Sexual and Gender Minority Identity Disclosure During Undergraduate Medical Education: "In the Closet" in Medical School

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Abstract

Purpose
To assess identity disclosure among sexual and gender minority (SGM) students pursuing undergraduate medical training in the United States and Canada.

Method
From 2009 to 2010, a survey was made available to all medical students enrolled in the 176 MD- and DO-granting medical schools in the United States and Canada. Respondents were asked about their sexual and gender identity, whether they were "out" (i.e., had publicly disclosed their identity), and, if they were not, their reasons for concealing their identity. The authors used a mixed-methods approach and analyzed quantitative and qualitative survey data.

Results
Of 5,812 completed responses (of 101,473 eligible respondents; response rate 5.7%), 920 (15.8%) students from 152 (of 176; 86.4%) institutions identified as SGMs. Of the 912 sexual minorities, 269 (29.5%) concealed their sexual identity in medical school. Factors associated with sexual identity concealment included sexual minority identity other than lesbian or gay, male gender, East Asian race, and medical school enrollment in the South or Central regions of North America. The most common reasons for concealing one's sexual identity were "nobody's business" (165/269; 61.3%), fear of discrimination in medical school (117/269; 43.5%), and social or cultural norms (110/269; 40.9%). Of the 35 gender minorities, 21 (60.0%) concealed their gender identity, citing fear of discrimination in medical school (9/21; 42.9%) and lack of support (9/21; 42.9%).

Conclusions
SGM students continue to conceal their identity during undergraduate medical training. Medical institutions should adopt targeted policies and programs to better support these individuals.

Sexual and gender minority (SGM) health care providers face discrimination and often work in environments unfriendly to both SGM patients and practitioners.[1,2] The term SGM is inclusive of all nonheterosexual and noncisgender individuals, including, but not limited to, those who identify as lesbian, gay, bisexual, transgender (LGBT), queer, or questioning. Small studies demonstrate that SGM medical students face obstacles during undergraduate medical training and residency applications, but their experiences remain widely unstudied.[3–8] Unfriendly and unsafe environments in medicine prevent SGM students from "coming out" (being publicly open about their identity); instead, they remain "in the closet" (concealing their identity).[5,7] Concealing one's identity can have significant negative effects on physical and mental well-being.[9–12]

The Liaison Committee on Medical Education forbids discrimination based on sexual orientation or gender identity in medical education programs.[13] In addition, the Association of American Medical Colleges (AAMC) recommends that all institutions "ensure a safe learning environment for all students, regardless of their sexual orientation or gender identity."[14] In spite of these recommendations, SGM students still experience discrimination in medical school.[3–8] According to responses to the 2013 AAMC Graduation Questionnaire, 2.3% of respondents reported being subjected to offensive remarks related to their sexual orientation.[15]

Yet, little is known about the experiences of SGM students during medical school. We hypothesized that a significant number of medical students enrolled in MD- and DO-granting institutions in the United States and Canada identify as SGM and that many of these individuals conceal their identity. In this study, we explored medical students' "outness" and their reasons for concealing their SGM identity during undergraduate medical training.

Method

Survey development and study population

Our research instrument was designed primarily to assess students' perceptions of SGM-specific medical school curricula, but it also included questions about sexual identity, gender identity, and identity disclosure. To inform the study design, we searched MEDLINE for all English-language publications containing "lesbian," "gay," "homosexual," "bisexual," "transgender," "medical education," "medical student," or "curriculum" in the title, abstract, or both, along with related National Library of Medicine Medical

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Subject Headings to identify previous LGBT health-related medical education studies and their study designs. To evaluate face validity and clarity, we piloted our survey with 23 medical students from MD- and DO-granting medical schools in the United States and Canada. Only minor changes to improve clarity were made to the survey following the pilot.

The final 23-item Internet-based survey (see Supplemental Digital Appendix 1 at http://links.lww.com/ACADMED/A260), designed to be completed within 20 minutes, was available from June 27, 2009 through May 31, 2010 to students at all 176 MD- and DO-granting medical schools in the United States and Canada that were enrolling students at survey initiation. An estimated 101,473 students were eligible to participate, including 73,082 at U.S. MD-granting schools, 18,143 at U.S. DO-granting schools, and 10,518 at Canadian MD-granting schools, all of whom were enrolled during the 2009–2010 academic year.[16–18] The survey was administered using Opinio (ObjectPlanet, Inc.; Oslo, Norway) with 128-bit SSL encryption, in compliance with the U.S. Health Information Protection and Portability Act and Stanford University institutional review board regulations and policies. Informed consent was obtained prior to survey initiation.

We distributed e-mail invitations through national and international medical student organizations (e.g., American Medical Association, American Medical Student Association, Council of Osteopathic Student Government Presidents, and Student Osteopathic Medical Association), school administrators, student governments or student activities contacts, and a targeted Facebook advertising campaign (see Supplemental Digital Appendix 2 at http://links.lww.com/ACADMED/A260). To limit sampling bias, we designed the recruitment materials to promote participation from all medical students regardless of identity; we did not approach SGM medical student organizations for survey distribution. To encourage participation, we invited respondents and nonrespondents to enter a drawing for one of fifty $25 Amazon.com gift cards.

Demographic variables

We assessed a number of demographic characteristics, including age, race, year in medical school, and AAMC-defined region[19] and type of institution (U.S. MD-granting, U.S. DO-granting, or Canadian MD-granting) attended. Respondents also were asked about their sexual and gender identity. They were allowed to select multiple identities; those who chose "another sexual orientation" or "another gender identity" were given the option to provide a free-text response as well (see Supplemental Digital Appendix 3 at http://links.lww.com/ACADMED/A260). We defined sexual minorities as individuals selecting a sexual identity other than "straight/heterosexual" or "decline to answer"; to limit misclassification bias, individuals selecting multiple sexual identities were considered a separate group. We defined gender minorities as individuals selecting a gender identity other than "female," "male," or "decline to answer," including those selecting multiple identities.

Identity disclosure

Respondents who reported an SGM identity were asked a binary question about whether they were "out" about their (1) sexual identity and/or (2) gender identity at their medical school. Being "out" was defined as "the state of having disclosed and continuing to disclose one's sexual orientation and/or gender identity to oneself or others" (see Supplemental Digital Appendix 1 at http://links.lww.com/ACADMED/A260). Respondents who reported not being "out" about their sexual or gender identity were asked an additional question with multiple-choice and free-text response components about their reasons for not being "out" at their medical school.

