

Disparities in Health-Related Quality of Life: A Comparison of Lesbians and Bisexual Women

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Sexual minority women (SMW) were acknowledged as a health disparate population in *Healthy People 2010*.¹ Despite many recent advances in sociopolitical and cultural acceptance for sexual minorities in the United States, these women continue to live in a society in which their lives run counter to the dominant culture. Meyer's² model of minority stress attributes health disparities to the greater exposure to life stressors that accompanies minority status among this population. Such stressors include victimization, discrimination, stigmatization, expectations of rejection, and vigilance and are well documented in some empirical studies.²⁻⁴

According to the minority stress model, disparities in health outcomes are expected between lesbians and bisexual women and heterosexual women. The inclusion of questions about sexual orientation on some epidemiological health surveys such as the National Comorbidity Survey, the National Health and Nutrition Examination Survey, the National Household Survey on Drug Abuse, and the Midlife in the United States Survey has allowed researchers interested in this population to conduct such between-group research.⁵⁻⁹ Overall, these data suggest that SMW are at higher risk for mental health disorders, particularly depression and anxiety (see Cochran¹⁰ and Meyer² for reviews). Relative to mental health outcomes, less research has been published focusing on physical health outcomes among SMW. There is evidence, however, that SMW are more likely to be obese, which puts them at greater risk for major health problems such as cancer and heart disease.¹¹ Other studies have demonstrated higher rates of health risk behaviors such as alcohol and drug abuse¹⁰ and smoking¹² among SMW compared with their heterosexual counterparts. Differences in physical health outcomes may be confounded by mental health problems; for example, Cochran and Mays¹³ found that differences in physical health between SMW and heterosexual women were no longer

Objectives. We investigated the association of health-related quality of life (HRQOL) with sexual orientation among lesbians and bisexual women and compared the predictors of HRQOL between the 2 groups.

Methods. We used multivariate logistic regression to analyze Washington State Behavioral Risk Factor Surveillance System population-based data (2003 to 2007) in a sample of 1496 lesbians and bisexual women and examined determinants of HRQOL among lesbians and bisexual women.

Results. For lesbians and bisexual women, frequent mental distress and poor general health were associated with poverty and lack of exercise; poor general health was associated with obesity and mental distress. Bisexual women showed a higher likelihood of frequent mental distress and poor general health than did lesbians. The odds of mental distress were higher for bisexual women living in urban areas as compared with nonurban areas. Lesbians had an elevated risk of poor general health and mental distress during midlife.

Conclusions. Despite the standard practice of collapsing sexual minority women into a single group, lesbian and bisexual women in this study emerge as distinct groups that merit specific attention. Bisexual women are at elevated risk for poor HRQOL. (*Am J Public Health.* 2010;100:2255-2261. doi:10.2105/AJPH.2009.177329)

significant when psychological distress was taken into account.

Although some studies document differences between SMW and heterosexual women,¹⁴⁻¹⁸ relatively few studies look within SMW subpopulations to examine determinants of health for these populations. Because of small numbers of participants, most studies combine lesbians and bisexual women into a single group for analysis, thereby obscuring potentially important differences. Yet, bisexual women may face additional stressors associated with lack of support from both lesbian and heterosexual communities. Indeed, studies that examine bisexuals as a separate group suggest that this group may have even greater health disparities relative to heterosexual women than do lesbians. For example, in Cochran and Mays's study,¹³ bisexual women, but not lesbians, were significantly more likely to report a functional health limitation, poor overall physical health, and a greater number of physical health conditions than were heterosexual women. In a recent study, Dilley et al.¹⁹ suggested that bisexual women may have more health risks relative to both heterosexual

women and lesbians, although heterosexual women again served as the referent group. Because these prior studies do not report statistically based comparisons of lesbians and bisexual women, we know little about how these 2 groups of women may differ in terms of health.

Another limitation of the existing literature on SMW is the inconsistent use of measures across studies, making comparisons difficult. For example, although health-related quality of life (HRQOL) has received much attention in recent health research and has been used extensively to track population trends and assess health disparities,^{20,21} HRQOL has not been used in studies of sexual minority health. Moreover, there is little research specifically examining determinants of health and HRQOL among lesbians and bisexual women. Such within-group analyses are the next step in advancing our understanding of minority stress² by highlighting the factors within a minority population that make individuals relatively more vulnerable to poor health outcomes. To date, little is known about whether and how such determinants of health and HRQOL are similar

or different for lesbians versus for bisexual women. Hence, we have little information on how best to focus preventive intervention efforts for these groups.

