

Let's Get Physical: Sexual Orientation Disparities in Physical Activity, Sports Involvement, and Obesity Among a Population-Based Sample of Adolescents

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Obesity is an increasing and serious health problem among adolescents.^{1,2} This is of major concern because obesity has many health and social consequences and it affects adolescents' overall well-being.^{3,4} Obesity among adolescents also has a high likelihood of continuing into adulthood.⁵ Recent population-based and longitudinal research has demonstrated that there are disparities in obesity between sexual minority and heterosexual adolescents.⁶⁻⁸ Research has also documented sexual orientation disparities in physical activity and sports involvement in adolescence.^{9,10} Despite this increased attention, the overall empirical base remains limited, and findings also suggest some gender nuances that need further exploration. More population-based research is needed to investigate these disparities, consistent with federal health priorities.^{7,11}

There are sexual orientation–based disparities in physical activity and sports involvement among adolescents; however, there are mixed findings for females. One study reported that sexual minority females are less likely than heterosexual females to participate in moderate to vigorous physical activity and team sports,⁹ whereas another study found no such differences in physical activity.¹⁰ Findings are more consistent for sexual minority male adolescents, who are less likely than heterosexual males to engage in moderate to vigorous physical activity, to engage in recommended levels of physical activity, and to participate in team sports.^{9,10} More research is needed because of the paucity of studies and mixed results. This is especially important given that adolescents' physical activity has been shown to relieve stress and protect against many mental and physical health conditions, including obesity,^{12,13} for which sexual minority adolescents are at greater risk.

Objectives. We examined sexual orientation disparities in physical activity, sports involvement, and obesity among a population-based adolescent sample.

Methods. We analyzed data from the 2012 Dane County Youth Assessment for 13933 students in grades 9 through 12 in 22 Wisconsin high schools. We conducted logistic regressions to examine sexual orientation disparities in physical activity, sports involvement, and body mass index among male and female adolescents.

Results. When we accounted for several covariates, compared with heterosexual females, sexual minority females were less likely to participate in team sports (adjusted odds ratio [AOR]=0.44; 95% confidence interval [CI]=0.37, 0.53) and more likely to be overweight (AOR=1.28; 95% CI=1.02, 1.62) or obese (AOR=1.88; 95% CI=1.43, 2.48). Sexual minority males were less likely than heterosexual males to be physically active (AOR=0.62; 95% CI=0.46, 0.83) or to participate in team sports (AOR=0.26; 95% CI=0.20, 0.32), but the 2 groups did not differ in their risk of obesity.

Conclusions. Sexual orientation health disparities in physical activity and obesity are evident during adolescence. Culturally affirming research, interventions, and policies are needed for sexual minority youths. (*Am J Public Health.* 2015;105:1842–1848. doi:10.2105/AJPH.2015.302682)

Research on sexual orientation disparities in obesity suggests that there are some gender nuances. Many studies have found that sexual minority female adolescents have higher risk of obesity than heterosexual females (e.g., higher body mass index [BMI], defined as weight in kilograms divided by the square of height in meters).^{6,8,10,14} These sexual orientation disparities in obesity among adolescent females parallel those among sexual minority adult women.^{15,16}

Findings of elevated obesity risk among sexual minority male adolescents are mixed. Some studies show that sexual minority males, specifically bisexual males, have higher odds of obesity than heterosexuals,¹⁴ whereas other studies have documented no differences.¹⁰ By contrast, some studies have found that heterosexual males have increases in BMI during adolescence compared with sexual minority males.^{6,8} These mixed findings for sexual

minority males might be attributed to physical maturation and developmental changes in adolescence that some of the cross-sectional studies could not examine.^{10,14} Specifically, one study found that sexual minority males had higher obesity risk than heterosexual males in early adolescence, but their risk of obesity became lower than for heterosexual males later in adolescence.⁶ The authors postulated that, compared with heterosexual males, sexual minority males reach puberty maturation earlier in adolescence but make less substantial weight gains later in adolescence.⁶

