



Correlates of health attitudes among homosexual and bisexual men [☆]

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Abstract There is increased emphasis on physician attention to the overall health and wellness of homosexual and bisexual men, though little is known about the health-related attitudes of these groups. This study determined factors associated with the health attitudes of homosexual and bisexual men and identified preferred sources of health information. For this study, the 2008 ConsumerStyles panel survey was used to create three health attitude scales and to determine factors associated with each scale. The three scales were labeled: (1) health motivation; (2) relationship with health care provider; and (3) self-perception of health literacy. In addition to other factors, higher scores for health motivation and relationship with health care provider were associated with black compared with white men. In contrast, lower scores for self-perception of health literacy were associated with black com-

men reported being motivated to be healthy and working well with their health care provider to manage their health. However, their perception of their own health motivation was low compared with the white men. Attempts to improve health literacy through Internet sites may be helpful in improving health attitudes and reducing negative health outcomes.

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1. Introduction

There are several interrelated complex issues that contribute to less than optimal health among men who have sex with men (MSM), including political, cultural, and psychosocial as well as sexual practices. MSM are reported to be less likely to have

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health insurance coverage and more likely to have unmet medical needs compared with men in different-sex relationships [1]. These discrepancies may stem from the lack of access to same-sex marriage rights [2] and/or perception of lack of provider sensitivity about sexual orientation-related health issues [3]. With regard to specific health discrepancies, MSM have been found to be at increased risk of: engaging in illegal drug use [4], reporting depression in the last 12 months [5], and having chronic diseases [6] and HIV and other sexually transmitted infections [7]. While there is recent increased emphasis on physician attention to the overall health and wellness of homosexual and bisexual men [8], little is known about the health-related attitudes of these groups. MSM health attitudes require attention because, ultimately, the health of each adult depends, in part, on their own actions and because attitudes and beliefs have been shown to play a large role in a person's health-related behaviors [9]. It is important to note that MSM have more challenges to maintaining optimum health than the general population because of stigma or perceived stigma related to their sexual orientation or sexual identity which can cause barriers to health care [3]. Understanding the health attitudes and perceptions of MSM may help health professionals and health plans to provide appropriate services which will in turn improve the overall health of MSM.

The objective of this study is to identify factors associated with positive and negative health attitudes among homosexual and bisexual men so that health promotion and health care services can be better tailored for these groups. In addition, a secondary objective is to identify preferred sources of information that may help in reaching these groups with health promotion education.

2. Methods

2.1. Survey

The 2008 paper-based ConsumerStyles survey was mailed to a stratified random sample of 20,000 potential respondents 18 years of age and older from Synovate's Consumer Opinion panel of approximately 340,000 households across the United States during the period of May through June 2008. The panel represented households with a range of demographic characteristics who had agreed to complete written surveys. Respondents were recruited to join the panel using a 4-page mailed survey and received a small incentive for their participation. The respondents were given a small monetary incentive (cash or coupon cash

totaling less than \$5) and were entered into a sweepstakes with a first place prize of \$1000 and 20 second-place prizes of \$50. The response rate for the 2008 ConsumerStyles survey was 50.5%. The survey data were post-stratified and weighted to the U.S. Census 2007 Current Population Survey on five demographic variables: gender, age, income, race, and household size. This approximated a nationally representative sample of adult men and women with respect to these variables that attempted to account for nonresponse bias. Pollard [10] assessed the validity of the HealthStyles Survey, which re-contacts respondents from the ConsumerStyles survey, using the Behavioral Risk Factor Surveillance Survey (BRFSS), a large, nationally representative survey that uses probability sampling to select participants. The distribution of responses to similarly worded questions on the two surveys were within a few percentage points of each other, and the surveys displayed similar trends for diabetes and obesity questions. Moreover, nine items compared on both surveys over 7 years had a correlation of $r = 0.99$, indicating high concordance in survey responses over time.

2.2. Measures

Participants responded to 20 five-point Likert statements regarding health-related attitudes based, in part, on the Social Cognitive Theory [11], Consumer Information Theory [12] and Health Belief Model [13]. Principal component analysis with varimax rotation for these 20 statements was used to create three novel (investigator created) scales to use as the dependent variables: health motivation, relationship with health care provider, and self-perception of health literacy (Table 1). Only participants with complete data on all items in the factor analysis were included; however, this retained approximately 93% of participants in the analysis. A scree plot, as well as the eigenvalue greater than one rule, was used to derive the three-factor solution. Factor loadings are presented in Table 1. There were no items loading 0.5 or higher on more than one factor, and most items had factor loadings of 0.7 or higher for their respective scales.