Statistical analysis

For all statistical analyses, we combined respondents identifying as "lesbian" or "gay" into a single group because we considered these gender-specific terms that defined similar sexual identities, and we controlled for gender as a separate covariate. We combined gender minorities for statistical power. For the univariate analysis, we compared all demographic factors (1) by SGM versus non-SGM identity among all respondents and (2) by "out" versus not "out" about their sexual identity in a subpopulation analysis of sexual minorities. Significance was determined with a two-sided Fisher exact test (categorical variables) or a two-sample Wilcoxon rank-sum test (continuous variables).

We conducted a multivariate logistic regression analysis of sexual identity minorities to identify demographic characteristics associated with sexual identity disclosure in medical school. Covariates included all demographic variables. We excluded individuals who declined to answer whether they were "out" (n = 27) or who failed to report at least one demographic variable (n = 36) from the final adjusted model. We performed all analyses in STATA version 13.1 (College Station, Texas) with two-sided alpha < .05.

Qualitative analysis

We analyzed the free-text response reasons for not being "out" in medical school with an approach derived from grounded theory without a priori defined assumptions.[20] Three readers (M.M., W.W., L.G.) used the free-text responses and generated 16 unique codes representing common themes. Each reader individually coded all free-text responses using the defined codes. One free-text response could receive multiple codes. Readers compiled their individual lists; a response required support from at least two readers for inclusion into a specific code group. Readers then selected individual quotations that best illustrated each code's unique theme. Spelling, capitalization, and identifying information were edited without altering the original meaning. In the Results, we identify each of these quotations with the respondent's age, year in medical school, sexual identity, race, gender identity, and type of medical school attended.

Results

Study population

Of 101,473 estimated eligible respondents, 5,812 (5.7%) completed the entire survey. Of those, 920 (15.8%) respondents from 152 (of 176; 86.4%) institutions identified as SGMs, including 912 sexual minorities and 35 gender minorities, with 21 individuals identifying as both. Demographic characteristics of all respondents are described in Table 1.

In univariate analysis, we found that SGM respondents compared with non-SGM respondents were older (26.4 years [standard deviation (SD) 3.9] versus 25.8 years [SD 3.3]; $P < .001$) and varied significantly by gender ($P < .001$), race

Table 1

Demographic Characteristics of Respondents to a Study of U.S. and Canadian (MD and DO) Medical Students Enrolled During the 2009–2010 Academic Year, by Sexual and Gender Minority Identity

Characteristic	All respondents (n = 5,812)	Sexual and gender minority (SGM) respondents (n = 920)	Non-SGM respondents (n = 4,892)	*P* value[a]
Sexual identity, no. (%)				
Straight/heterosexual	4,791 (82.4)	8 (0.9)	4,783 (98)	< .001
Sexual minority	912 (15.7)	912 (99.2)	0 (0.0)	
Lesbian or gay[b]	483 (8.3)	483 (52.5)	0 (0.0)	
Lesbian	121 (2.1)	121 (13.2)	0 (0.0)	
Gay	362 (6.2)	362 (39.3)	0 (0.0)	
Bisexual	206 (3.5)	206 (30.4)	0 (0.0)	
Queer	36 (0.6)	36 (3.9)	0 (0.0)	
Questioning	25 (0.4)	25 (2.7)	0 (0.0)	
Another sexual orientation	14 (0.2)	14 (1.5)	0 (0.0)	
Multiple sexual identities	148 (2.6)	148 (16.1)	0 (0.0)	
Decline to answer	109 (1.9)	0 (0.0)	109 (2.2)	
Gender identity, no. (%)				
Female	3,379 (40.2)	436 (47.4)	2,943 (60.2)	< .001
Male	2,335 (58.1)	448 (48.7)	1,887 (38.6)	
Gender minority[c]	35 (0.6)	35 (3.8)	0 (0.0)	
Female-to-male	9 (0.2)	9 (1.0)	0 (0.0)	
Male-to-female	7 (0.1)	7 (0.8)	0 (0.0)	
Another gender identity	22 (0.4)	22 (2.4)	0 (0.0)	
Decline to answer	63 (1.1)	1 (0.1)	62 (1.3)	
Age, mean (standard deviation)	25.9 (3.4)	26.4 (3.9)	25.8 (3.3)	< .001
Race, no. (%)				
White	4,197 (72.2)	642 (69.8)	3,555 (72.7)	.005
East Asian	407 (7.0)	67 (7.3)	340 (7.0)	
Hispanic	178 (3.1)	46 (5.0)	132 (2.7)	
South Asian	286 (4.9)	36 (3.9)	250 (5.1)	
Black/African American	149 (2.6)	20 (2.2)	129 (2.6)	
American Indian/Native Alaskan/Native Hawaiian/Pacific Islander	151 (2.6)	25 (1.6)	125 (2.6)	
Multiple races	313 (5.4)	59 (6.4)	254 (5.2)	
Decline to answer	131 (2.3)	24 (2.6)	107 (2.2)	
Region, no. (%)[d]				
Northeast	1,353 (23.3)	285 (31.0)	1,068 (21.8)	< .001
Central	1,900 (32.7)	249 (27.1)	1,651 (33.7)	
South	1,632 (28.1)	238 (25.9)	1,394 (28.5)	
West	873 (15.0)	137 (14.9)	736 (15.0)	
Decline to answer	54 (0.9)	11 (1.2)	43 (0.9)	
Year in school, no. (%)				
First year	1,565 (26.9)	237 (25.8)	1,328 (27.1)	.62
Second year	1,757 (30.2)	273 (29.7)	1,484 (30.3)	
Third year or above	2,274 (39.1)	378 (41.1)	1,896 (38.8)	
Recently graduated	199 (3.4)	30 (3.3)	169 (3.5)	
Decline to answer	17 (0.3)	2 (0.2)	15 (0.3)	

(*Continues*)

Table 1
(Continued)

