

Article

Gender, Sexual Orientation, and Marital/Partner Status: Tests of Association with Self-Rated Overall Health and Mental Health in Japan

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ABSTRACT: Gender, sexual orientation, and marital/intimate partner relationship status come together with other social-ecological factors to shape health. In a substudy within a broader survey of social determinants of health in Japan ($n = 258$), I tested potential associations between this cluster of independent variables and self-rated overall health and mental health as dependent variables. I also investigated other relevant constructs. Perceived gender bias, sexual orientation bias, and lifetime experience of sexual violence/abuse were remarkably prevalent but not associated with the dependent variables. Not being in a relationship legally recognized in Japan and not being in a committed relationship (regardless of legal recognition) were associated with worse self-rated mental health at the bivariate level, though this effect did not withstand multivariate testing. Three bivariate results remained significant in multivariate models adjusted for socio-demographic/economic controls: compared with heterosexual/straight participants, those with non-heterosexual orientations had lower odds of reporting good/very good/excellent overall health; and divorced or widowed people (who were also single) had lower odds of rating both their overall health and mental health as good/very good/excellent, compared with people in heterosexual marriages. Gender was not associated with either dependent variable, though it approached significance with mental health. This was contrary to theory but consistent with other studies and has potentially positive implications.

KEYWORDS: Gender, sexual orientation, marital/partner status, self-rated health, survey research

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1. Introduction

It is well established that living conditions and other social-contextual factors play significant roles in exposing people to health risk and protecting them from risk, thereby shaping physical and mental health outcomes (World Health Organization, 2010; U.S. Department of Health and Human Services, 2022). Some examples of such social determinants of health include wealth, employment, and education; housing; social capital (i.e., mutual social connection, trust, and support); identity-motivated bias; social structures, cultural practices, and interpersonal relationships shaped by heteronormative and patriarchal norms; exposure to violence and abuse; and other aspects of community context (Hamano et al., 2010; Yoshihama, 2011; Logie, 2012; Murayama et al., 2012; Kachi et al., 2014; Pega & Veale, 2015; Williams & Mann, 2017; Kondo, 2020; Kawachi, 2024).

The impacts of social factors on public health in Japan are occurring in the context of profound demographic shifts—including recent racial/ethnic diversification, largely due to Japan’s attraction to immigrants for its educational and economic opportunities, and also because of an increased demand for foreign labor to supplement Japan’s low fertility rate and declining and aging population (Faber, 2024; Statistics Bureau of Japan, 2025; Ministry of Health, Labour and Welfare of Japan [MHLW], 2025a). Moreover, improving but persistently problematic societal situations for women and sexual and gender minorities also shape public health in Japan (Suzuki et al., 2025; Minami et al., 2024; Kazama, 2020).

In 2024, I launched a research project with the overall research question, “Which demographic and social factors most affect the physical health, mental health, and health-related behaviors of a diverse sample of Japanese nationals and non-Japanese nationals currently living in Japan?” In this paper, I present results from my analysis of a relatively narrow set of variables from the broader (parent) study. The focus is on a cluster of constructs centered on gender, sexual orientation, and marital/intimate partner relationship status—including perceptions of bias and experiences of violence/abuse relevant to these—and their potential association with self-rated overall health and mental health.

Feminist theory (Butler, 1990; Connell, 2012; Heise et al., 2019), minority stress theory (Meyer, 2003; Frost et al. 2015), the Intersectional Ecology Model of LGBTQ Health (Mink et al., 2014), and other empirical evidence (e.g., Yoshihama et al., 2007; Yoshihama, 2011; Rendall et al., 2011; Kail et al., 2015; Lim & Raymo, 2016; Holt-Lunstad et al., 2017; Tomioka et al., 2024; Han et al., 2024; Satti et al., 2025) lead to expectations of health disparities by gender, sexual orientation, and marital/partner status, and that these disparities will be present in Japan. For sexual orientation and marital/partner status, theory and research are generally well aligned in support of this expectation.

For gender, the situation is more nuanced. Studies of populations outside Japan strongly support an expectation of health disparities when the comparison is between

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

cisgender people and all other genders (Downing & Przedworski, 2018; Lee et al., 2020; Gonzales et al., 2022). Research that disaggregates minority genders in Japan (e.g., transgender, nonbinary, gender-diverse) from broader demographic categories that include sexual orientation is nascent; but so far, studies have shown that non-cisgender people have worse physical and mental health compared with cisgender people (Katagiri et al., 2024, 2025). When “women” and “men” are compared (i.e., with no distinction between cisgender and transgender men and women, and no explicit inclusion of other genders), the expectation of health disparities favoring men is more strongly supported by theory than empirical evidence from the past two decades. For example, women outlive men in Japan by six years, on average: 87.1 vs. 81.1 years, respectively (MHLW, 2025b); and although women report lower self-rated overall health and mental health than men, the differences have been narrow and not always statistically significant when examining data in aggregate form (e.g., Honjo et al., 2006; Tanaka et al., 2021; Takahashi et al., 2020). Nevertheless, Takahashi et al. (2020) showed that the disparity in self-rated overall health for women versus men around age 40 was significant; and Honjo et al. (2006) found that 42.8% of women rated their mental health as fair/poor, compared with 39.5% of men, and considered the difference significant ($p = .07$).