An additional measure was used to describe the respondent's first choice for information about a particular health condition. Independent measures included: demographic information (age, race/ethnicity, income and education); sexual identity (Which of the following best describes your sexual orientation? heterosexual, homosexual, bisexual, other); church attendance; and currently having health care coverage. Having multiple sex partners

Table 1 Health-related attitude scales, ConsumerStyles 2008.

	Factor loadings		
	Factor 1	Factor 2	Factor 3
<i>Health motivation (maximum score = 55, alpha = 0.909)</i>			
It is important to me to be informed about health issues	0.658	0.380	-0.165
It is important to me that I look healthy	0.619	0.164	-0.033
I do everything I can to stay healthy	0.724	0.153	0.004
I actively try to prevent disease and illness	0.740	0.190	-0.030
Living life in the best possible health is very important to me	0.722	0.150	0.018
I make a point to read and watch stories about health	0.761	0.045	0.079
I need to know about health issues so I can keep myself and my family healthy	0.726	0.211	-0.048
I really enjoy learning about health issues	0.798	0.112	-0.022
I know more about health and nutrition than most other people	0.673	-0.026	-0.132
I try to understand my personal health risks	0.737	0.206	-0.165
When I read or hear something that is relevant to my health care, I bring it up with my doctor	0.553	0.468	0.035
<i>Relationship with health care provider (maximum score = 25 alpha = 0.832)</i>			
I have a good relationship with my health care provider(s)	0.293	0.718	-0.233
My doctor provides me with practical health information	0.305	0.754	-0.163
My doctor and I work together to manage my health	0.384	0.766	-0.068
I rely on my doctor to tell me everything I need to know about managing my health	0.112	0.760	0.283
I leave it up to my doctor to make the right decisions about my health	-0.026	0.673	0.371
<i>Health literacy (maximum score = 20, alpha = 0.768)</i>			
Most health issues are too complex for me to understand	-0.085	0.099	0.745
I have difficulty understanding a lot of health information that I read	-0.021	0.174	0.767
It is hard to find good answers to my health questions and concerns	0.065	-0.113	0.686
I often do not understand the language my doctor uses	-0.014	-0.035	0.776

Note: Scales were composed of responses to individual statements with Likert-style response options (1 = strongly disagree to 5 = strongly agree). Maximum scores and Cronbach's alphas are provided.

in the past year at the time of the survey (Have you had more than one sexual partner in the last 12 months?), and response to a Likert scale question about their perceived "control over things that happen to me" were also used as independent measures. While other terms to describe sexual orientation may have been more appropriate than "heterosexual", "homosexual" and "bisexual", these were the terms used in the only questions on sexual orientation in the survey.

2.3. Analyses

Only data from male respondents who identified themselves as either homosexual or bisexual were analyzed in this study. Only white, black and Hispanic respondents were included in the analysis because only 4 respondents identified themselves as being of a different race and this sample size is insufficient to draw meaningful inference with regard to that subgroup. Including these respondents as a separate race group would also introduce instability into the models.

Correlations between the scales were estimated with Pearson correlation coefficients. Adjusted means were estimated for each scale, as well as the differences in the adjusted mean scale across subgroups, by entering all independent variables simultaneously in a multiple linear regression model.

Bivariate logistic regression analysis was used to model the respondent's first choice for information about a health condition and the independent variables listed above. Because the majority of responses were either a health care provider or the Internet, two dichotomous variables were created: health care provider (yes/no) or Internet (yes/no). The two youngest age groups were collapsed because no one in the 18–24 age group chose health care provider as their primary source for health information, and education was excluded as an independent variable because it was highly correlated with income. A backward elimination model selection algorithm was used to identify factors which were independent predictors of each scale. Factors were removed from the final model if they

failed to meet a $p = .05$ level of significance. Changes in the model fit were assessed at each stage using Akaike's Information Criterion (AIC). All statistical analyses were performed using SAS 9.2.