In this population-based study, we used Behavioral Risk Factor Surveillance System data from Washington State (WA-BRFSS) to examine the relationship between HRQOL and sociodemographic characteristics, access to health care, and health risk behaviors among lesbians and bisexual women. We hypothesized that compared with lesbians, bisexual women would have lower levels of HRQOL, after controlling for the other health-related factors. We also examined similarities and differences in the predictors of HRQOL between these 2 groups.

METHODS

The data used in this study are from the 2003–2007 WA-BRFSS. The WA-BRFSS is a telephone interview survey of randomly selected noninstitutionalized adults aged 18 years and older who speak English or Spanish and live in households with a telephone. The total sample size of 2003–2007 WA-BRFSS was 110174. The weighted percentage of women was approximately 50.6% ($n=67\,821$); among the women surveyed, 1.4% were identified as lesbian ($n=779$) and 1.6% as bisexual ($n=717$).

Measures

The respondents self-reported their sexual orientation as heterosexual, homosexual, bisexual, or other. Responses of “other” or “don’t know or not sure” or a refusal to answer were considered missing data. We also created a variable including only lesbians (0) and bisexual women (1) for further analyses.

Health care access measures included having any health insurance coverage, experiencing financial barriers to health care services in the past 12 months, and having a health care provider. Health risk behaviors included current smoking status, defined as having smoked at least 100 cigarettes in one’s lifetime and smoking every day or some days; acute drinking, defined as having more than 5 drinks on at least 1 occasion during the past month; obesity, defined as a body mass index of 30 or more;

and lack of exercise, defined as not having been involved in any physical activities or exercise except regular job duties during the past month.

HRQOL included general health, frequent mental distress, frequent poor physical health, and frequent limited activities. HRQOL is defined by the Centers for Disease Control and Prevention, as “an individual’s or group’s perceived physical and mental health over time.”²¹ WA-BRFSS includes 4 questions to measure HRQOL: self-identified general health (5-point Likert scale), days of poor physical health, days of poor mental health, and days of limited activities as a result of poor physical or mental health in the past 30 days. We dichotomized the self-rating of general health by excellent or very good or good (0) and fair or poor (1). We dichotomized frequent mental distress by 14 or more days of poor mental health. Clinicians often use the cutoff of 14 or more days as a marker for clinical depression and anxiety disorders.^{22–24} We also dichotomized the days of poor physical health and limited activities by the 14-day cutoff point to be consistent with other health research studies.^{20,22,25–31} Previous studies show that the 4-item HRQOL measure is reliable and valid (see Centers for Disease Control and Prevention²¹ for further information).

Sociodemographic measures were as follows: age grouped by 18–29 years, 30–49 years, and 50 years or older; race/ethnicity (non-Hispanic White vs people of color); household income dichotomized by below versus at or above 200% of the federal poverty level^{32–36}; education (high school graduate or less vs some college or more); number of children (younger than 18 years) in a household; relationship status (married or partnered vs other); employment; and urban residence. To determine urban or nonurban residence, we used a 4-tiered rural–urban commute area code derived from population size and commuting relationships (see Washington State Department of Health³⁷). We dichotomized the respondents into those who lived in an urban core, defined as an area with 50 000 persons or more, and those who did not live in an urban core.

Statistical Analyses

First, to reduce the chance of biased results and to maximize sample size, we conducted

multiple imputation using Stata–SE version 10.1 (StataCorp LP, College Station, TX). Multiple imputation produces more than 1 set of imputed data by restoring the variability in the missing data and imputing simulated values for missing values to maintain the overall variability of the population.^{38,39} The proportion of missing case participants for each variable was less than 7%, with the highest proportion of missing case participants observed in income (6.6%) and obesity (3.7%); the other variables had less than 1.3% missing. We analyzed the data before and after multiple imputation for sociodemographic variables, health indicators, and health outcomes of lesbians and bisexual women. The shapes of the distributions of each variable remained similar after multiple imputation, and the significant differences between lesbians and bisexual women according to data without multiple imputation remained after multiple imputation. Thus, the missing data appeared to be random. In addition, we weighted data to adjust for the unequal probability of respondent selection, nonresponse, and telephone noncoverage to make the sample representative of the population.