Based on Census data (Statistics Bureau of Japan, n.d.), I anticipated the average age in the current substudy would be somewhere in the 40s; and I did not wish to discount theory. Thus, although I set a stricter threshold for statistical significance than Honjo et al. (see Methods), I expected the disparities that I previously listed—including by gender—would hold, even in contemporary Japanese society and while adjusting for important control variables. I thus had three primary hypotheses:

- Hypothesis 1: Compared with men, women will report worse overall health and mental health.
- Hypothesis 2: Lesbians, gay men, bisexual persons, and those with other non-heterosexual sexual orientations will report worse overall health and mental health, compared with heterosexual persons.
- Hypothesis 3: People *not* married in a heterosexual marriage will report worse overall health and mental health, compared with those who are married in a heterosexual marriage.

I also investigated whether a set of additional, exploratory independent variables would be associated with self-rated health. This led to five secondary hypotheses:

- Hypothesis 4: People *not* in a relationship legally recognized in Japan will report worse overall health and mental health, compared with those who are in a relationship legally recognized in Japan.
- Hypothesis 5: People *not* in a committed relationship (regardless of legal recognition) will report worse overall health and mental health, compared with those

- who are in a committed relationship.
- Hypothesis 6: People who have perceived gender bias directed at them from others will report worse overall health and mental health, compared with those who have not perceived gender bias.
- Hypothesis 7: People who have perceived sexual orientation bias directed at them from others will report worse overall health and mental health, compared with those who have not perceived sexual orientation bias.
- Hypothesis 8: People who have experienced sexual violence or abuse will report worse overall health and mental health, compared with those who have not experienced sexual violence/abuse.

2. Methods

Design, Recruitment, and Data Collection

The parent study within which this substudy is nested was an anonymous, cross-sectional, online survey conducted in 2024–2025. Inclusion criteria were age 18 and over and current residence in Japan. Non-permanent residents qualified for the study, but people visiting Japan temporarily (e.g., for tourism) were excluded.

The survey was offered in Japanese and English (participants could choose) and was administered via the Qualtrics online platform. Potential participants were given a link to a dedicated study website with information about the study, including potential risk and benefits and human subjects projections. Participants also could directly enter the online questionnaire via a link and QR code provided in study recruitment messaging.

A research assistant and I recruited participants by emailing community-based and other nongovernmental organizations (CBOs, NGOs); universities, labor unions, law firms, religious groups, museums, and other civil society institutions; and, when available, by posting to organizations' mailing lists. We also posted on social media; emailed participants from one of my previous research studies in Japan (2013–2016); and engaged in broad outreach through our social and professional networks across Japan. In our recruitment messaging, we asked people to participate if they met the inclusion criteria, and also to refer other people in their own networks.

The questionnaire measured 99 variables, which allowed for a sufficiently thorough description of the sample, and respondents' perceptions, experiences, behaviors, and physical and mental health statuses relevant to the parent study's overall research question. I adopted or adapted several validated measures, including the 36-item Short-Form Health Survey (SF-36; Ware & Sherbourne, 1992), Perceived Stress Scale 4 (PSS-4; Cohen et al., 1983), Alcohol Use Disorders Identification Test (AUDIT; Saunders et al., 1993), and Brief Problem Gambling Screen (Volberg & Williams, 2011). I also developed

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

multiple original measures based on the literature and results from my colleague's and my previous ethnographic social determinants of health research in the United States (DiStefano & Yang, 2024).

The study protocol was approved by the Institute for Research in Humanities, Kyoto University, and the Institutional Review Board at California State University, Fullerton (Protocol Number: HSR-23-24-167).

Measures

The present substudy had two dependent variables: self-rated overall health and self-rated mental health. I measured the first by adapting a single item from the general health perceptions subscale of the SF-36 (Ware & Sherbourne, 1992), which was originally developed for the Medical Outcomes Study in the United States. The general mental health subscale in the SF-36 did not contain an equivalent single-item measure, so I created one with the same phrasing as the overall health question. Thus, participants were asked, "In general, how would you rate your overall health?" and, 12 questions later in the questionnaire, "In general, how would you rate your overall mental health?" (underline included to help participants clearly differentiate between the questions). Response options for both items were "poor," "fair," "good," "very good," and "excellent."

There were three main independent variables: 1. gender (with response options of "woman," "man," "transgender woman," "transgender man," "nonbinary/non-conforming," and "not listed/specify"); 2. sexual orientation ("heterosexual or straight;" "bisexual;" "gay or lesbian;" "not listed/specify"); and 3. marital/partner status ("**single and never married** [and never in a government-recognized same-sex/any-gender partnership registered in Japan]"; "**divorced or widowed, and single**"; "**government-recognized same-sex/any-gender partnership registered in Japan** [not including heterosexual marriage]"; "**married, in a same-sex/any-gender marriage** [married in another country and not recognized in Japan]"; "**married, in a heterosexual marriage** [recognized in Japan]"; "**not listed/specify**"). Bolding was used to help participants distinguish the marital/partner status categories from additional, explanatory text.