Characteristic	All respondents (n = 5,812)	Sexual and gender minority (SGM) respondents (n = 920)	Non-SGM respondents (n = 4,892)	*P* value[a]
School type, no. (%)				
U.S. MD granting	4,321 (74.4)	675 (73.7)	3,646 (74.5)	.09
U.S. DO granting	1,085 (18.7)	165 (17.9)	920 (18.8)	
Canadian MD granting	406 (7.0)	80 (8.7)	326 (6.7)	

[a]Significance was determined with a two-sided Fisher exact test (categorical variables) or a two-sample Wilcoxon rank-sum test (continuous variables) for each major variable (SGM versus non-SGM respondents). Individuals who declined to answer an individual variable were removed from that specific statistical analysis.
[b]Respondents selecting "lesbian" or "gay" were combined as a single group for analysis.
[c]Some gender minority respondents selected multiple gender identities. For statistical power in our analysis, we analyzed gender minorities as a single group.
[d]Regions were determined using the Association of American Medical Colleges' regional breakdown for medical schools.[19]

($P = .005$), and region of medical school attended ($P < .001$). In particular, SGM respondents compared with non-SGM respondents were more likely to report male gender (448/920 [48.7%] versus 1,887/4,892 [38.6%]) and medical school enrollment in the Northeast region (285/920 [31.0%] versus 1,068/4,892 [21.8%]) but were less likely to report enrollment in the South (238/920 [25.9%] versus 1,394/4,892 [28.5%]) or Central regions (249/920 [27.1%] versus 1,651/4,892 [33.7%]).

Sexual identity disclosure in medical school

Of sexual minority respondents, including individuals identifying as lesbian, gay, bisexual, queer, questioning, another sexual orientation, or multiple sexual identities, 269 (of 912; 29.5%) concealed their sexual identity in medical school. Sexual identity concealment was lowest among lesbian or gay (71/483; 14.7%) and queer (8/36; 22.2%) respondents. The majority of bisexual (111/206; 53.9%) and questioning (23/25; 92.0%) respondents reported concealing their sexual identity in medical school. In univariate analysis, we found significant differences in sexual identity disclosure by individual sexual identity ($P < .001$), gender identity ($P = .001$), age ($P = .007$), race ($P = .005$), and region of medical school attended ($P = .047$) (see Table 2).

Multivariate analysis identified demographic characteristics that were independently associated with sexual identity disclosure in medical school (see Table 3). We found that respondents identifying as bisexual, queer, questioning, another sexual orientation, or multiple sexual identities were all significantly less likely to disclose their sexual identity compared with lesbian or gay respondents. In terms of race, East Asian respondents were significantly less likely to disclose their sexual identity compared with White respondents (odds ratio [OR] = 0.46; 95% confidence interval [CI]: 0.25–0.85; $P = .01$). We found a similar trend for identity concealment among other racial minority groups, but these relationships were not statistically significant. Respondents attending medical school in the South (OR = 0.52; 95% CI: 0.32–0.85; $P = .009$) or Central regions (OR = 0.55; 95% CI: 0.35–0.88; $P = .01$) compared with those in the Northeast region had significantly decreased odds of being "out" about their sexual identity.

At the unadjusted level, female respondents were less likely than male respondents (OR = 0.58; 95% CI: 0.43–0.78; $P < .001$) to report being "out" (see Table 3), but this relationship was reversed in our multivariate model (OR = 1.66; 95% CI: 1.09–2.55; $P = .02$). In a sensitivity analysis, we found that this disparity was primarily a result of differences in sexual identity that varied by gender. Female as compared with male sexual minorities were much more likely to select a sexual minority identity other than lesbian or gay (309/436 [70.9%] versus 97/448 [21.7%]) (see Supplemental Digital Appendix 4 at http://links.lww.com/ACADMED/A260), which we previously identified were all independently associated with identity concealment.

Gender identity disclosure in medical school

We separately analyzed gender identity disclosure, specifically among gender minorities, including individuals identifying as transgender female-to-male, transgender male-to-female, or another gender identity. Of the 35 respondents who reported a gender minority identity, 12 (34.3%) were "out" about their gender identity, 21 (60.0%) were not "out," and 2 (5.7%) declined to answer. We did not perform a subpopulation analysis on factors associated with "outness" concerning gender identity because of inadequate sample size.

Reasons for not being "out"

Reasons for identity concealment in medical school are presented in Table 4. The most common reasons for concealing one's sexual identity were "nobody's business" (165/269; 61.3%), fear of discrimination in medical school (117/269; 43.5%), and social or cultural norms (110/269; 40.9%). Gender minority respondents who were not "out" about their gender identity most often cited fear of discrimination in medical school (9/21; 42.9%) and lack of support (9/21; 42.9%).

Free-text responses

SGM respondents who were not "out" about their identity (n = 285) were given an optional free-text box to describe their reasons for not being "out" in more detail. These respondents included those who concealed their sexual identity (n = 269) or gender identity (n = 21), five of whom concealed both identities. Of the 285 eligible respondents, 72 (25.3%) provided

Table 2

Results of Univariate Analyses of Demographic Characteristics of "Out" and Not "Out" Sexual Minority Medical Students Enrolled at U.S. and Canadian MD- and DO-Granting Medical Schools During the 2009–2010 Academic Year