3. Results

Of the 4567 male respondents, 211 (4.6%) self-identified as homosexuals, 100 (2.2%) as bisexuals, and 3564 (78.0%) as heterosexuals. Another 101 self-identified as "other" and 591 did not answer the sexual orientation question. Of the 311 respondents to the 2008 ConsumerStyles survey who were included in the analysis, 211 (68%) were homosexual, 123 (40%) were 18–34 years old, 253 (82%) were white, 142 (46%) had annual household incomes of less than \$40,000, and 236 (76%) had at least some college education. There were some significant differences between homosexual and bisexual men. A greater proportion of homosexual men had a college education or higher and had health insurance, while a greater proportion of bisexual men attended church more than once per year (Table 2).

Correlations between the three scales were as follows: health motivation and relationship with health care provider 0.551 ($p < 0.0001$), relationship with health care provider and self-perception of health literacy -0.098 ($p = 0.180$), and health motivation and self-perception of health literacy 0.007 ($p = 0.9226$).

3.1. Health motivation

The overall mean score for the health motivation scale was 38.9 (SD ± 11.7 , maximum score = 55). The health motivation scale was associated with age group, race/ethnicity, church attendance, and having health insurance (overall $R^2 = 0.42$; all $p < 0.0001$, Table 3). Compared with men 18–24 years of age, men 25 years of age and older had higher health motivation scale scores. Black and Hispanic men scored higher than white men; men who attended church more than once per year had a higher score than men who attended once, or did not attend at all. Men without health insurance had lower scores than men with health insurance.

3.2. Relationship with health care provider

The overall mean score for the relationship with health care provider scale was 17.3 (SD ± 5.9 , maximum score = 25). The relationship with health care provider scale was associated with age, race/ethnicity, church attendance, and perceived control

(overall $R^2 = 0.37$; all $p < 0.0001$, Table 3). Compared with men 18–24 years of age, men 35–44 and men 55 years and older had a higher relationship with the health care provider scale score. Black and Hispanic men had higher scores than white men; men who attended church more than once per year had a higher score than men who attended once per year or did not attend at all. Compared with men who strongly disagreed they have little control over the things that happen to them, men who strongly agreed had higher scores, while men who agreed had lower scores.

3.3. Self-perception of health literacy

The overall mean score for the self-perception of health literacy scale was 10.3 (SD ± 4.7 , maximum score = 20). The self-perception of health literacy scale was associated with race/ethnicity, education, perceived control, and health insurance (overall $R^2 = 0.44$; all $p < 0.0001$, Table 3). Compared with white men, black men had a lower self-perception of health literacy scale score as did men with no health insurance compared with men with health insurance. Men who agreed, were neutral or disagreed regarding having little control over things that happen to them had a lower self-perception of health literacy score than men who strongly disagreed. Men who had a college or higher degree had a higher score than men with a high school degree or less education.

3.4. Sources of health information

For health information, homosexual and bisexual men most frequently turned to the Internet first ($n = 128$, 57.1%), followed by a health care provider ($n = 72$, 32.1%). The remainder of men reported seeking information from people at work, friend or family member, and other.

Reporting turning to the Internet as a first choice for health information was associated with age, race/ethnicity, income and perceived control. Compared with men 18–34 years of age, all other age groups had lower odds of reporting the Internet (35–44 years: adjusted odds ratio (AOR) = 0.046, 95% CI = 0.01, 0.19; 45–54 years: AOR = 0.07, 95% CI = 0.02, 0.29; 55–64 years: AOR = 0.01, 95% CI = 0, 0.04, 65+ years: AOR = 0.01, 95% CI = 0, 0.04). Hispanics had lower odds of reporting the Internet compared with whites (AOR = 0.08, 95% CI = 0.02, 0.35) and men earning \$0–24,999 per year had lower odds (AOR = 0.10, 95% CI = 0.03, 0.33) than men earning \geq \$60,000 per year. Men who strongly agreed they have little control over things that happen to them had lower odds of

Table 2 Characteristics of homosexual and bisexual male respondents ($n = 311$) included in the analysis, ConsumerStyles, 2008.