Sexual orientation health disparities have been explained through the minority stress model: sexual minority youths experience unique stressors and stigma related to their sexual identity (e.g., homophobic bullying), which lead to poorer health.¹⁷ Sexual minority adolescents might therefore be less likely to be physically active or involved in team sports

because of potential minority stressors that they often experience at school, especially bias and heightened discrimination experienced in the context of sports or in their communities.¹⁸⁻²⁰ More recently, the negative effects of minority stress and stigma on physical health disparities have been documented,^{21,22} including their effects on obesity for sexual minority women.²³ However, the minority stress model is not sufficient in explaining how sexual minority adolescent females, but not males, are at greater risk for obesity compared with their heterosexual peers.

Another potential explanation of these obesity disparities is related to cultural norms and sexual minority females' experiences of internalizing ideals for femininity and appearance⁸ and sexual minority males' ideals for muscularity and body image.²⁴ For instance, compared with heterosexual women, sexual minority women are more likely to be satisfied with their bodies and attracted to women with greater body mass,^{25,26} whereas sexual minority men are less likely to be satisfied with their bodies compared with heterosexual men and are more likely to be attracted to muscular men.^{25,27} Therefore, these 2 groups might engage (or not engage) in differing body weight management and dieting behaviors compared with their heterosexual peers; concomitantly, these behaviors might render differing risks for obesity.

Sexual minority adolescents' lack of physical activity and sports involvement might be influenced by traditional gender norms associated with athleticism and sports, which has implications for their athletic self-esteem and involvement. For adolescent males, team sports are a means to define masculinity²⁸; however, adolescent males often engage in homophobic banter to prove their masculinity and heterosexuality and to enforce traditional gender norms.^{29,30} Sexual prejudice is pervasive in athletic settings,^{19,20} making sports contexts unwelcoming and unsafe for many sexual minority males. Traditional feminine gender norms and homophobia also affect sexual minority females' involvement in sports.³¹ However, sexual minority adolescent females have unique gendered experiences in relation to sports. Because women's athleticism can be a stereotype for being a lesbian,³² sexual minority females might avoid sports involvement.

Expecting or experiencing exclusion in sports settings might also affect sexual minority adolescents' athletic self-esteem, consequently preventing them from engaging in future sports or physical activity.⁹ In fact, athletic self-esteem has been found to contribute to sexual orientation disparities in sports involvement and physical activity.⁹

Emerging evidence of sexual orientation disparities in physical activity, sports involvement, and obesity among adolescents, in addition to potential gender nuances in these disparities, points to the need for more population-based research in this area. We therefore examined sexual orientation disparities among a large adolescent population-based sample and tested for gender differences. While accounting for variables commonly associated with physical activity and obesity among adolescents,^{4,33} we hypothesized that sexual minority adolescents would be less likely to report physical activity and sports involvement than would their heterosexual peers. We also hypothesized that sexual minority females would be at higher risk for being overweight and obese than their heterosexual peers. Because of mixed findings in existing sexual orientation disparities research among adolescent males, we hypothesized that sexual minority males would be at equal risk for being overweight and obese than their heterosexual male peers.

METHODS

We analyzed data from the 2012 Dane County Youth Assessment for 13 933 students in grades 9 through 12 in 22 high schools. Table 1 provides demographic information on the sample. The Dane County Youth Assessment is administered to students in Dane County, Wisconsin and is similar to the Youth Risk Behavior Survey.³⁴ The county is expansive and geographically diverse; it ranges from rural farming areas to a large city (Madison). The schools have an enumerated antibullying policy that explicitly includes sexual orientation as a protected group. All but 1 high school participated. Because of the large student populations in the city-based high schools, 50% of students in these schools were randomly selected to complete the survey. All other schools sought participation from their entire student population. The data were weighted to be

reflective of the total student population in the county. Students completed the assessment in computer labs during normal school hours. There were proctors to ensure independent survey completion and confidentiality.