Characteristic	"Out" (n = 616)	Not "out" (n = 269)	Decline to answer (n = 27)[a]	*P* value[b]
Sexual identity, no. (%)				
Sexual minority (n = 912)	616 (67.5)	269 (29.5)	27 (3.0)	
Lesbian or gay (n = 483)[c]	409 (84.7)	71 (14.7)	3 (0.6)	< .001
Lesbian (n = 121)	104 (86.0)	16 (13.2)	1 (0.8)	
Gay (n = 362)	305 (84.3)	55 (15.2)	2 (0.6)	
Bisexual (n = 206)	89 (43.2)	111 (53.3)	6 (2.9)	
Queer (n = 36)	26 (72.2)	8 (22.2)	2 (5.6)	
Questioning (n = 25)	2 (8.0)	23 (92.0)	0 (0.0)	
Another sexual orientation (n = 14)	6 (42.9)	5 (35.7)	3 (21.4)	
Multiple sexual identities (n = 148)	84 (56.8)	51 (34.5)	13 (8.7)	
Gender identity, no. (%)				
Male (n = 448)	330 (73.7)	110 (24.6)	8 (1.8)	.001
Female (n = 436)	266 (61.0)	153 (35.1)	17 (3.9)	
Gender minority (n = 27)	20 (74.1)	6 (22.2)	1 (3.7)	
Decline to answer (n = 1)	0 (0.0)	0 (0.0)	1 (100.0)	
Age, mean (standard deviation)	26.5 (3.8)	26.1 (4.1)	25.8 (4.4)	.006
Race, no. (%)				
White (n = 637)	439 (68.9)	179 (28.1)	19 (3.0)	.007
East Asian (n = 67)	36 (53.7)	29 (43.3)	2 (3.0)	
Hispanic (n = 45)	34 (75.6)	10 (22.2)	1 (2.2)	
South Asian (n = 35)	25 (71.4)	8 (22.9)	2 (5.7)	
Black/African American (n = 20)	10 (50.0)	10 (50.0)	0 (0.0)	
American Indian/Native Alaskan/Native Hawaiian/ Pacific Islander (n = 26)	12 (46.2)	12 (46.2)	2 (7.7)	
Multiple races (n = 59)	45 (76.3)	13 (22.0)	1 (1.7)	
Decline to answer (n = 23)	15 (65.2)	8 (34.8)	0 (0.0)	
Region, no. (%)[d]				
Northeast (n = 284)	209 (73.6)	67 (23.6)	8 (2.8)	.047
Central (n = 246)	155 (63.0)	84 (34.1)	7 (2.8)	
South (n = 235)	153 (65.1)	73 (31.1)	9 (3.8)	
West (n = 136)	94 (69.1)	40 (29.4)	2 (1.5)	
Decline to answer (n = 11)	5 (45.5)	5 (45.5)	1 (9.1)	
Year in school, no. (%)				
First year (n = 235)	154 (63.9)	71 (29.4)	10 (6.7)	.88
Second year (n = 273)	182 (66.7)	83 (30.0)	8 (3.3)	
Third year or above (n = 373)	259 (68.1)	107 (27.6)	7 (4.3)	
Recently graduated (n = 29)	20 (70.0)	7 (30.0)	2 (0.0)	
Decline to answer (n = 2)	1 (50.0)	1 (50.0)	0 (0.0)	
School type, no. (%)				
U.S. MD granting (n = 670)	449 (67.0)	198 (29.6)	23 (3.4)	.53
U.S. DO granting (n = 163)	116 (71.2)	44 (26.7)	3 (1.8)	
Canadian MD granting (n = 79)	51 (64.6)	27 (34.2)	1 (1.3)	

[a]Individuals who declined to answer if they were "out" were excluded from statistical analysis.
[b]Significance was determined by two-sided Fisher exact test (categorical variables) or two-sample Wilcoxon rank-sum test (continuous variables) for each major variable ("out" versus not "out"). Individuals who declined to answer an individual variable were removed from that specific statistical analysis.
[c]Respondents selecting "lesbian" or "gay" were combined as a single group for analysis.
[d]Regions were determined using the Association of American Medical Colleges' regional breakdown for medical schools.[19]

Table 3

Results of Unadjusted and Multivariate Adjusted Logistic Regression Models of Being "Out" About Sexual Identity Among Sexual Minority Students Enrolled at U.S. and Canadian MD- and DO-Granting Medical Schools During the 2009–2010 Academic Year

Characteristic	Unadjusted odds ratio (95% confidence interval)[a]	*P* value	Adjusted odds ratio (95% confidence interval)[b]	*P* value
Sexual identity				
Lesbian or gay	1.0 (Reference)		1.0 (Reference)	
Bisexual	0.15 (0.10–0.20)	< .001	0.10 (0.06–0.16)	< .001
Queer	0.60 (0.26–1.38)	.23	0.30 (0.12–0.76)	.01
Questioning	0.01 (0.003–0.06)	< .001	0.01 (0.002–0.05)	< .001
Another sexual orientation	0.31 (0.10–0.95)	.04	0.07 (0.02–0.30)	< .001
Multiple sexual identities	0.33 (0.20–0.50)	< .001	0.23 (0.14–0.38)	< .001
Gender identity				
Male	1.0 (Reference)		1.0 (Reference)	
Female	0.58 (0.43–0.78)	< .001	1.66 (1.09–2.55)	.02
Gender minority	1.11 (0.44–2.80)	.83	3.06 (0.87–10.73)	.08
Age (unit = 1 year)	1.03 (0.99–1.07)[c]	.14	1.01 (0.96–1.06)[c]	.66
Race				
White	1.0 (Reference)		1.0 (Reference)	
East Asian	0.51 (0.31–0.86)	.01	0.46 (0.25–0.85)	.01
Hispanic	1.37 (0.66–2.82)	.40	1.40 (0.60–3.28)	.44
South Asian	1.32 (0.59–2.96)	.50	1.29 (0.48–3.41)	.61
Black/African American	0.39 (0.16–0.95)	.04	0.41 (0.13–1.23)	.11
American Indian/Native Alaskan/Native Hawaiian/Pacific Islander	0.46 (0.21–1.00)	.05	0.52 (0.19–1.41)	.20
Multiple races	1.38 (0.73–2.62)	.32	2.00 (0.96–4.34)	.06
Region[d]				
Northeast	1.0 (Reference)		1.0 (Reference)	
Central	0.60 (0.41–0.87)	.008	0.55 (0.35–0.88)	.01
South	0.74 (0.46–1.01)	.06	0.52 (0.32–0.85)	.009
West	0.74 (0.47–1.17)	.20	0.60 (0.34–1.06)	.08
Year in school				
First year	1.0 (Reference)		1.0 (Reference)	
Second year	0.99 (0.68–1.45)	.96	1.06 (0.67–1.68)	.80
Third year or above	1.07 (0.75–1.54)	.69	1.15 (0.74–1.79)	.53
Recently graduated	1.36 (0.56–3.30)	.50	0.89 (0.31–2.53)	.83
School type				
U.S. MD granting	1.0 (Reference)		1.0 (Reference)	
U.S. DO granting	1.13 (0.77–1.67)	.52	1.17 (0.74–1.86)	.50
Canadian MD granting	0.81 (0.49–1.32)	.40	0.73 (0.38–1.40)	.34

[a]Odds ratio for being "out" about sexual identity adjusted for only single covariates. Individuals declining to answer whether they were "out" or the individual covariate were excluded from that specific analysis. Odds ratio > 1.0 indicates identity disclosure. Odds ratio < 1.0 indicates identity concealment.