In bivariate analyses, I included additional, exploratory independent variables: perceived gender bias and sexual orientation bias from other people; experience of sexual violence or sexual abuse in Japan; currently in a relationship legally recognized in Japan; and currently in a committed relationship (regardless of legal recognition). The question measuring perceived gender bias was, "During your time living in Japan (whether it is a short time or all of your life), how often have you felt that other people held negatively biased opinions, thoughts, or stereotypes about you based on what they knew or perceived your gender to be?" The question on perceived sexual orientation bias had the same lead-in but ended with " ... based on what they knew or perceived your sexual

orientation to be?” Response options for both of these variables were “never,” “almost never,” “sometimes,” “fairly often,” and “very often.” To measure sexual violence/abuse, the question was, “**How many times have you been the victim of sexual violence or sexual abuse in Japan?** (This refers to any time someone forced you to take part in a sex act; or any physical attempt to engage in a sex act with you without your consent, or when you were unable to consent or refuse. However, it does not include verbal sexual harassment.)” Response options were “never,” “one time,” “twice,” “3–4 times,” “5 or more times.” The variables “currently in a relationship legally recognized in Japan” and “currently in a committed relationship (regardless of legal recognition)” were variants of the marital/partner status variable that I constructed with recoding.

Additionally, I included a select subset of four of the study’s general sociodemographic and socioeconomic indicators as independent variables in the bivariate analyses: age, household income, education, and employment status. Age was a simple, open-ended question asking for a typed-in number in “years old.” Household income was measured with the question, “**What is the current yearly income of your entire household from all sources, before taxes and other deductions?** (‘Household’ here means all the persons **aged 15 and older** who are living together in a housing unit, whether they are related as family members or not. ... If you live alone, this will be the same as your individual yearly income).” Participants were prompted to enter a number in ¥ per year in standard numerical notation—for example, “7411848” or “708000.” The education item asked for the highest level of education completed, with eight rank-ordered response options ranging from “elementary/primary school (6th grade) or below” to “doctoral degree.” Employment status asked for the participant’s current situation, with response options of “not in the labor force and not looking for work,” “unemployed, but looking for work,” “employed part-time (less than 38 hours per week),” and “employed full-time (38 hours or more per week).” These variables were also entered in the multivariate models—but as control variables, not as the main independent variables of interest.

Data Cleaning and Statistical Analysis

Following ongoing monitoring during data collection, there were 359 respondents. From this total, and despite using Qualtrics tools to minimize duplicate respondents and bots, I dropped 101 cases due to duplicates (i.e., people who found workarounds to Qualtrics’ protections), a high level of missing data within a case (i.e., no data on any of the parent study’s dependent variables), or indications of data fabrication. The final analytic sample size was 258.

Two hundred fifty-eight participants ($n = 258$) allowed for sufficient statistical power for the analyses conducted in this substudy; however, if I had opted for a complete-case analysis with listwise deletion (i.e., dropping additional cases from the analytic sample if

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

participants had even one missing data point), that would have resulted in a catastrophic loss of power and likely introduced substantial bias in the findings. For these reasons, I used both logical/deductive imputation and multiple imputation to replace missing values in the dataset. Both are rigorous methods that use existing data from the same participant's responses to other questions and other participants' responses to the same question (i.e., the question with missing data for the present case) to triangulate a best-fit estimate to replace a missing value. Additionally, multiple imputation formulates imputed values from repeated iterations of five simulated versions of the dataset, which, in turn, are based directly on the original dataset.

There was one participant who answered the gender question with a response other than "man" or "woman." This person identified as a transgender man, and their data are represented in the descriptive, univariate results. However, having only a single case in a third gender category led to unstable statistical tests. Thus, solely for the bivariate tests that included gender as the independent variable, and for all four multivariate models, the transgender man's case was removed ($n = 257$).

Data were analyzed using SPSS 31 statistical software. Following exploratory univariate analyses, I dichotomized responses on the dependent variables—self-rated overall health and self-rated mental health—into "poor/fair" (i.e., the negative health condition in this substudy) and "good/very good/excellent" (i.e., the positive health condition); and I converted ordinal independent variables into nominal variables of 4 categories or fewer. I then examined bivariate relationships between continuous independent variables and the dependent variables using binary logistic regression. For nominal-by-nominal variable pairings, I first used chi-square because it is the standard test for two nominal variables; however, as a conservative strategy to ensure robust analysis after multiple imputation, I also ran confirmatory binary logistic regressions (White et al., 2011). For chi-square tests, when 20% or more of the cells in a crosstab contingency table had expected counts lower than 5 and destabilized the test, I ran Fisher's exact test, which is not affected by small cell counts.

In model building for the multivariate analyses, I chose independent variables and control variables for entry as covariates in multiple logistic regression models based on the literature, not on which variables were statistically significant in the bivariate tests. The multiple regression structure had four steps. The base model (Model 1) included only the select subset of four socio-demographic/economic control variables (previously described) that the literature had shown repeatedly were associated with self-rated health: age, household income, education, and employment status. If not held constant, these variables could have confounded any observed relationship between the main independent variables and self-rated overall health. However, to build a more predictive regression structure that was a better fit with self-rated mental health, multivariate analy-

sis of that dependent variable did not include the education and employment status controls. Education and employment status have some correlation with each other and with household income, which was the only demographic variable that showed significance in bivariate tests with the dependent variables (see Results). Thus, only age and household income were retained as control variables in the mental health models.