	Homosexual $n(\%)$ ($n = 211$)	Bisexual $n(\%)$ ($n = 100$)	p
Age (years)			
18–24	40(19)	17(17)	.240
25–34	39(18)	27(27)	
35–44	46(22)	15(15)	
45–54	43(20)	18(18)	
55–64	24(12)	9(9)	
65+	20(9)	15(15)	
Race/ethnicity			
White	171(81)	83(83)	.559
Black	22(10)	7(7)	
Hispanic	18(9)	10(10)	
Household annual income			
\$0–24,999	33(33)	49(23)	.210
\$25,000–39,999	17(17)	44(21)	
\$40,000–59,999	19(19)	53(25)	
\geq \$60,000	31(31)	66(31)	
Education			
High school or less	35(17)	34(34)	<.0001
Some college	71(34)	42(43)	
College graduate or more	100(49)	22(23)	
Church attendance			
\leq Once per yr	117(56)	42(43)	.026
$>$ Once per yr	91(43)	57(57)	
I have little control over the things that happen to me			
Strongly agree	22(11)	9(9)	.339
Agree	33(16)	17(17)	
Neutral	50(24)	25(26)	
Disagree	59(28)	36(36)	
Strongly disagree	44(21)	12(12)	
Multiple partners			
No	118(56)	57(57)	.900
Yes	91(44)	42(43)	
Health insurance			
No	24(11)	24(24)	.004
Yes	187(89)	74(76)	

All percents may not add to 100 because data are weighted.

reporting turning to the Internet first for health information (AOR = 0.04, 95% CI = 0.01, 0.21) compared with men who strongly disagreed.

Reporting a health care provider as a first choice for health information was also associated with age, race/ethnicity, income and perceived control, though in the opposite direction. Compared with men 18–34 years old, all other age groups had higher odds of choosing a health care provider (35–44 years: AOR = 9.16, 95% CI = 2.36, 35.66; 45–54 years: AOR = 12.05, 95% CI = 2.92, 49.73; 55–64 years: AOR = 35.03, 95% CI = 7.61, 161.32; 65+ years: AOR = 93.42, 95% CI = 18.57, 469.95).

Hispanics had higher odds of reporting health care providers compared with whites (AOR = 7.50, 95% CI = 2.23, 25.25). Compared with men making \geq \$60,000 per year, men making \$0–24,999 per year had higher odds (AOR = 2.77, 95% CI = 1.05, 7.34) and men making \$25,000–39,999 had lower odds of reporting health care providers (AOR = 0.29, 95% CI = 0.09, 0.92). Men who strongly agreed they have little control over things that happen to them had higher odds of reporting a health care provider as a first choice for health information (AOR = 15.51, 95% CI = 3.14, 76.69) compared with men who strongly disagreed.

Table 3 Multiple linear regression models for health attitude scales, ConsumerStyles 2008.