Initially, we conducted group comparisons between heterosexual women and lesbians and bisexual women. We found that lesbians and bisexual women were at higher risk of poor HRQOL than were heterosexual women. We then conducted further analyses excluding heterosexual women to answer the research questions focusing only on lesbians and bisexual women. We examined characteristics of lesbian and bisexual women respondents, including sociodemographic information, health-related indicators, and HRQOL, and employed logistic regression analyses to examine the association of the individual characteristics and sexual orientation among lesbians and bisexual women. We also conducted multivariate logistic regression analyses to examine whether sexual orientation was a significant predictor of HRQOL, after controlling for other predictors. Last, we conducted separate multivariate logistic regressions by sexual orientation to examine the similar and dissimilar impacts of individual characteristics on general health and frequent mental distress for lesbians and bisexual women. We did not detect any multicollinearity issues in the multivariate regression models.

RESULTS

Table 1 shows the association between sociodemographic characteristics, health-related factors, and sexual orientation. Bisexual women were significantly younger than were lesbians. Compared with lesbians, bisexual women also had significantly lower levels of education, were more likely to be living with income below 200% of the federal poverty level, and had more children living in the household. However, we observed no significant differences between the 2 groups for race, relationship status, employment, or urban residence.

Bisexual women, as compared with lesbians, were significantly less likely to have health

insurance coverage and more likely to experience financial barriers to receiving health care services. There were no significant differences between the 2 groups in the likelihood of having a health care provider. Compared with lesbians, bisexual women were more likely to be current smokers and acute drinkers. The rates of obesity and lack of exercise were not significantly different between the 2 groups.

Health-Related Quality of Life

Bisexual women showed significantly higher rates of poor general health and frequent mental distress than did lesbians (Table 1). However, there were no differences between the 2 groups on frequent poor physical health and frequent limited activities. Thus, we

included only poor general health and frequent mental distress for further analyses to examine whether the differences in HRQOL remain when adjusting for sociodemographic characteristics and health-related factors and to assess which explanatory variables are significantly associated with HRQOL of each group.

Table 2 shows differences between lesbians and bisexual women on the likelihood of experiencing poor general health and frequent mental distress while controlling for sociodemographic characteristics, health care access, and health behavior risk factors. The odds of bisexual women having frequent mental distress were significantly higher than were the odds for lesbians, even after controlling for the confounding variables. Bisexual women were also more likely to report poor general health than were lesbians. In model 2, predicting poor general health, we added frequent mental distress as a potential confounding variable, and bisexual women still showed significantly higher likelihood of poor general health when compared with lesbians.

Predictors of HRQOL Among Lesbians and Bisexual Women

As displayed in Table 3, separate logistic regression analyses of general health and frequent mental distress show similar and dissimilar associations between predictors and health outcomes among lesbians and bisexual women. For both groups, the odds of experiencing poor general health were increased by low income, financial barriers to health services, obesity, lack of exercise, and frequent mental distress when adjusting for other variables. Bisexual women showed higher percentages of poor general health than did lesbians across the age groups. About 21% of bisexual women and 8% of lesbians aged 18–29 years, 21% of bisexual women and 16% of lesbians aged 30–49 years, and 17% of bisexual women and 12% of lesbians aged 50 years or older reported that they experienced poor general health. According to multivariate logistic regression analysis, whereas the likelihood of poor general health for bisexual women did not change across the different age groups, lesbians aged 30–49 years were more likely to report poor general health than were lesbians aged 18–29 years (Table 3). For bisexual women, having health insurance

TABLE 1—Weighted Sample Characteristics by Sexual Orientation Among Sexual Minority Women: Washington State Behavioral Risk Factor Surveillance System, 2003–2007