Measures

Demographics and control variables. Students reported their gender, age, race/ethnicity, and sexual orientation. The sexual orientation item was, "Which of the following best describes you?" Response options were "straight/heterosexual," "gay or lesbian," "bisexual," and "questioning my sexual orientation." We classified students as either heterosexual or LGBQ (lesbian, gay, bisexual, or questioning) because there were too few students in the specific sexual minority subgroups to be considered separately. Students reported whether they received a free or reduced-cost lunch, used as a proxy for socioeconomic status. Response options were "yes," "no," and "I don't know," which we dichotomized (0=no or don't know; 1=yes). Students completed an established 4-item measure of general victimization (e.g., "I got hit and pushed by other students"; $\alpha = 0.85$).³⁵

Physical activity and sports involvement. Students reported their level of physical activity in the past week by answering the following: "During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day?" Response options ranged from 1 (zero days) to 8 (7 days), which we dichotomized (0=no or some physical activity during the past 7 days; 1=physically active every day in the past 7 days). The dichotomization of this physical activity variable was guided by the World Health Organization's daily physical activity recommendations for children and adolescents.³⁶ Students reported how frequently they participated in team sports by answering the following: "How many days a week do you play team sports (practice, lessons, and games)?" Response options ranged from 1 (zero days) to 8 (7 days), which we dichotomized (0=no team sports involvement; 1=involved in team sports).

Body mass index. The Public Health Department of Madison and Dane County calculated participants' BMI on the basis of their self-reported height and weight, similar to approaches in other adolescent studies. On the basis of these BMI values, we classified participants as underweight, healthy weight,

TABLE 1—Descriptive Data of Study Participants, by Body Weight Category: Dane County Youth Assessment, Wisconsin, 2012

Characteristic	Healthy Weight, No. (%)	Underweight, No. (%)	Overweight, No. (%)	Obese, No. (%)	Total Sample, No. (%)
Gender					
Male	4 906 (71.8)	140 (2.0)	994 (14.5)	795 (11.6)	6 835 (49.8)
Female	5 620 (81.6)	118 (1.7)	792 (11.5)	359 (5.2)	6 889 (50.2)
Sexual orientation					
Heterosexual	9 867 (77.2)	235 (1.8)	1 650 (12.9)	1 023 (8.0)	12 775 (93.6)
Gay or lesbian	113 (72.4)	2 (1.3)	17 (10.9)	24 (15.4)	156 (1.1)
Bisexual	290 (66.7)	11 (2.5)	71 (16.3)	63 (14.5)	435 (3.2)
Questioning	199 (71.6)	7 (2.5)	39 (14.0)	33 (11.9)	278 (2.0)
Race/ethnicity					
White	7 935 (77.5)	175 (1.7)	1 309 (12.8)	823 (8.0)	10 242 (73.5)
Black	570 (76.7)	10 (1.3)	105 (14.1)	58 (7.8)	743 (5.3)
Hispanic	538 (76.2)	22 (3.1)	80 (11.3)	66 (9.3)	706 (5.1)
Asian, non-Hmong	278 (73.9)	9 (2.4)	53 (14.1)	36 (9.6)	376 (2.7)
Asian, Hmong	152 (71.0)	5 (2.3)	28 (13.1)	29 (13.6)	214 (1.5)
Native American	59 (74.7)	3 (3.8)	10 (12.7)	7 (8.9)	79 (0.6)
Middle Eastern	63 (77.8)	3 (3.7)	10 (12.3)	5 (6.2)	81 (0.6)
Biracial or multiracial	763 (75.5)	22 (2.2)	139 (13.7)	87 (8.6)	1 011 (7.3)
Other	226 (74.3)	6 (2.0)	41 (13.5)	31 (10.2)	304 (2.2)
Free or reduced-cost lunch					
Yes	1 523 (67.1)	45 (2.0)	395 (17.4)	307 (13.5)	2 270 (17.3)
No or unsure	8 507 (78.5)	205 (1.9)	1 329 (12.3)	798 (7.4)	10 839 (82.7)
Age, y					
≤ 12	15 (83.3)	1 (5.6)	1 (5.6)	1 (5.6)	18 (0.1)
13	7 (70.0)	0	2 (20.0)	1 (10.0)	10 (0.1)
14	1 443 (77.4)	30 (1.6)	250 (13.4)	142 (7.6)	1 865 (13.5)
15	2 842 (78.4)	62 (1.7)	453 (12.5)	266 (7.3)	3 623 (26.2)
16	2 707 (76.0)	60 (1.7)	472 (13.2)	325 (9.1)	3 564 (25.8)
17	2 441 (75.9)	64 (2.0)	415 (12.9)	294 (9.1)	3 214 (23.3)
≥ 18	1 158 (76.3)	41 (2.7)	193 (12.7)	125 (8.2)	1 517 (11.0)
Physically active					
No	11 189 (75.6)	301 (2.0)	1 966 (13.3)	1 339 (9.1)	14 795 (83.6)
Yes	2 303 (79.5)	36 (1.2)	378 (13.0)	181 (6.2)	2 898 (16.4)
Sports involvement					
No	3 744 (71.1)	144 (2.7)	789 (15.0)	588 (11.2)	5 265 (38.9)
Yes	6 629 (80.2)	111 (1.3)	976 (11.8)	554 (6.7)	8 270 (61.1)