[b]Odds ratio for being "out" about sexual identity adjusted for all model covariates, including sexual identity, gender identity, age, race, region, year in school, and school type. Individuals declining to answer whether they were "out" or at least one covariate were excluded from multivariate analysis. Odds ratio > 1.0 signifies identity disclosure. Odds ratio < 1.0 signifies identity concealment.

[c]Odds ratio per 1-year increase in age.

[d]Regions were determined using the Association of American Medical Colleges' regional breakdown for medical schools.[19]

free-text responses. Those who provided free-text responses were representative of all eligible respondents (n = 285) (see Supplemental Digital Appendix 5 at http://links.lww.com/ACADMED/A260). Free-text responses revealed complex reasons for identity concealment. In the following sections, we present the five most commonly cited reasons for identity concealment with representative quotations. Additional themes contributing to identity concealment included fear of discrimination from patients, lack of SGM institutional presence, being partially "out," pressure

Table 4

Reasons for Not Being "Out" About One's Sexual Identity and Gender Identity Among Sexual and Gender Minority Medical Students Enrolled at U.S. and Canadian MD- and DO-Granting Medical Schools During the 2009–2010 Academic Year

Characteristic	"Nobody's business"	Fear of discrimination in medical school	Social and cultural norms	Concern over career options	Fear of discrimination in residency	Lack of support	Pressure from family and friends	Fear of patient discrimination	Religious beliefs	Other	Decline to answer
Sexual minority, no. (% of 269)	165 (61.3)	117 (43.5)	110 (40.9)	99 (36.8)	98 (36.4)	73 (27.1)	64 (23.8)	60 (22.3)	21 (7.8)	29 (10.8)	7 (2.6)
Lesbian, no. (% of 16)	6 (37.5)	12 (75.0)	8 (50.0)	13 (81.3)	12 (75.0)	8 (50.0)	4 (25.0)	3 (18.8)	1 (6.3)	2 (12.5)	0 (0.0)
Gay, no. (% of 55)	34 (61.8)	33 (60.0)	22 (40.0)	35 (63.6)	32 (58.2)	13 (23.6)	20 (36.4)	25 (45.5)	4 (7.3)	3 (54.5)	0 (0.0)
Bisexual, no. (% of 111)	72 (64.8)	39 (35.1)	45 (40.5)	31 (27.9)	31 (27.9)	29 (26.1)	20 (18.0)	13 (11.7)	9 (8.1)	8 (7.2)	4 (3.6)
Queer, no. (% of 8)	2 (25.0)	4 (50.0)	2 (25.0)	2 (25.0)	2 (25.0)	3 (37.5)	0 (0.0)	1 (12.5)	0 (0.0)	3 (37.5)	0 (0.0)
Questioning, no. (% of 23)	12 (52.2)	3 (13.0)	5 (21.7)	3 (13.0)	3 (13.0)	2 (8.7)	5 (21.7)	1 (4.3)	2 (8.7)	7 (30.4)	3 (13.0)
Another sexual orientation, no. (% of 5)	3 (60.0)	1 (20.0)	1 (20.0)	0 (0.0)	1 (20.0)	1 (20.0)	1 (20.0)	0 (0.0)	0 (0.0)	2 (40.0)	0 (0.0)
Multiple sexual identities, no. (% of 51)	36 (70.6)	25 (49.0)	27 (52.9)	15 (29.4)	17 (33.3)	17 (33.3)	14 (27.5)	17 (33.3)	5 (9.8)	4 (7.8)	0 (0.0)
Gender minority, no. (% of 21)	8 (38.1)	9 (42.9)	6 (28.6)	6 (28.6)	7 (33.3)	9 (42.9)	2 (9.5)	3 (14.3)	0 (0.0)	4 (19.0)	1 (4.8)

from family/friends, social or cultural norms, religious beliefs, don't ask/don't tell policies, lack of importance, and unique challenges specific to bisexual and gender minority respondents (see Table 5).

"Nobody's business." Among SGM respondents who concealed their identity, many discussed a separation of their personal and professional identities—that their identity was not relevant to their education or interactions with peers, faculty, or patients.

> I do not consider it part of my professional identity and do not believe that my colleagues need to know. (23-year-old, second-year, bisexual, white, female, U.S. MD student)

> I am out with my friends in medical school, just not the whole community because I feel it is something personal. I wouldn't share my personal life with the medical community if I were straight either. (29-year-old, recently graduated, bisexual, white, female, Canadian MD student)

Lack of supportive environment. Respondents defined unsupportive environments in various ways: institutional assumption of a heterosexual student body, fear of the perceived religious or conservative nature of an institution, casual comments or jokes from faculty and peers, lack of venues for support, etc. They also reported that these issues can be compounded by the inherently stressful and socially isolating nature of medical school.

> There is a subtle devaluation of LGBT individuals that I have noticed among my peers and, more so, among older physicians. There are casual comments, jokes, and innuendos; things that wouldn't be said by most if they knew an LGBT person was present. There is support too among some, but it's hard to know who you can trust. (26-year-old, fourth-year, gay, white, male, U.S. MD student)

> Medical school is incredibly intense and we barely receive any support in handling the stress (especially in the clinical years when we deal with issues including evaluations, competition, and becoming immersed in clinical situations we cannot control, i.e., the death of [a] patient). Throughout this intensity, I have become more and more distanced from the friends and relationships that offered me so much support in college. I feel that there could not be any worse of [a] time to come out or even question my sexuality. (27-year-old, third-year, gay, white, male, U.S. MD student)

Table 5

Themes and Representative Quotations of Reasons for Not Being "Out" About One's Sexual Identity and Gender Identity Among Sexual and Gender Minority Medical Students Enrolled at U.S. and Canadian MD- and DO-Granting Medical Schools During the 2009–2010 Academic Year