	Lesbians (n = 779), %	Bisexual Women (n = 717), %	P
Sociodemographic Information			
Age, y			
18–29	22.43	48.61	<.001
30–49	52.82	39.51	<.001
≥50	24.75	11.88	<.001
Non-Hispanic White	83.10	80.31	.339
≥Some college	81.42	63.46	<.001
Income below 200% of federal poverty level ^a	34.42	48.43	<.001
Number of children (<18 y) in household	0.43	0.79	<.001
Married or partnered	48.59	47.59	.774
Unemployed	8.21	9.66	.452
Living in urban core area	79.51	78.58	.706
Health-Related Factors			
Health insurance coverage	83.50	75.10	<.01
Financial barrier to health care services	24.08	33.33	<.01
Health care provider	78.56	72.92	.077
Tobacco use	29.34	38.74	<.01
Acute drinking	12.13	24.76	<.001
Obesity	30.51	29.26	.686
Lack of exercise	16.92	17.23	.903
Health-Related Quality of Life			
General health (fair or poor)	13.22	20.74	<.01
Frequent mental distress	18.75	32.29	<.001
Frequent poor physical health	12.95	17.44	.063
Frequent limited activities	9.88	12.87	.164

Note. We conducted bivariate logistic regressions to examine the differences between lesbians and bisexual women regarding each characteristic.

^aDetermined by federal poverty levels, 2003–2007, used by US Department of Health and Human Services.

TABLE 2—Results of Multivariate Logistic Regression of Frequent Mental Distress and Poor General Health on Sexual Orientation and Other Related Factors Among Sexual Minority Women: Washington State Behavioral Risk Factor Surveillance System, 2003–2007

	Frequent Mental Distress		Poor General Health
	Model 1, AOR	Model 1, AOR	Model 2, AOR
Sexual orientation ^a	1.74**	1.79**	1.62*
Sociodemographic Information			
Age, y			
18–29 (reference)	1.00	1.00	1.00
30–49	1.12	1.54	1.48
≥ 50	0.98	1.31	1.28
Non-Hispanic White	0.73	0.92	1.01
≥ Some college	0.82	0.93	0.95
Income below 200% of federal poverty level ^b	2.34***	2.34***	1.92*
Number of children (<18 y) in household	0.95	0.81	0.81
Married or partnered	0.91	0.97	0.98
Unemployed	0.98	0.96	0.94
Living in urban core area	1.46	1.15	1.07
Health-Related Factors			
Health insurance coverage	1.80*	1.91*	1.73
Financial barrier to health care services	1.63*	3.11***	3.01***
Health care provider	0.77	1.15	1.26
Tobacco use	2.47***	1.69*	1.37
Acute drinking	1.19	0.71	0.65
Obesity	1.20	2.33***	2.37***
Lack of exercise	2.33***	2.43***	2.06**
Frequent mental distress	3.21***

Note. AOR = adjusted odds ratio.

^aLesbians were coded as the reference group.

^bDetermined by federal poverty levels, 2003–2007, used by US Department of Health and Human Services.

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

coverage was also associated with poor general health when controlling for the other variables.

Low income and lack of exercise for both lesbians and bisexual women were independently associated with frequent mental distress. For both lesbians and bisexual women, having health insurance coverage and financial barriers were associated with frequent mental distress; however, as shown in Table 3, only the adjusted odds ratios for lesbians were statistically significant. Current smoking was also more likely to be associated with frequent mental distress; yet, only the adjusted odds ratios for bisexual women were statistically significant.

We observed differences between lesbians and bisexual women in frequent mental distress more clearly in the relationship with age

and urban residence. The percentages of frequent mental distress for bisexual women were greater than were those for lesbians across the different age groups. Among those aged 18–29 years, about 38% of bisexual women and 19% of lesbians reported frequent mental distress; 29% of bisexual women and 20% of lesbians aged 30–49 years and 18% of bisexual women and 16% of lesbians aged 50 years or older reported frequent mental distress. These percentages indicate that for bisexual women, the likelihood of frequent mental distress decreased as their age increased, whereas for lesbians a different pattern emerged. Among lesbians, those aged 30–49 years showed a slightly higher chance of frequent mental distress than did those aged 18–29 years. Table 3 shows that this

difference remained statistically significant even after controlling for individual characteristics and health-related factors.

The likelihood of experiencing frequent mental distress was similar between lesbians and bisexual women in a nonurban area. About 26% of lesbians and 22% of bisexual women residing in a nonurban area reported that they experienced frequent mental distress. However, frequent mental distress decreased significantly for lesbians living in an urban area. When controlling for other sociodemographic and health-related factors, the odds of frequent mental distress for bisexual women living in an urban area were almost twice as high as those for bisexual women living in a nonurban area.