Note. Underweight defined as body mass index < 5th percentile, healthy weight as 5th–84th percentile, overweight as 85th–94th percentile, and obese as ≥ 95th percentile. “Physically active” denotes whether students reported having engaged in physical activity every day in the past 7 days (yes) or not (no). “Sports involvement” denotes whether students reported having participated in a team sport at least 1 day per week (yes) or not (no).

overweight, or obese, using the standards suggested for males and females younger than 18 years (underweight < 5th percentile, healthy weight 5th–84th percentile, overweight 85th–94th percentile, and obese ≥ 95th percentile).³⁷

Statistical Analysis

For the models described in the “Results” section, we first report the unadjusted odds ratios followed by the adjusted odds ratios when including the noted covariates in the models. We conducted logistic regressions

separately for males and females to test for differences between heterosexual and LGBTQ youths in their likelihood of having been physically active in the past 7 days and being involved in team sports. We included race/ethnicity, age, free or reduced-cost lunch status, victimization, and BMI as covariates. Heterosexual youths, White youths, youths who did not receive or were unsure of whether they received a free or reduced-cost lunch, and youths who were classified within the healthy BMI range were the reference group in the analyses.

We then conducted multinomial logistic regressions for males and females to test for differences between heterosexual and LGBTQ youths in their likelihood of being underweight, overweight, or obese. Healthy weight served as the reference category. We included the same covariates as those for the physical activity and team sports models, as well as physical activity and sports involvement. We included the same covariates as those for the physical activity and team sports models, as well as physical activity and sports involvement variables as additional covariates.

RESULTS

Unadjusted odds ratios indicated that sexual minority females were less likely than heterosexual females to have been physically active every day in the past 7 days (odds ratio [OR]=0.74; 95% confidence interval [CI]=0.57, 0.97; *P*<.05; 11% of heterosexual females and 8% of sexual minority females were physically active), or to have been involved in team sports (OR=0.43; 95% CI=0.37, 0.50; *P*<.001; 57% of heterosexual females and 35% of sexual minority females were involved in team sports). Unadjusted odds ratios indicated that sexual minority males were less likely than heterosexual males to have been physically active every day in the past 7 days (OR=0.58; 95% CI=0.44, 0.76; *P*<.001; 23% of heterosexual males and 14% of sexual minority males were physically active), or to have been involved in team sports (OR=0.26; 95% CI=0.21, 0.32; *P*<.001; 66% of heterosexual males and 32% of sexual minority males were involved in team sports).