Gender bias, sexual orientation bias, and sexual violence/abuse were not significant at the bivariate level (see Results). However, in Model 2, I added experience of sexual violence/abuse as a key covariate, and this variable remained in the multiple regressions through Model 4. This was done to maintain a parsimonious set of models in which the number of independent variables did not exceed that which could be accommodated by the sample size—and also because, compared with perceived bias, the effect of sexual violence/abuse on physical health and mental health has been more thoroughly documented in the literature (Basile et al., 2024; Choudhary et al., 2012).

In the last two multivariate models, I introduced the substudy’s main independent variables of interest—sexual orientation (reduced to two categories) and marital/partner status (reduced to four categories) in Model 3 and gender in Model 4—to assess their effect on self-rated overall health and mental health, controlling for all other variables.

In Models 2–4, I tried switching out the four-category marital/partner status variable with each of the two exploratory independent variables framing relationship status in alternative ways: “currently in a relationship legally recognized in Japan” and “currently in a committed relationship (regardless of legal recognition).” I did so, one at a time, to explore whether each of these variables would improve the fit of the multivariate models (results not shown). Neither variable was significantly associated with self-rated overall health or mental health, and there was no improvement in model fit. Therefore, these two variables did not replace the four-category marital/partner status variable in the final set of models.

For the descriptive results from univariate analyses, I report frequencies, percentages, means (*M*), medians (*Mdn*), and standard deviations (*SD*), as appropriate to the variable, using the pre-imputation dataset (i.e., before logical/deductive imputation and multiple imputation were executed). This dataset had only minimal corrections to the raw, unprocessed dataset—e.g., fixing errors arising from participants entering numbers in Japanese font that Qualtrics did not recognize, entering income in units of ¥10,000 (e.g., “4” for four *man*) instead of the full numerical amount (e.g., “40000”). For bivariate and multivariate tests, as applicable, I report pooled statistics (Pearson’s chi-square [χ^2], odds ratios [OR], adjusted odds ratios [AOR], 95% confidence intervals [CI], and *p*-values [*p*]), drawing on all the data from the five datasets containing imputed values. The pooled results account for uncertainty introduced by missing data in the original dataset. I include Cramer’s *V*—a measure of effect size to gauge strength of associa-

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

tion—only when two variables demonstrated a significant relationship in chi-square tests. Statistical significance was set at $\alpha = .05$.

3. Results

Univariate and Bivariate Results

Socio-Demographic/Economic Variables

Descriptive, univariate analyses indicate 12.9% of participants rated their overall health as excellent, 20.8% rated it as very good, 31.4% as good, 30.2% as fair, and 4.7% as poor.

With regard to self-rated mental health, 11.9% of participants rated it as excellent, 20.2% rated it as very good, 31.6% as good, 29.6% as fair, and 6.7% as poor. When these variables were dichotomized, 34.9% rated their overall health as poor/fair versus 65.1% as good/very good/excellent; and 36.4% rated their mental health as poor/fair versus 63.6% as good/very good/excellent.

Other results from univariate and bivariate analyses are presented in Tables 1–5. The mean age of participants was 40.1 years old, with a median of 42 (Table 1). Regarding

Table 1. Participant General Sociodemographic Characteristics ($n = 258$)

	Number (%)
Age, years ($n = 253$; $M = 40.1$ [$SD = 17.2$]; $Mdn = 42$)	
18–25	83 (32.8)
26–39	33 (13.0)
40–59	97 (38.3)
60–77	40 (15.8)
Region of residence ($n = 257$)	
Hokkaido	2 (0.8)
Kanto	144 (56.0)
Chubu	24 (9.3)
Kansai	70 (27.2)
Chugoku	2 (0.8)
Shikoku	3 (1.2)
Kyushu/Okinawa	12 (4.7)
Gender ($n = 258$)	
Woman	165 (64.0)
Man	92 (35.7)
Transgender man	1 (0.4)

ANTHONY DISTEFANO

Nationality/citizenship (<i>n</i> = 258)	
Japan	237 (91.9)
China	4 (1.6)
Colombia	2 (0.8)
Southeast Asian country	2 (0.8)
North American country	7 (2.7)
European country	3 (1.2)
Other, including multinational	3 (1.2)
Marital/partner status (<i>n</i> = 255)	
Married, in a heterosexual marriage	112 (43.9)
Single and never married ^a	124 (48.6)
Divorced or widowed, and single	13 (5.1)
Married, in a same-sex/any-gender marriage ^b	4 (1.6)
Other marital/partner status ^c	2 (0.8)
Sexual orientation (<i>n</i> = 255)	
Heterosexual/straight	207 (81.2)
Bisexual	20 (7.8)
Gay or lesbian	11 (4.3)
Other sexual orientation ^d	17 (6.7)

Note. *M* = mean; SD = standard deviation. *Mdn* = median. Some variables have ≥ 1 missing cases; the sample size for each variable is noted. Some percentages total to more than 100% due to rounding.

^a And never in a government-recognized same-sex/any-gender partnership registered in Japan. ^b Married in another country and not recognized in Japan. ^c Common law marriage, registered in same-sex partnership oath system (neither recognized by government). ^d Included pansexual, asexual, aromantic, no label, don't know yet.

region and prefecture of residence, 27 (57.4%) of Japan's 47 prefectures were represented, as were all major regions except Tohoku. Nearly two-thirds (64.0%) of participants were women, and 92% were Japanese nationals/citizens. Most participants were either married in a heterosexual marriage (43.9%) or single and never married (48.6%), though 5.1% were divorced or widowed (and single), and 2.4% had other marital/partner statuses. Heterosexual/straight people comprised 81.2% of the sample; but a sizeable minority of people with other sexual orientations (18.8%) participated, most of whom (12.1% of the sample) were lesbian, gay, or bisexual.