DISCUSSION

Several studies have found that lesbians and bisexual women experience disparities in physical and mental health.^{13,15,17,19,40,41} In one of the first studies to disaggregate groups of SMW, the findings underscore the importance of examining subgroup differences, with bisexual women reporting lower levels of general health and higher levels of frequent mental distress than reported by lesbians, even after controlling for sociodemographics, access to health care, and health risk behaviors. When examining the predictors of HRQOL among lesbians and bisexual women, age and urban residence showed differing trends between the 2 groups.

It has been standard practice to collapse lesbians and bisexual women into a single group representing SMW in many health studies^{14–18}; however, lesbians and bisexual women in this study emerge as unique groups that merit tailored intervention efforts. Bisexual women, as compared with lesbians, reported greater sociodemographic risks (younger, less education, lower income, and more children in the household), less access to health care (less likely to have health insurance and more financial barriers to care); more health risk behaviors (tobacco use and acute drinking); and poorer HRQOL (poor general health and frequent mental distress).

The elevation in risk of poor HRQOL for bisexual women persists even when controlling for sociodemographics, health care access, and health risk behaviors. Mental distress was a significant confounder of general health

TABLE 3—Results of Multivariate Logistic Regression of Frequent Mental Distress and Poor General Health on Sociodemographic and Health-Related Factors by Sexual Orientation: Washington State Behavioral Risk Factor Surveillance System, 2003–2007

	Frequent Mental Distress		Poor General Health	
	Lesbians, AOR	Bisexual Women, AOR	Lesbians, AOR	Bisexual Women, AOR
Sociodemographic Information				
Age, y				
18–29 (reference)	1.00	1.00	1.00	1.00
30–49	2.25*	0.82	4.09*	1.01
≥50	1.67	0.80	2.68	1.15
Non-Hispanic White	0.88	0.61	0.93	1.13
≥Some college	1.15	0.72	1.02	0.86
Income below 200% of federal poverty level ^a	2.63**	2.23**	2.27*	1.97*
Number of children (<18 y) in household	0.81	1.03	0.76	0.84
Married or partnered	0.68	1.05	0.82	1.18
Unemployed	1.16	0.83	0.58	1.12
Living in urban core area	0.80	2.32**	1.25	0.99
Health-Related Factors				
Health insurance coverage	2.48*	1.61	0.83	2.84**
Financial barrier to health care services	2.22**	1.45	2.53**	3.79***
Health care provider	0.69	0.78	1.47	0.96
Tobacco use	1.69	3.05***	1.47	1.23
Acute drinking	1.44	0.99	0.32	0.81
Obesity	1.34	1.14	3.06***	2.20**
Lack of exercise	2.77**	2.21*	2.28*	2.13*
Frequent mental distress	2.90**	3.32***

Note. AOR=adjusted odds ratio.

^aDetermined by federal poverty levels, 2003–2007, used by US Department of Health and Human Services.

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

among both lesbians and bisexual women, as seen in findings by Cochran et al.¹³; however, in our study differences in general health in the 2 groups remained even after taking mental health into account. Reporting of poor general health remained relatively higher among bisexual women than among lesbians, and this difference remained constant across all age groups.

Interestingly, we found that bisexual women living in urban areas were more likely to report mental distress than were those living in nonurban areas, although this difference was not true for lesbians. In addition to the minority stressors encountered by lesbians, bisexual women may face stressors which may be associated with poor health outcomes, such as lack of support by lesbian and gay communities as well as the larger community.^{42–44} Urban environments are

typically characterized as having more well-organized gay and lesbian communities; bisexual women in such environments may feel even more isolated because they do not have access to a defined community.

Although existing literature suggests that “coming out” and maintaining a stable identity over time serves as a protective mechanism against persistent stress,^{45,46} bisexual identities may shift and require renegotiation over the life course.^{47–49} More research is needed to explore to what extent stress and stigma, shifting identities, and the lack of connection to a defined community help explain poorer health outcomes among bisexual women. Although in the past most studies of sexual minority health have been conducted in urban areas, the findings presented here underscore the need to better understand differences in health behaviors and outcomes

among sexual minority groups living in non-urban and urban areas.