Unadjusted odds ratios indicated that sexual minority females were nearly twice as likely as

were heterosexual females to be overweight (OR = 1.81; 95% CI = 1.48, 2.22; $P < .001$), and they were nearly 3 times as likely to be obese (OR = 2.94; 95% CI = 2.31, 3.74; $P < .001$); they were no more likely to be underweight (OR = 1.32; $P > .05$). Unadjusted odds ratios indicated that sexual minority males were more likely to be underweight than heterosexual males (OR = 1.72; 95% CI = 1.02, 2.90; $P < .05$), but they were no more likely to be overweight (OR = 0.76; $P > .05$) or obese (OR = 1.22; $P > .05$). The percentages of heterosexual and sexual minority youths within each BMI category are presented in Table 1.

Table 2 presents adjusted odds ratios of differences between heterosexual and LGBTQ youths in physical activity when we accounted for age, race/ethnicity, free or reduced-cost lunch status, victimization, and BMI. Table 3 presents the same adjusted odds ratios for differences in team sports involvement. Even when we accounted for this set of covariates, sexual minority males remained less likely than

heterosexual males to have been physically active (adjusted odds ratio [AOR] = 0.62; 95% CI = 0.46, 0.83; $P < .01$), although sexual minority females were no longer less likely than heterosexual females to have been physically active (AOR = 0.78; 95% CI = 0.59, 1.04; $P = .09$). Also, when we accounted for this set of covariates, sexual minority females and sexual minority males remained less likely than their heterosexual counterparts to have participated in team sports (females, AOR = 0.44; 95% CI = 0.37, 0.53; $P < .001$; males, AOR = 0.26; 95% CI = 0.20, 0.32; $P < .001$).

Table 4 presents adjusted odds ratios of differences between heterosexual and LGBTQ youths in BMI when we accounted for age, race/ethnicity, free or reduced-cost lunch status, victimization, sports involvement, and physical activity. Sexual minority females remained more likely than heterosexual females to be overweight (AOR = 1.28; 95% CI = 1.02, 1.61; $P < .05$) and obese (AOR = 1.88; 95% CI = 1.43, 2.48; $P < .001$).

Sexual minority males were no longer more likely than heterosexual males to be underweight (AOR = 1.20; 95% CI = 0.67, 2.12; $P > .50$).

DISCUSSION

Using a population-based data set, we found sexual orientation disparities in physical activity, sports involvement, and obesity when we accounted for sociodemographic variables and victimization. Our results are significant because we used a population-based data set, and we build on recent findings that have demonstrated sexual orientation disparities in physical activity, sports involvement, and obesity among adolescents.^{6,8-10,14} These results are important because they provide support for some of the literature and note the prevalence of physical inactivity and obesity among certain sexual minority adolescents.

We found that sexual minority adolescents were less likely both to be physically active and to participate in team sports than were their heterosexual counterparts; however, the sports involvement disparity was no longer significant for females when we accounted for demographic variables. Our results add support to the few extant studies documenting such disparities among sexual minority adolescents.^{9,10} These disparities are serious issues because physical activity, including sports involvement, is an important factor in mitigating several health risks that sexual minority youths experience.^{12,13} Physical activity, including sports involvement, for many adolescents is facilitated through school or community activities. Sexual minority adolescents might be less likely to be physically active or to be involved in team sports because of potential stigma and victimization that they often experience at heightened levels in these specific contexts.¹⁸⁻²⁰ Future research should directly examine how discrimination and hostile climates affect sexual minority adolescents' access to and involvement in a range of specific physical activities.

The results of this study also support the limited findings of obesity disparities between sexual minority and heterosexual female adolescents.⁷ Our findings further support the notion that disparities in obesity among sexual minority adult women¹⁵ may begin in adolescence,⁶ which is consistent with the general

TABLE 2—Sexual Orientation Disparities in Physical Activity: Dane County Youth Assessment, Wisconsin, 2012