The majority of participants (62.4%) had completed at least a university education (Table 2), and there was a substantial number of students in the study (*n* = 87, 34.1%). Most participants were employed (27.9% of the sample part-time, 47.3% full-time), and

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

Table 2. Participant Socioeconomic Characteristics ($n = 258$)

	Number (%)
Education ($n = 258$)	
Middle school/Jr. high school	2 (0.8)
High school	69 (26.7)
Some post-secondary/post-high school (did not complete)	1 (0.4)
Junior College/Trade School	25 (9.7)
University degree (Bachelor's degree)	90 (34.9)
Graduate/professional degree (master's through doctoral)	71 (27.5)
Student status ($n = 255$)	
Non-student	168 (65.9)
Student	87 (34.1)
Employment status ($n = 258$)	
Not in the labor force and not looking for work	54 (20.9)
Unemployed but looking for work	10 (3.9)
Employed part-time (< 38 hours/week)	72 (27.9)
Employed full-time ($\geq$ 38 hours/week)	122 (47.3)
Annual individual income before taxes, other deductions ($n = 222$; $M = ¥4,277,121.5$ [$SD = ¥5,162,428.5$]; $Mdn = ¥3,330,000$)	
$\leq ¥999,999$	67 (30.2)
¥1,000,000–¥4,999,999	78 (35.1)
¥5,000,000–¥50,000,000	77 (34.7)
Annual household income before taxes, other deductions ^a ($n = 218$; $M = ¥8,431,961$ [$SD = ¥6,861,799$]; $Mdn = ¥7,000,000$)	
$\leq ¥4,999,999$	68 (31.2)
¥5,000,000–¥8,499,999	69 (31.7)
¥8,500,000–¥50,000,000	81 (37.2)

Note. M = mean; SD = standard deviation. Mdn = median. Some variables have ≥ 1 missing cases; the sample size for each variable is noted. Some percentages total to more than 100% due to rounding.

^a "Household" = all persons aged 15 and older living together in a housing unit, whether related as family members or not.

the median individual and household incomes were ¥3,330,000 and ¥7,000,000, respectively.

Control Variables by Self-Rated Overall Health and Mental Health

Bivariate analyses testing for relationships between the substudy's control variables and the dependent variables included age by self-rated overall health; age by self-rated

mental health; household income (divided into three levels [tertiles]) by self-rated overall health; household income by self-rated mental health; education by both dependent variables; and employment status by both dependent variables. Only one of these pairings showed significance: in binary logistic regression analysis, compared with people in the lowest tertile of household income (¥0–¥4,999,999), people in the middle tertile (¥5,000,000–¥8,499,999) had significantly higher odds of reporting good/very good/excellent overall health (OR = 2.10 [1.06, 4.09], $p = .032$); however, unexpectedly, the significance of this relationship did not extend to the highest tertile (¥8,500,000–¥50,000,000; OR = 1.32, [.72, 2.43], $p = .373$). In chi-square analysis, the values of the adjusted standardized residuals (± 2.0) also suggested significance in the same direction: that people in the middle tertile were more likely to report good/very good/excellent overall health (73.9%) compared with those in the lowest tertile (57.6%), and also—somewhat surprisingly again—compared with the highest tertile (¥8,500,000–¥50,000,000; 64.2%); however, the overall chi-square test was not significant ($\chi^2 = 4.84$, $p = .093$). Bivariate results on household income by self-rated mental health trended in a similar direction: compared with people in both the lowest and highest tertiles of household income, those in the middle tertile had higher odds (logistic regression) and were more likely (chi-square) to report good/very good/excellent mental health; however, these findings were not significant ($p_{\text{logistic regression}} = .191$, $p_{\text{chi-square}} = .368$).

Age, education, and employment status trended in the expected direction. With increasing age, participants had lower odds of reporting good/very good/excellent overall health and mental health. Participants who had completed at least a university education had higher odds and were more likely to report good/very good/excellent overall and mental health, compared with those who had less than a university education. Likewise, people who were employed (part- or full-time) had higher odds and were more likely to report good/very good/excellent overall and mental health, compared with persons who were not currently employed. However, none of these associations were statistically significant, with p -values ranging from .075 to .725.

Bias and Sexual Violence/Abuse by Self-Rated Overall Health and Mental Health

Forty-six percent (46%) of study participants had perceived gender bias directed at them from other people; 38.8% had perceived sexual orientation bias, reported by both sexual minorities and heterosexual persons; and 24.5% had experienced sexual violence or abuse at least once in their lifetime (Table 3).