Variable	Health attitude scales					
	Health motivation $R^2 = 0.42$		Relationship with health care provider $R^2 = 0.37$		Self-perception of health literacy $R^2 = 0.44$	
	Adjusted ^a mean	β^b (95% CI)	Adjusted mean	β^b (95% CI)	Adjusted mean	β^b (95% CI)
Sexual orientation						
Homosexual	42.22	Referent	19.00	Referent	8.53	Referent
Bisexual	41.44	.789 (−1.83, 3.41)	18.58	−.419 (−1.79, 0.956)	8.14	−.393 (−1.39, 0.607)
Age						
18–24	35.84	Referent	16.34	Referent	8.70	Referent
25–34	40.12	4.28 (0.002, 8.55)	17.71	1.37 (−0.879, 3.61)	8.11	−.585 (−2.22, 1.05)
35–44	42.27	6.43 (1.85, 11.01)	18.97	2.63 (0.199, 5.06)	8.64	−.057 (−1.82, 1.71)
45–54	42.35	6.52 (1.83, 11.20)	18.46	2.12 (−0.342, 4.58)	8.56	−.133 (−1.91, 1.64)
55–64	43.19	7.35 (2.19, 12.50)	19.66	3.32 (0.602, 6.04)	8.43	−.270 (−2.27, 1.73)
65+	47.24	11.40 (6.26, 16.55)	21.60	5.25 (2.44, 8.06)	7.58	−1.12 (−3.08, .847)
Race/ethnicity						
Black	46.17	9.46 (5.23, 13.69)	20.07	3.07 (0.901, 5.24)	5.81	−4.01 (−5.57, −2.45)
Hispanic	42.63	5.93 (1.71, 10.15)	19.32	2.33 (0.134, 4.52)	9.38	−.444 (−2.10, 1.21)
White	36.70	Referent	16.99	Referent	9.82	Referent
Income						
0–24.9K	38.21	−3.65 (−7.41, 0.113)	18.11	−.332 (−2.32, 1.65)	7.71	−.947 (−2.37, .474)
\$25–39.9K	43.32	1.46 (−2.00, 4.92)	18.97	.526 (−1.31, 2.37)	8.99	.338 (−0.986, 1.66)
\$40–59.9K	43.95	2.09 (−1.27, 5.46)	19.66	1.22 (−0.558, 2.99)	7.99	−.667 (−1.96, .624)
≥\$60K	41.86	Referent	18.44	Referent	8.66	Referent
Education						
High school or less	41.30	Referent	19.08	Referent	7.08	Referent
Some college	42.49	1.20 (−2.27, 4.66)	18.95	−.128 (−1.96, 1.70)	8.34	1.26 (−0.060, 2.58)
College graduate or more	41.71	.419 (−3.39, 4.23)	18.35	−.723 (−2.73, 1.29)	9.60	2.52 (1.06, 3.98)
Church attendance						
≤once per yr	40.37	Referent	17.91	Referent	8.05	Referent
>once per yr	43.30	2.92 (0.375, 5.47)	19.67	1.76 (0.422, 3.10)	8.63	.580 (−.398, 1.56)
I have little control over the things that happen to me						
Strongly agree	44.40	1.83 (−3.08, 6.74)	21.88	2.84 (0.257, 5.42)	6.93	−3.66 (−5.58, −1.75)
Agree	39.64	−2.92 (−7.01, 1.18)	15.53	−3.50 (−5.67, −1.33)	8.17	−2.43 (−3.98, −0.88)
Neutral	41.71	−.85 (−4.61, 2.91)	19.49	.449 (−1.54, 2.44)	7.25	−3.34 (−4.79, −1.88)
Disagree	40.86	−1.70 (−5.20, 1.81)	18.03	−1.00 (−2.85, 0.85)	8.75	−1.84 (−3.21, −0.48)
Strongly disagree	42.56	Referent	19.03	Referent	10.59	Referent
Multiple partners						
No	41.70	−.265 (−3.02, 2.49)	18.61	−.359 (−1.83, 1.11)	8.22	−.238 (−1.31, 0.83)
Yes	41.97	Referent	18.97	Referent	8.46	Referent
Health insurance						
No	39.23	−5.20 (−8.74, −1.66)	18.22	−1.14 (−3.01, 0.73)	7.52	−1.64 (−3.03, −0.26)
Yes	44.44	Referent	19.36	Referent	9.16	Referent

^a Means were adjusted for all variables in the model.

^b β represents the estimated difference in the dependent variable between a given level of the independent variable and the referent group.

4. Discussion

The Gay and Lesbian Medical Association put forth a summary of health and health access disparities

among Lesbian, Gay, Bisexual and Transgender (LGBT) persons [14]. While there are many and varied reasons for the disparities, overall health attitudes may provide areas for health promotion and

health care service interventions. In this study, men reported the highest scores for the health motivation scale indicating they were motivated to improve or maintain their health, while they reported the lowest score for the self-perception of health literacy scale, indicating they could not access needed health information, or, if accessed, could not understand it.

Several demographic factors were associated with the health attitude scales. Age was associated with both the health motivation and the relationship with health care provider scales. Older homosexual and bisexual men generally scored higher on both scales. Other studies have shown that older adults generally have a tendency toward better health practices [15,16] and work well with their health care providers [17,18]. Compared with white men, black men scored higher on the health motivation and relationship with health care provider scales. It has been frequently reported that gay men place more emphasis on physical attractiveness than heterosexual men owing, perhaps, to sexual objectification by their male romantic partners [19,20] and/or the influence of media [21]. That black homosexual and bisexual men had higher health motivation and relationship with health care provider scores than white men may reflect their desire to stay healthy in an environment where HIV rates are higher among blacks [7]. It is of note that black homosexual and bisexual men scored lower than white men on the self-perception of health literacy scale. Race/ethnicity has previously been reported to be associated with health literacy in an analysis of the National Assessment of Adult Literacy with minorities, especially blacks and Hispanics, having lower scores than non-Hispanic whites [22]. Finally, education was a significant correlate for the health literacy scale, but not the other two scales. The association of self-perception of health literacy with education was not unexpected since having more education would provide a better basis for understanding health information.