Theme	Representative quotation
Fear of discrimination from patients	I am out to a small proportion of medical school, but feel that to be more widely open would be frowned upon by the school and the school would be concerned about how our patients felt about our sexual orientation. (26-year-old, fourth-year, bisexual, white, "gender queer," U.S. MD student)
No sexual or gender minority presence in medical school	The school isn't supportive or unsupportive, but I have yet to meet another person who is LGBTQ at our school, and there are no groups to get together and socialize. (41-year-old, first-year, bisexual, white, female, U.S. MD student)
Partially "out"	I'm out to some people in my class, and not others. It doesn't come up in everyday conversation, and I don't go out of my way to bring it up. (25-year-old, second-year, bisexual, white, female, U.S. MD student)
Pressure from family/ friends	I still rely on my parents for a lot of my financial support. They are incredibly conservative, religious, and commended my aunt for completely disowning her son that came out. (23-year-old, second-year, gay, Hispanic, male, U.S. MD student)
Cultural and social norms	There are students in class who are conservative/religious/homophobic…. Unfortunately, the idea of variation in sexual identities is not very well accepted in our society yet, even in medical schools and among the younger generation. (22-year-old, first-year, multiple sexual identities, Native American/Alaskan Native, female, Canadian MD student)
Religious beliefs	I am a gay Christian, and being a member of both communities makes it hard for me to be "out" and not feel like I would be discriminated against by other student groups such as the student Christian group and its associated faculty, some of who are in my field of interest. (26-year-old, fourth-year, gay, white, male, U.S. MD student)
Don't ask/don't tell	I am receiving an Army scholarship…. Coming out may jeopardize my position in the Army. (22-year-old, first-year, lesbian, black/African American, female, U.S. MD student)
Never came up/not important	I don't feel that my sexual orientation has much to do with my interaction with my professors, preceptors, or peers. I am not ashamed about my orientation, but I suppose it never comes up in conversation and people simply don't ask. (28-year-old, third-year, bisexual, black/African American/"Asian Indian," female, U.S. MD student)
Bisexual: perception of bisexuality	I've also met multiple people who believe that bisexuality does not exist. In particular, I feel that claims of bisexuality in women are regarded with suspicion—attempts at gaining attention because of the appeal of "girl-on-girl"…. When I came out about being bisexual to a very well-educated medical school colleague of mine (at the top of his class, multiple degrees, extensive knowledge about politics), he innocently commented that he never quite understood the idea of threesomes and asked whether my bisexuality meant that I would want to marry both a man and a woman. I was totally taken aback that even a highly educated peer could so honestly equate bisexuality with polygamy. (23-year-old, second-year, bisexual, East Asian, female, U.S. MD student)
Bisexual: in heterosexual relationship	I am married to a man, although I consider myself bisexual. In my classmates' eyes, I am viewed as "one of the married girls." Bisexual girls are often perceived as "experimenting," "slutty," "looking for attention"—that fact that I am married would just compound these labels if I were to "come out." (25-year-old, second-year, bisexual, white, female, U.S. DO student)
Gender minority in medical school	I received enough discrimination as a visibly gender-nonconforming female, I didn't want to have to deal with even more discrimination as transgendered, something that faculty, staff, and students seemed to know absolutely nothing about. (25-year-old, recently graduated, queer, white, female-to-male transgender, U.S. MD student)

Fear of discrimination in medical school: Peers. SGM respondents noted a fear of discrimination by their peers on the basis of their identity, often resulting from conservative or religious students and offensive comments or remarks.

> There is an assumption of my heterosexuality among my classmates…. Several of the people in my small class are immature or from a conservative religious background. The small class size means that if I come out to the wrong person, I stand jeopardizing potentially useful professional relationships because they judge my sexuality rather than my abilities. (32-year-old, first-year, gay, "mixed European," male, U.S. MD student)

> When you work closely with a group of students for an extended amount of time on clerkships, you need to effectively work within a team. The amount of antigay banter that exists within my own group is enough for me to not come out to the other students on my rotation for fear that they will exclude me and/ or reveal to attendings/residents what my sexual orientation is. In interacting with residents and attendings, it is clear through general conversation and offhand comments that LGBT is unfamiliar and, at best, a joke. (26-year-old, third-year, gay, white, male, U.S. MD student)

Fear of discrimination in medical school: Faculty. A fear of discrimination by faculty also prevented identity disclosure. This fear often stemmed from experiencing offensive comments or attitudes towards SGM individuals combined with faculty influence over evaluations.

> I have only shared my orientation with a few friends whom I feel to be accepting. No faculty know, that I'm aware of, because I fear their prejudices will affect my grades consciously or unconsciously…. I have found no faculty who seem accepting of LGBT people based on their casual conversations, discussion about patients…. On my surgery rotation, we saw a male-to-female transgender patient who had "do-it-yourself" silicone breast implants which had become infected. He was treated like a freak by the residents and attendings behind closed doors, joking at his expense. (25-year-old, third-year, lesbian, white, female, U.S. MD student)

> Some faculty members (especially from the older generation) are homophobic in their heteronormative assumptions, humor, and statements. It creates an environment where LGBT people may be afraid to truly be themselves, for fear of bad evaluations or being subconsciously judged by their facilitators/resident/ instructor. (25-year-old, second-year, gay, East Asian, male, U.S. MD student)

Concerns over future career options. Some SGM respondents refrained from disclosing their identity because of concerns about their future career options, specialty choice, and geographic practice flexibility.

> I fear that my sexuality in addition to my gender (i.e., being a gay male) would drive patients and colleagues away. Unfortunately, we live in a society that draws negative assumptions that would [be a] detriment [to] my career and my ability to serve my patients. Furthermore, I grew up in a small community … and I have always wanted to return to such a community. Unfortunately, I fear that such an environment would likely be most hostile. (27-year-old, third-year, gay, white, male, U.S. MD student)

> I am going into a surgical specialty, which is male dominated and very macho/antigay. (27-year-old, recently graduated, gay, white, male, U.S. MD student)

Discussion

Our study assessed the experiences of SGM medical students and examined barriers to identity disclosure. We found at least 912 sexual minority and 35 gender minority individuals enrolled in medical school during the 2009–2010 academic year across nearly every MD- and DO-granting institution in Canada and the United States. These are the largest documented numbers of SGM medical students in North America but likely are still an underrepresentation of the total number of SGM students pursuing undergraduate medical education.