Variable	Model for Females, AOR (95% CI)	Model for Males, AOR (95% CI)
Sexual orientation		
Heterosexual (Ref)	1.00	1.00
LGBTQ	0.78 (0.59, 1.04)	0.62** (0.46, 0.83)
Race/ethnicity		
White (Ref)	1.00	1.00
Minority	0.82* (0.70, 0.97)	1.09 (0.96, 1.23)
Free or reduced-cost lunch		
No or unsure (Ref)	1.00	1.00
Yes	0.83 (0.69, 1.01)	0.66*** (0.57, 0.76)
Age	0.86*** (0.81, 0.92)	0.90*** (0.86, 0.94)
Victimization	1.17* (1.02, 1.33)	1.07 (0.97, 1.17)
BMI		
Healthy weight (Ref)	1.00	1.00
Underweight	1.07 (0.62, 1.83)	0.40*** (0.25, 0.66)
Overweight	0.69* (0.53, 0.88)	0.95 (0.81, 1.10)
Obese	0.66* (0.46, 0.95)	0.52*** (0.43, 0.63)

Note. AOR = adjusted odds ratio; BMI = body mass index; CI = confidence interval; LGBTQ = lesbian, gay, bisexual, or questioning. Underweight defined as body mass index < 5th percentile, healthy weight as 5th–84th percentile, overweight as 85th–94th percentile, and obese as ≥ 95th percentile. The dependent variable is the likelihood of having engaged in physical activity every day in the past 7 days.

* $P < .05$; ** $P < .01$; *** $P < .001$.

TABLE 3—Sexual Orientation Disparities in Team Sports Involvement: Dane County Youth Assessment, Wisconsin, 2012

Variable	Model for Females, AOR (95% CI)	Model for Males, AOR (95% CI)
Sexual orientation		
Heterosexual (Ref)	1.00	1.00
LGBQ	0.44*** (0.37, 0.53)	0.26*** (0.20, 0.32)
Race/ethnicity		
White (Ref)	1.00	1.00
Minority	0.98 (0.89, 1.09)	0.95 (0.85, 1.05)
Free or reduced-cost lunch		
No or unsure (Ref)	1.00	1.00
Yes	0.38*** (0.33, 0.42)	0.62*** (0.55, 0.69)
Age	0.79*** (0.76, 0.82)	0.94** (0.91, 0.98)
Victimization	0.96 (0.88, 1.06)	0.89** (0.83, 0.97)
BMI		
Healthy weight (Ref)	1.00	1.00
Underweight	0.60** (0.42, 0.86)	0.35*** (0.25, 0.48)
Overweight	0.64*** (0.56, 0.74)	0.83** (0.73, 0.95)
Obese	0.41*** (0.33, 0.51)	0.57*** (0.49, 0.66)

Note. AOR = adjusted odds ratio; BMI = body mass index; CI = confidence interval; LGBQ = lesbian, gay, bisexual, or questioning. Underweight defined as body mass index < 5th percentile, healthy weight as 5th–84th percentile, overweight as 85th–94th percentile, and obese as ≥ 95th percentile. The dependent variable is the likelihood of having participated in a team sport at least 1 day per week.

** $P < .01$; *** $P < .001$.

literature indicating that adolescent obesity has a high likelihood of continuing into adulthood.⁵ One possible explanation for this obesity disparity may relate to sexual minority females' experiences with sexual minority stress.²³ Sexual minority females experience unique stressors and stigma related to their sexual identity (e.g., homophobic victimization), which are related to poorer health^{17,38}; they might therefore engage in poorer health behaviors to cope with this stress. This issue might especially be the case for females because women are more likely than men to engage in coping behaviors such as disinhibited eating when they are emotionally upset.³⁹ Another potential explanation for sexual minority females' obesity risk might be related to their body image perceptions and ideals of beauty. Compared with heterosexual women, sexual minority women are more likely to be satisfied with their bodies and to perceive women of varying body sizes as attractive.^{25,26} Being more comfortable with their bodies and rejecting the traditional "thinness" ideals of beauty and femininity, they might engage in fewer behaviors

related to body weight management. Future research should examine how these 2 potential explanations might be related to obesity risk for sexual minority female adolescents.