Other factors were also associated with the health attitude scales. Health insurance was associated with the health motivation and self-perception of health literacy scales. Homosexual and bisexual men with no health insurance had lower scores than men with insurance perhaps as a result of fewer health care visits and missed opportunities for health education. Health insurance was not a factor in the relationship with health care provider scale as might be expected perhaps because some men with no insurance were seeing health care providers that worked well with them at free clinics. Involvement in church life has

been shown to provide access to health education interventions as well as exerting an overall health benefit to African Americans [23]. Church attendance more than once per year was associated with the health motivation and relationship with health care provider scales. This may be the result of churches providing social support and an emphasis on health [24]. In contrast, church attendance was not a factor for the self-perception of health literacy scale. It may be that providing tailored health information to homosexual and bisexual male church-goers represented an unfilled need. Finally, the perception of having little control over things that happen to them was associated in a consistent manner with low values on the self-perception of health literacy scale. Homosexuals have reported difficulties in communicating with health care providers [25,26], while bisexuals have reported feeling as though they do not belong to the straight world or to the gay world [27,28] and have been reported to have disadvantaged social well-being [29], possibly contributing to this feeling of little control [30,31].

For information about an unfamiliar health condition, the largest percent of homosexual and bisexual men reported turning to the Internet first rather than to a health care provider. This is likely a result of the ready accessibility of health information on the Internet available at relatively no cost compared with a physician visit. This result may also reflect the literature on communication barriers frequently present between health care providers and their homosexual and bisexual patients [26]. Men who turned to the Internet first had lower odds of being 35 and older, being Hispanic, having low income and not feeling in control of things that happen to them. Men who turned to a health care provider first were just the opposite, having greater odds of being 35 and older, being Hispanic, having less income, and not feeling in control. Perhaps while homosexual and bisexual men work well with their providers to manage their personal health relationship with health care providers, as indicated on this study's scale, they are not as comfortable asking them about unfamiliar health conditions that may have to do with their sexuality. This finding underscores the importance of training physicians and medical students to ask questions about sexual as well as other health risk behaviors and the importance of reliable, accurate medical web sites addressing health issues specific to homosexual and bisexual men.

There are several potential limitations of this study. First, a non-response bias may exist owing to the fairly low response rate of the Consumer-Styles survey. It was not possible to assess

differences between responders and non-responders, so these findings may be biased if non-responders were different from responders in their attitudes. Second, the survey data are cross-sectional, thus causality cannot be determined. Third, it is likely that some important factors were not measured, thus the impact of significant correlates in this analysis may have been overestimated. Fourth, known questions with established psychometric properties were not used, and this may have affected the interpretation of the question and accuracy of the responses. Fifth, there were few non-heterosexual male survey participants relative to the total sample; however, this generally reflects the proportion of non-heterosexual men in the population. Sixth, HIV status was not possible to assess, which may have affected health attitudes. Finally, the survey did not use a probability sampling technique, though results of this survey have been shown to be comparable to the BRFSS, which does use a probability sampling technique [10]. These limitations should be considered in the interpretation of results. The strengths of this study are the large sample size and the ability to weight responses to the U.S. Census Current Population Survey on five demographic variables.

Overall, homosexual and bisexual men report being motivated to be healthy, although self-perception of their health literacy was relatively low. This was especially pronounced among black homosexual and bisexual men who bear the burden of high rates of HIV and other sexually transmitted infections [7,32]. This may indicate a knowledge gap that needs to be addressed so that health-conscious minority homosexual and bisexual men can protect their health as much as possible. Attempts to improve health literacy through tailored Internet sites may be helpful in reducing negative health outcomes for homosexual and bisexual men less than 55 years of age. Concurrently, it is important to continue to encourage and train health care providers to ask questions about a person's sexuality, to not assume everyone is heterosexual [25,33], and to educate their patients about health issues relevant to their sexual orientation [34–37].

Conflict of interest

None declared.

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