There were several common key predictors of frequent mental distress and poor general health among both lesbians and bisexual women in this study, such as poverty, financial barriers to care, and lack of exercise, when controlling for sociodemographic and other health-related factors. In addition, obesity and mental distress emerged as significant predictors of poor general health in both groups. Obesity and lack of physical exercise are both risk factors for heart disease,^{50–52} the leading cause of death for women. Providers and programs aimed at supporting lesbians and bisexual women who want to reduce their health risks need to develop inclusive practices and create an environment that is welcoming to them. By recognizing the stigma and stress that may have given rise to such risk factors, providers can help these women develop the skills necessary to develop health-enhancing strategies.

Interestingly, lesbians reported an elevated risk of poor general health and mental distress during midlife (aged 30–49 years), which persisted even when controlling for other health-related factors. Although more research is needed to understand this finding, lesbians have been found to be at risk for some chronic illnesses, such as asthma,^{13,53} which may have an earlier onset during adulthood. It is also possible that lesbians experience fewer “scheduled life events,”^{10,54} such as marriage or the birth of children, at midlife and thus are at risk for poorer HRQOL because of increased stigma and stress. These findings warrant additional research and highlight the importance of examining determinants of health in this at-risk population.

There is considerable literature documenting the association between poverty and adverse health^{55–58} and poor HRQOL,⁵⁹ with the association postulated to operate through a variety of direct and indirect mechanisms; however, income and poverty are excluded in several analyses of sexual minority health, often because of missing data (see Dille et al.¹⁹). Given the importance of poverty and financial barriers to care as significant predictors of health among SMW, especially bisexual women, future studies of sexual minority health need to explore the use of available analytic tools to better address such key influences on health.^{38,39,60} We also

found positive associations between health insurance coverage and poor general health among bisexual women and between health insurance coverage and frequent mental distress among lesbians, which were unexpected findings. Although additional research is needed to further examine these relationships, it may be that SMW with more health problems are more likely to obtain health insurance coverage.

Although this study highlights important findings regarding the health of lesbians and bisexual women, several limitations must be considered. The cross-sectional nature of the WA-BRFSS makes it difficult to fully understand the unexpected findings and to tease out the temporal relationships between key risk factors and health outcomes of interest. To fully address such disparities and develop effective intervention strategies, further research is needed to better understand the experiences and health consequences that lesbians and bisexual women encounter over time.

This research addresses health only among women who self-identify as lesbian or bisexual. In addition, because the WA-BRFSS did not include questions each year on HIV risk or other preventative health behaviors or chronic health conditions, these factors are not included in our analyses. Furthermore, the WA-BRFSS does not include questions on victimization or discrimination; future research is needed to more fully examine the impact of the social context and how such stressors affect health. Because of the limited sample size, we collapsed people of color into a single category, which may have obscured important differences. Furthermore, we divided age into 3 groups to summarize and directly compare between groups and eliminate the effect of outliers. However, because the bisexual women were significantly younger than the lesbians in the study, categorizing age into only 3 groups may not have sufficiently accounted for this difference. For example, the age difference may be a primary reason why bisexual women showed a greater likelihood of frequent mental distress and poor general health than did lesbians. When a sufficient sample size is available, further analyses, including more categories of age, will be needed to avoid the potential for imperfect control of confounding.⁶¹

Given that the WA-BRFSS relies on a telephone survey with English- or Spanish-speaking callers, the method may not reach persons who do not have a landline or who are not able to participate in the study because of language barriers.

Despite these limitations, this population-based study provides important insights into the differences that exist in health among lesbians and bisexual women. Future health research is needed to develop appropriate and efficacious interventions that are tailored to the unique needs of each group. Furthermore, providers should be alert to the evidence that bisexual women are emerging as a subpopulation at risk of adverse health behaviors and poor HRQOL. ■

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Contributors

K.I. Fredriksen-Goldsen originated the study, synthesized the conceptualization and analyses, and provided leadership during all stages of article preparation. H.-J. Kim contributed to the data analyses, conceptualization, and interpretation. All authors participated in the conceptualization and interpretation of findings and in the writing and editing of the article.

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Human Participant Protection

The institutional review board of the University of Washington approved this study.

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