Although we found that sexual minority males were less likely to be physically active or involved in sports, our findings did not identify obesity disparities between sexual minority and heterosexual adolescent males. This finding might be explained by recent research on body weight image and dieting behaviors among sexual minority males. Specifically, studies have demonstrated that sexual minority males have greater desire for muscularity and are more likely than heterosexual males to engage in purging behaviors and diet pill use.^{14,24} It is plausible that because of these behaviors, sexual minority males are less likely to be at risk for obesity.

Limitations

There are some limitations to this study. First, because of small cell sizes, especially for the BMI categories, we were forced to aggregate specific sexual minority subgroups, which

limited the nuance with which we could examine sexual orientation disparities. However, we were still able to examine gender differences, and our results are consistent with the extant sexual minority literature on physical activity and obesity disparities.^{9,14} Second, because this was a general survey of adolescents, we were limited to only a self-reported sexual orientation identity measure and were not able to examine sexual behaviors or attractions; however, there might be variability in health disparities depending on how sexual orientation is measured. Third, our measures were self-report. Although more objective measures of physical activity and obesity are important for future research, adolescents have been found to be accurate reporters of their weight and height,⁴⁰ and self-report measures of obesity are valuable even if they are the only source of data available.⁴¹

Fourth, our data were from a single time point, which limits the generalization of our results to the overall developmental process of adolescence. Nonetheless, our results are congruent with longitudinal research documenting obesity disparities by sexual orientation.^{6,8} Fifth, our measure of sports involvement did not specify the varying types of sports available for adolescents, which limits our understanding of potential disparities in sports involvement based on varying types of sports. Lastly, our sample is from Wisconsin, a Midwestern state with antibullying school policies that protect sexual minority students; thus, our results may be limited in their generalizability to other states in various geographic regions and without enumerated antibullying policies. Importantly, however, our findings document sexual orientation disparities even in a state with such antibullying policies.

Future Directions and Implications

On the basis of the findings and the limitations of the present study, there are many potential directions for future research. Research should examine how and why the disparities found may affect specific groups of sexual minorities (e.g., bisexual youths). Although we found sexual orientation disparities while accounting for sociodemographic variables (e.g., age, race, socioeconomic background) and victimization, future research should examine the intersections of some of

TABLE 4—Sexual Orientation Disparities in Body Mass Index: Dane County Youth Assessment, Wisconsin, 2012

	Model for Females, AOR (95% CI)			Model for Males, AOR (95% CI)		
	Underweight	Overweight	Obese	Underweight	Overweight	Obese
Sexual orientation						
Heterosexual (Ref)	1.00	1.00	1.00	1.00	1.00	1.00
LGBQ	1.01 (0.53, 1.92)	1.28* (1.02, 1.61)	1.88*** (1.43, 2.48)	1.20 (0.67, 2.12)	0.74 (0.52, 1.04)	1.06 (0.77, 1.45)
Race/ethnicity						
White (Ref)	1.00	1.00	1.00	1.00	1.00	1.00
Minority	1.15 (0.78, 1.69)	1.04 (0.89, 1.21)	1.25* (1.02, 1.54)	1.80*** (1.31, 2.48)	1.16* (1.01, 1.34)	1.08 (0.92, 1.26)
Free or reduced-cost lunch						
No or unsure (Ref)	1.00	1.00	1.00	1.00	1.00	1.00
Yes	0.82 (0.52, 1.30)	1.75*** (1.50, 2.04)	3.02*** (2.47, 3.69)	1.25 (0.88, 1.78)	1.22* (1.04, 1.42)	1.37*** (1.16, 1.61)
Age	1.16 (1.00, 1.35)	0.99 (0.93, 1.05)	0.97 (0.90, 1.06)	1.33*** (1.17, 1.52)	1.01 (0.96, 1.07)	1.06* (1.01, 1.13)
Victimization	1.21 (0.87, 1.67)	1.28*** (1.13, 1.45)	1.31** (1.10, 1.55)	1.24 (0.98, 1.56)	1.00 (0.89, 1.12)	1.12 (1.00, 1.26)
Physically active						
No	0.83 (0.48, 1.43)	1.36* (1.06, 1.75)	1.31 (0.90, 1.89)	2.12** (1.27, 3.54)	1.02 (0.87, 1.19)	1.73*** (1.41, 2.12)
Yes (Ref)	1.00	1.00	1.00	1.00	1.00	1.00
Sports involvement						
No	1.74** (1.21, 2.50)	1.53*** (1.33, 1.77)	2.41*** (1.94, 2.98)	2.62*** (1.90, 3.62)	1.20** (1.04, 1.37)	1.62*** (1.40, 1.88)
Yes (Ref)	1.00	1.00	1.00	1.00	1.00	1.00