Perceptions of gender and sexual orientation biases trended in the hypothesized direction with overall health. Compared with participants who had not perceived gender bias, those who had perceived it had slightly lower odds of reporting good/very good/

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

Table 3. Perceived Bias and Experiences of Sexual Violence/Abuse in Japan ($n = 258$)

	Number (%)
Ever perceived gender bias from other people ($n = 237$)	
Never	128 (54.0)
Almost never to sometimes	77 (32.5)
Fairly often to very often	32 (13.5)
Ever perceived sexual orientation bias from other people ($n = 237$)	
Never	145 (61.2)
Almost never to sometimes	68 (28.7)
Fairly often to very often	24 (10.1)
Ever experienced sexual violence/abuse ($n = 233$)	
Never	176 (75.5)
1–2 times	36 (15.5)
3 times or more	21 (9.0)

Note. All variables have ≥ 1 missing cases; the sample size for each variable is noted.

excellent overall health ($OR = .98$ [.58, 1.66], $p = .953$) and were slightly more likely to report poor/fair overall health (35.1% vs. 34.8%; $\chi^2 = .04$, $p = .883$). Similarly, compared with participants who had not perceived sexual orientation bias, those who had perceived it had lower odds of reporting good/very good/excellent overall health ($OR = .73$ [.43, 1.24], $p = .243$) and were more likely (39.0% vs. 31.9%; $\chi^2 = 1.44$, $p = .240$) to report poor/fair overall health. However, none of these associations were statistically significant.

When gender and sexual orientation biases were tested with mental health, the odds ratios and frequencies were *opposite* to the hypothesized direction. Compared with participants who had not perceived gender bias, those who had perceived it had *higher* odds of reporting good/very good/excellent mental health ($OR = 1.13$ [.67, 1.91], $p = .635$) and were *less* likely to report poor/fair mental health (34.5% vs. 37.4%; $\chi^2 = .27$, $p = .632$). Compared with participants who had not perceived sexual orientation bias, those who had perceived it had slightly *higher* odds of reporting good/very good/excellent mental health ($OR = 1.03$ [.60, 1.77], $p = .918$) and were slightly *less* likely to report poor/fair mental health (35.6% vs. 36.3%; $\chi^2 = .09$, $p = .813$). However, none of these associations were significant.

Experiencing sexual violence/abuse trended in the hypothesized direction but was not significant in tests with either dependent variable. Compared with participants who had not experienced this kind of violence/abuse, those who had experienced it had lower odds report good/very good/excellent overall health ($OR = .85$ [.47, 1.54], $p = .594$) and were more likely to report poor/fair overall health (37.6% vs. 33.9%; $\chi^2 = .40$, $p = .585$). Participants who had experienced sexual violence/abuse also had lower odds of reporting

good/very good/excellent mental health (OR = .76 [.41, 1.39], $p = .371$) and were more likely to report poor/fair mental health (40.5% vs. 34.1%; $\chi^2 = 1.08$, $p = .356$). However, again, none of these results were statistically significant.

Gender, Sexual Orientation, and Marital/Partner Status by Self-Rated Overall Health and Mental Health

Bivariate analyses showed that gender trended in the predicted direction when tested with the dependent variables (Table 4). Compared with men, women had slightly lower odds of reporting good/very good/excellent overall health (OR = .91 [.53, 1.56], $p = .718$)

Table 4. Gender, Sexual Orientation, and Marital/Partner Status by Self-Rated Overall Health and Mental Health ($n = 258$)

	Chi-Square Test					Binary Logistic Regression		
	Poor or Fair No. (%)	Good, Very Good, or Excellent No. (%)	Chi-Square	p	Cramer's V^a	OR	p	95% CI
Gender ($n = 257$) ^b								
Overall Health								
Woman	59 (35.8)	106 (64.2)	.14	.718		.91	.718	.53, 1.56
Man	31 (33.7)	61 (66.3)				1.00 ^c		
Mental Health								
Woman	66 (40.0)	99 (60.0)	3.29	.073		.60	.075	.35, 1.05
Man	26 (28.3)	66 (71.7)				1.00		
Sexual orientation								
Overall Health								
Heterosexual/straight	66 (31.7)	142 (68.3)	4.74	.034	.13	1.00		
All other sexual orientations	24 (48.0)	26 (52.0)				.51	.039	.26, .97
Mental Health								
Heterosexual/straight	72 (34.6)	136 (65.4)	1.02	.318		1.00		
All other sexual orientations	21 (42.0)	29 (58.0)				.73	.320	.39, 1.37
Marital/Partner Status								
Overall Health								
Married--heterosexual marriage	42 (33.6)	83 (66.4)	9.26	.025^d	.19	1.00		

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

Single and never married	35 (31.3)	77 (68.7)				.90	.715	.52, 1.56
Divorced or widowed, and single	9 (69.2)	4 (30.8)				.19	.010	.06, .67
All other marital/partner statuses	4 (57.1)	3 (42.9)				.41	.298	.08, 2.21
Mental Health								
Married--heterosexual marriage	31 (27.7)	81 (72.3)	8.94	.029^d	.19	1.00		
Single and never married	52 (41.6)	74 (59.2)				.56	.036	.32, .96
Divorced or widowed, and single	8 (61.5)	5 (38.5)				.25	.022	.08, .81
All other marital/partner statuses	2 (28.6)	5 (71.4)				1.43	.73	.18, 11.58

Note. **Bold** indicates statistical significance at $p < .05$. For Tables 4–6, results are pooled statistics based on repeated iterations of five versions of the dataset with missing values replaced via multiple imputation. Some percentages total to less or more than 100% due to rounding of pooled estimates. OR = odds ratio for response of good/very good/excellent; CI = confidence interval.