The majority (67.5%) of sexual minority respondents were "out" about their sexual identity in medical school. However, this percentage represents only a moderate increase from a previous estimate (44%) from roughly two decades ago.[5] Sexual minorities who identified as bisexual or questioning had the highest levels of sexual identity concealment. Other factors associated with identity concealment included male sex, East Asian race, and medical school attendance in the South or Central regions. We found no association between sexual identity disclosure and year in medical school, indicating that progression through training does not promote disclosure. These data suggest that different support strategies may be necessary to promote disclosure for different groups and that barriers may vary significantly by institution depending on student-body demographics and region.[21,22]

Few gender minorities (34.3%) were "out" about their gender identity in medical school. These findings parallel patient-centered research that has demonstrated that gender minorities are even more likely than sexual minorities to encounter discrimination when accessing health care.[23] Improving the environment for gender minorities may be particularly difficult and may necessitate more focused attention.

The most significant factors preventing identity disclosure were the perception that sexual or gender identity is "nobody's business" and fears concerning discrimination in medical school, residency, and future career options (see Tables 4 and 5). The AAMC Medical Student Life Survey pilot demonstrated similar findings, including increased stress and financial concerns and decreased social support among sexual minorities during undergraduate medical training.[24]

Medical schools should have zero tolerance for mistreatment or discrimination against SGM students on the basis of their identity. Identity concealment negatively impacts physical and mental health well-being, including increased rates of depression, anxiety, eating disorders, relationship problems, and substance abuse.[16,25,26] Furthermore, medical student mistreatment results in higher levels of burnout,[27] decreased career satisfaction,[28] and avoidance of careers in academic medicine.[29] Reducing the added stress for SGM students can help eliminate these consequences.[11] The failure to address the conditions that perpetuate discriminatory environments may prevent SGM students from pursuing successful careers in medicine.

Institutions must actively promote environments conducive to sexual and gender identity disclosure in medicine. In an accompanying Perspective, we argue that the standardization of SGM identity data collection on all national and institutional research and recruitment instruments is necessary to identify the barriers to disclosure and to drive change.[30] Strategies for institutional change mentioned in a recent GLMA report include establishing nondiscrimination policies, same-sex partner benefits, faculty and staff sensitivity training, community awareness campaigns, and formal mentoring and social support groups. Targeted interventions for gender minorities include support services for transitioning students, improved mental health services, and physical plant changes, such as gender-neutral restrooms.[31] In our study, many students noted a lack of understanding of SGM identities among medical school faculty and peers, yet SGM-specific medical curricula remain limited.[32] Efforts to increase both cultural competency and knowledge-based training surrounding these populations in medical school would help remove these barriers. Accordingly, the AAMC recently released an extensive resource for medical educators to implement curricular and institutional climate change surrounding SGMs.[33] Finally, ensuring that recruitment, academic (i.e., clerkship grading), social environment review, and residency placement processes acknowledge and actively work to eliminate discrimination on the basis of sexual and gender identity will be critical to eliminating the sources of stress that prevent disclosure.

Our study has several strengths. It is the largest study collecting information on sexual identity, gender identity, and identity disclosure among medical students in the United States and Canada. Respondents came from the majority of eligible medical schools, all class years, and represented a diverse set of sexual and gender identities. The survey did not directly target SGM students and likely sampled a more varied population than previous studies. For analysis, we used statistically rigorous methods including multivariate regression.

Our study has a few notable limitations. The overall sample represents a small proportion of the eligible U.S. and Canadian medical student population (5.7%). Despite efforts to limit sampling bias, our nonrandom sample produced a greater-than-expected proportion of SGM-identified respondents (15.5%), as recent estimates suggest that only about 6.9% of the U.S. population (18–29 years of age) identifies as LGBT.[34] The subject matter of the survey likely contributed to increased participation from SGM students and/or deterred participation from non-SGM students, potentially

reducing the internal validity of our results. Furthermore, our study was likely not adequately powered to detect some relationships, particularly between racial minority identity and identity disclosure. Finally, we did not investigate factors that promote disclosure in medical school, which would be valuable for programs looking to implement effective interventions. Future studies with larger sample sizes that address these issues are needed.

In medicine, a growing movement aims to broaden our conceptualization of diversity and adopt a more holistic framework for shaping the next generation of physicians, including a greater emphasis on and respect for the personal attributes that will contribute to one's mission as a provider.[35,36] Although SGM students often experience a different and occasionally hostile environment during training, they also bring a unique and underrepresented perspective to medicine. In particular, these individuals may be much more likely to pursue careers that encompass caring for SGM patients, who face significant health and health care access disparities.[37] All medical students deserve a safe and respectful environment that fosters individual development and success during undergraduate medical training. As such, all institutions must take active steps to better support SGM individuals in medicine.

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References

1 Schatz B, O'Hanlan K. Anti-Gay Discrimination in Medicine: Results of a National Survey of Lesbian, Gay, and Bisexual Physicians. San Francisco, Calif: Gay and Lesbian Medical Association; 1994.
2 Eliason MJ, Dibble SL, Robertson PA. Lesbian, gay, bisexual, and transgender (LGBT) physicians' experiences in the workplace. J Homosex. 2011;58:1355–1371.
3 Tinmouth J, Hamwi G. The experience of gay and lesbian students in medical school. JAMA. 1994;271:714–715.
4 Risdon C, Cook D, Willms D. Gay and lesbian physicians in training: A qualitative study. CMAJ. 2000;162:331–334.
5 Townsend MH, Wallick MM, Cambre KM. Follow-up survey of support services for lesbian, gay, and bisexual medical students. Acad Med. 1996;71:1012–1014.
6 Hern HG Jr, Alter HJ, Wills CP, Snoey ER, Simon BC. How prevalent are potentially illegal questions during residency interviews? Acad Med. 2013;88:1116–1121.
7 Merchant RC, Jongco AM 3rd, Woodward L. Disclosure of sexual orientation by medical students and residency applicants. Acad Med. 2005;80:786.
8 Lee KP, Kelz RR, Dubé B, Morris JB. Attitude and perceptions of the other underrepresented minority in surgery. J Surg Educ. 2014;71:e47–e52.
9 Juster RP, Smith NG, Ouellet É, Sindi S, Lupien SJ. Sexual orientation and disclosure in relation to psychiatric symptoms, diurnal cortisol, and allostatic load. Psychosom Med. 2013;75:103–116.
10 Haas AP, Eliason M, Mays VM, et al. Suicide and suicide risk in lesbian, gay, bisexual, and transgender populations: Review and recommendations. J Homosex. 2011;58:10–51.
11 Herrick AL, Stall R, Chmiel JS, et al. It gets better: Resolution of internalized homophobia over time and associations with positive health outcomes among MSM. AIDS Behav. 2013;17:1423–1430.