Note. AOR = adjusted odds ratio; CI = confidence interval; LGBQ = lesbian, gay, bisexual, or questioning. Underweight defined as body mass index (BMI) < 5th percentile, healthy weight as 5th–84th percentile, overweight as 85th–94th percentile, and obese as ≥ 95th percentile. Youths who were classified within the healthy BMI range served as the BMI reference group.

* $P < .05$; ** $P < .01$; *** $P < .001$.

these variables with sexual orientation in predicting unique disparities for subgroups that might be at greater risk (e.g., sexual minority girls of color). Moreover, research should examine nuances in sexual orientation disparities in sports involvement based on factors such as types of sports (e.g., contact and collision vs noncontact and aesthetic sports). Additionally, future research should consider using health center samples to more objectively examine BMI as well as other measures of obesity. It should also examine the trajectories of these sexual orientation health disparities over time, and especially their long-term effects into adulthood.

Growing up in stigmatizing contexts has not only deleterious mental health effects¹⁷ but also poorer physical health effects for sexual minorities.^{21,22} Future research should examine the mechanisms by which minority stress and stigma affect sexual minority adolescents' physical activity and obesity risk. Longitudinal research is also needed to examine the unique and intersecting pathways between minority stress, physical activity, sports involvement, and obesity risk. Specifically, our results

demonstrated that physical activity and sports involvement were associated with BMI for all adolescents; thus, future research should identify ways in which minority stress might cause reductions in physical activity and sports involvement, and their consequent impact on BMI. Moreover, research is needed to examine unique processes and mechanisms that exacerbate or mitigate these disparities (e.g., coping mechanisms). Finally, given that gender nonconformity and psychological factors (e.g., athletic self-esteem) are significantly related to sexual orientation disparities in physical activity and sports involvement,⁹ future studies should examine the unique contributions of these factors as well as others (e.g., homophobic and gender nonconformity–based victimization) on these disparities.

In addition to the aforementioned implications for research, our results also have implications for clinicians. Clinicians addressing physical activity and obesity need to incorporate culturally sensitive interventions when working with sexual minority youths (e.g., consider the effects of stigma and minority stress as well as gender differences among

sexual minority youths). Additionally, most family physicians and pediatricians, who are often the primary source of health care for adolescents, have insufficient training in sexual minority health care.⁷ Given the documented disparities in our study and the extant literature, it is imperative that sexual orientation is discussed by providers as part of their patients' health care visits in culturally sensitive and affirming methods to better support sexual minority youths' health needs.

Although examining sexual orientation health disparities are federal and public health priorities,^{7,11} there is a paucity of research on disparities in physical health and their implications for practice. Our study is one of few to provide population-based evidence of sexual orientation disparities in physical activity across 3 domains: physical activity, sports involvement, and obesity. Given the existence of these disparities, there is a great need for researchers and clinicians to consider the unique and holistic health of sexual minority adolescents. School- and community-based public health interventions are also needed to address the safety of physical activity and

sports involvement settings to ensure the inclusion of sexual minority youths. ■

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Contributors

E. H. Mereish drafted the article and interpreted the results. V. P. Poteat conducted the statistical analysis and contributed to writing and reviewing the article. Both authors conceptualized the study and have read and approved the final article.

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Human Participant Protection

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