^a Cramer's V is calculated only for significant variables. ^b For Gender only, the one transgender case was removed to stabilize the statistical tests, thus $n = 257$; for all other variables, $n = 258$. ^c OR = 1.00 indicates the referent category. ^d Fisher's Exact p -value.

and were slightly more likely to report poor/fair overall health (35.8% vs. 33.7%; $\chi^2 = .14$, $p = .718$). Women also had lower odds of reporting good/very good/excellent mental health (OR = .60 [.35, 1.05], $p = .075$) and were more likely than men to report poor/fair mental health (40.0% vs 28.3%; $\chi^2 = 3.29$, $p = .073$). None of these results were statistically significant, though the tests with mental health approached significance.

Non-heterosexual orientation was significantly negatively associated with self-rated overall health: compared with heterosexual participants, those with all other sexual orientations had significantly lower odds of reporting good/very good/excellent overall health (**OR = .51 [.26, .97], $p = .029$**) and were significantly more likely to report poor/fair overall health (**48.0% vs. 31.7%; $\chi^2 = 4.74$, $p = .034$, Cramer's V = .13**). Compared with heterosexuals, people with all other sexual orientations also had lower odds of reporting good/very good/excellent mental health (OR = .73 [.39, 1.37], $p = .320$) and were more likely to report poor/fair mental health (42.0% vs. 34.6%; $\chi^2 = 1.02$, $p = .318$), but these results were not significant.

Marital/partner status was significantly associated with both dependent variables. Compared with people who were married in a heterosexual marriage, people who were

divorced or widowed (and also single) had significantly lower odds of reporting good/very good/excellent overall health in binary logistic regression analysis (**OR = .19 [.06, .67], $p = .010$**). A significant chi-square test additionally showed that divorced/widowed (and single) people were most likely to report poor/fair overall health (**69.2%; $\chi^2 = 9.26, p = .025$, Cramer's $V = .19$**), when compared with people married in a heterosexual marriage (33.6%), single and never married people (31.3%), and those with all other marital/partner statuses (57.1%).

Regarding mental health: compared with people who were married in a heterosexual marriage, those who were divorced/widowed (and single) (**OR = .25 [.08, .81], $p = .022$**) and those who were single and never married (**OR = .56 [.32, .96], $p = .036$**) had significantly lower odds of reporting good/very good/excellent mental health in binary logistic regression. A significant chi-square test also indicated that divorced/widowed (and single) people were most likely (**61.5%; $\chi^2 = 8.94, p = .029$, Cramer's $V = .19$**) and people married in a heterosexual marriage were least likely (**27.7%**) to report poor/fair mental health when compared with each other, single and never married people (41.6%), and those with all other marital/partner statuses (28.6%).

I also recoded the marital/partner status variable to explore other aspects of this construct in bivariate analyses (Table 5). Compared with people in a relationship legally recognized in Japan, those who were *not* in such relationships had lower odds of reporting good/very good/excellent overall health (OR = .76 [.45, 1.30], $p = .316$) and were more likely to report poor/fair overall health (37.7% vs. 31.3%; $\chi^2 = 1.08, p = .312$); but these tests were not significant. However, the tests with mental health were significant: people *not* in a relationship legally recognized in Japan had significantly lower odds of reporting good/very good/excellent mental health (**OR = .55 [.32, .93], $p = .026$**) and were significantly more likely to report poor/fair mental health (**41.8% vs. 28.6%; $\chi^2 = 5.11, p = .025$, Cramer's $V = .14$**).

Likewise, compared with people in a committed relationship (regardless of legal recognition), those who were *not* in such relationships had lower odds of reporting good/very good/excellent overall health (OR = .82 [.49, 1.39], $p = .461$) and were more likely to report poor/fair overall health (36.7% vs. 32.8%; $\chi^2 = .59, p = .458$); but these tests were not significant. However, again, the tests with mental health were significant: people *not* in a committed relationship (regardless of legal recognition) had significantly lower odds of reporting good/very good/excellent mental health (**OR = .51 [.30, .86], $p = .011$**) and were significantly more likely to report poor/fair mental health (**43.2% vs. 27.7%; $\chi^2 = 6.61, p = .010$, Cramer's $V = .16$**).

Multivariate Results

Findings from the multiple logistic regressions are presented in Table 6. All results

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

Table 5. Alternative Relationship Status Variables by Self-Rated Overall Health and Mental Health ($n = 258$)

	Chi-Square Test					Binary Logistic Regression		
	Poor or Fair No. (%)	Good, Very Good, or Excellent No. (%)	Chi-Square	p	Cramer's V	OR	p	95% CI
Overall Health								
Currently in a relationship legally recognized in Japan								
No	55 (37.7)	91 (62.3)	1.08	.312		.76	.316	.45, 1.30
Yes	35 (31.3)	77 (68.7)				1.00		
Mental Health								
No	61 (41.8)	85 (58.2)	5.11	.025	.14	.55	.026	.32, .93
Yes	32 (28.6)	81 (72.3)				1.00		
Overall Health								
Currently in a committed relationship (regardless of legal recognition)								
No	51 (36.7)	87 (62.6)	.59	.458		.82	.461	.49, 1.39
Yes	39 (32.8)	80 (67.2)				1.00		
Mental Health								
No	60 (43.2)	79 (56.8)	6.61	.010	.16	.51	.011	.30, .86
Yes	33 (27.7)	86 (72.3)				1.00		

Note. Some percentages total to less or more than 100% due to rounding of pooled estimates. OR = odds ratio for response of good/very good/excellent; OR = 1.00 indicates the referent category.

here and in Table 6 that are noted as statistically significant had $p < .05$. Statistics were calculated while controlling simultaneously for all other variables in a given model.