12 Kertzner RM, Meyer IH, Frost DM, Stirratt MJ. Social and psychological well-being in lesbians, gay men, and bisexuals: The effects of race, gender, age, and sexual identity. Am J Orthopsychiatry. 2009;79:500–510.
13 Liaison Committee on Medical Education. Functions and Structure of a Medical School. Standards for Accreditation of Medical Education Programs Leading to the M.D. Degree. June 2013. http://www.lcme.org/publications/functions.pdf. Accessed December 9, 2014.
14 Association of American Medical Colleges. Joint AAMC-GSA and AAMC-OSR Recommendations Regarding Institutional Programs and Educational Activities to Address the Needs of Gay, Lesbian, Bisexual and Transgender (GLBT) Students and Patients. 2007. https://www.aamc.org/download/157460/data/institutional_programs_and_educational_activities_to_address_th.pdf. Accessed December 9, 2014.
15 Association of American Medical Colleges. Medical School Graduation Questionnaire: 2013 All Schools Summary Report. July 2013. https://www.aamc.org/download/350998/data/2013gqallschoolssummaryreport.pdf. Accessed December 9, 2014.
16 Barzansky B, Etzel SI. Medical schools in the United States, 2009–2010. JAMA. 2010;304:1247–1254.
17 American Association of Colleges of Osteopathic Medicine. 2009–2010 Osteopathic Medical College Total Enrollment, by State of Legal Residence. 2010. http://www.aacom.org/docs/default-source/archive-data-and-trends/2009-10-total-enrollment-by-state-of-legal-residence.pdf?sfvrsn=4. Accessed December 9, 2014.
18 Association of Faculties of Medicine of Canada. Canadian Medical Education Statistics 2013. https://www.afmc.ca/pdf/Cmes2013_Enrolment-Attrition-2014-05-09.pdf. Accessed December 9, 2014.
19 Association of American Medical Colleges. U.S. and Canadian Regional Map. https://www.aamc.org/download/65692/data/regional.pdf.pdf. Accessed December 9, 2014.
20 Martin PY, Turner BA. Grounded theory and organizational research. J Appl Behav Sci. 1986;22:141–157.
21 Hatzenbuehler ML, Bellatorre A, Lee Y, Finch BK, Muennig P, Fiscella K. Structural stigma and all-cause mortality in sexual minority populations. Soc Sci Med. 2014;103:33–41.
22 Tilcsik A. Pride and prejudice: Employment discrimination against openly gay men in the United States. AJS. 2011;117:586–626.
23 Lambda Legal. When Health Care Isn't Caring: Lambda Legal's Survey of Discrimination Against LGBT People and People with HIV. 2010. http://www.lambdalegal.org/health-care-report. Accessed December 9, 2014.
24 Grbic D, Sondheimer H. Personal well-being among medical students: Findings from an AAMC pilot survey. AAMC Analysis in Brief. 2014;14:1–2.
25 Frost DM, Lehavot K, Meyer IH. Minority stress and physical health among sexual minority individuals [published online July 18, 2013]. J Behav Med. doi: 10.1007/s10865-013-9523-8.
26 Shilo G, Mor Z. The impact of minority stressors on the mental and physical health of lesbian, gay, and bisexual youths and young adults. Health Soc Work. 2014;39:161–171.
27 Cook AF, Arora VM, Rasinski KA, Curlin FA, Yoon JD. The prevalence of medical student mistreatment and its association with burnout. Acad Med. 2014;89:749–754.
28 Sheehan KH, Sheehan DV, White K, Leibowitz A, Baldwin DC Jr. A pilot study of medical student "abuse". Student perceptions of mistreatment and misconduct in medical school. JAMA. 1990;263:533–537.
29 Haviland MG, Yamagata H, Werner LS, Zhang K, Dial TH, Sonne JL. Student mistreatment in medical school and planning a career in academic medicine. Teach Learn Med. 2011;23:231–237.
30 Mansh M, Garcia C, Lunn MR. From patients to providers: Changing the culture of medicine towards sexual and gender minorities. Acad Med. 2015. In press.
31 Snowdon S. Recommendations for Enhancing the Climate for LGBT Students and Employees in Health Professional Schools. Washington, DC: Gay and Lesbian Medical Association; 2013.
32 Obedin-Maliver J, Goldsmith ES, Stewart L, et al. Lesbian, gay, bisexual, and transgender–related content in undergraduate medical education. JAMA. 2011;306:971–977.
33 Association of American Medical Colleges Advisory Committee on Sexual Orientation, Gender Identity, and Sex Development. Implementing Curricular and Institutional Climate Changes to Improve Health Care for Individuals Who Are LGBT, Gender Nonconforming, or Born With DSD. Washington, DC: Association of American Medical Colleges; 2014.
34 Gates GJ, Newport F. Special Report: 3.4% of U.S. Adults Identify as LGBT. Washington, DC: Gallup; October 2012. http://www.gallup.com/poll/158066/special-report-adults-identify-lgbt.aspx. Accessed December 9, 2014.
35 Young ME, Razack S, Hanson MD, et al. Calling for a broader conceptualization of diversity: Surface and deep diversity in four Canadian medical schools. Acad Med. 2012;87:1501–1510.
36 Witzburg RA, Sondheimer HM. Holistic review—shaping the medical profession one applicant at a time. N Engl J Med. 2013;368:1565–1567.
37 Gay and Lesbian Medical Association and LGBT Health Experts. Healthy People 2010 Companion Document for Lesbian, Gay, Bisexual, and Transgender (LGBT) Health. San Francisco, Calif: Gay and Lesbian Medical Association; 2001. http://www.glma.org/_data/n_0001/resources/live/HealthyCompanionDoc3.pdf. Accessed December 9, 2014.