In Model 1, which included only the socio-demographic/economic control variables, household income alone was significant. Compared with people in the lowest tertile (¥0–¥4,999,999), people in the middle tertile (¥5,000,000–¥8,499,999) had significantly higher odds of reporting good/very good/excellent overall health (**AOR = 2.16 [1.04, 4.47]**); but, as in bivariate testing, the significance of this relationship did not extend to the highest tertile (¥8,500,000–¥50,000,000; AOR = 1.41, [.70, 2.86]). When tested with mental health, household income followed a similar pattern but was not significant. Age, education, and employment status were not significantly associated with overall health in

ANTHONY DISTEFANO

Table 6. Multiple Logistic Regressions: Factors Associated with Overall Health and Mental Health Self-Rated as Good, Very Good, or Excellent^a (*n* = 257)^b

	Model 1 ^c AOR (95% CI)	Model 2 AOR (95% CI)	Model 3 AOR (95% CI)	Model 4 AOR (95% CI)
Age				
		Overall Health		
	.98 (.97, 1.00)	.98 (.97, 1.00)	.98 (.96, 1.00)	.98 (.96, 1.00)
		Mental Health		
	1.01 (.99, 1.02)	1.01 (.99, 1.02)	1.00 (.98, 1.02)	.996 (.97, 1.02)
Household income				
		Overall Health		
≤ ¥4,999,999	1.00	1.00	1.00	1.00
¥5,000,000–¥8,499,999	2.16 (1.04, 4.47)	2.22 (1.07, 4.62)	1.92 (.89, 4.13)	1.92 (.89, 4.14)
≥ ¥8,500,000	1.41 (.70, 2.86)	1.47 (.72, 3.00)	1.23 (.57, 2.63)	1.22 (.57, 2.64)
		Mental Health		
≤ ¥4,999,999	1.00	1.00	1.00	1.00
¥5,000,000–¥8,499,999	1.43 (.74, 2.76)	1.51 (.77, 2.93)	1.32 (.66, 2.65)	1.32 (.66, 2.65)
≥ ¥8,500,000	1.25 (.66, 2.36)	1.32 (.69, 2.55)	1.04 (.52, 2.10)	1.04 (.52, 2.11)
Education				
		Overall Health		
Below university degree ^d	1.00	1.00	1.00	1.00
University (Bachelor's degree) or higher	1.44 (.80, 2.60)	1.43 (.79, 2.60)	1.55 (.84, 2.87)	1.54 (.83, 2.86)
		(Education Not Entered for Mental Health)		
Employment status				
		Overall Health		
Unemployed ^e	1.00	1.00	1.00	1.00
Employed, part-time or full-time	1.08 (.55, 2.11)	1.10 (.56, 2.17)	1.17 (.59, 2.34)	1.16 (.58, 2.33)
		(Employment Status Not Entered for Mental Health)		
Sexual violence/abuse in Japan				
		Overall Health		
Never		1.00	1.00	1.00
1 or more times		.79 (.42, 1.49)	1.004 (.51, 1.98)	1.01 (.51, 2.02)
		Mental Health		
Never		1.00	1.00	1.00
1 or more times		.74 (.39, 1.39)	.81 (.42, 1.59)	.86 (.44, 1.68)

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

Sexual orientation	Overall Health		
Heterosexual/ straight	1.00		1.00
All other sexual orientations	.48 (.23, .996)		.48 (.23, .992)
	Mental Health		
Heterosexual/ straight	1.00		1.00
All other sexual orientations	.82 (.41, 1.66)		.80 (.39, 1.61)
Marital/partner status	Overall Health		
Married in heterosexual marriage	1.00		1.00
Single and never married	.83 (.35, 1.95)		.82 (.35, 1.94)
Divorced or widowed, and single	.23 (.06, .88)		.24 (.06, .91)
All other mari- tal/partner sta- tuses	.56 (.10, 3.62)		.60 (.10, 3.70)
	Mental Health		
Married in heterosexual marriage	1.00	1.00	1.00
Single and never married	.60 (.26, 1.39)		.59 (.25, 1.37)
Divorced or widowed, and single	.28 (.08, .992)		.31 (.09, 1.11)
All other mari- tal/partner sta- tuses	1.90 (.21, 17.53)		2.10 (.23, 19.48)
Gender	Overall Health		
Man			1.00
Woman			.93 (.10, 3.70)
	Mental Health		
Man			1.00
Woman			.68 (.36, 1.25)

Note. **Bold** indicates statistical significance at $p < .05$. AOR: adjusted odds ratio. CI: confidence interval. Except for Age, which is a continuous variable, AOR = 1.00 indicates the referent category.

^a Dependent variables were dichotomized to poor/fair vs. good/very good/excellent. Statistics refer to the odds of reporting good/very good/excellent. ^b To stabilize the hierarchically-sequenced logistic regressions, with Gender included, data from the one transgender participant were removed—thus $n = 257$. ^c All eight independent and control variables were run on self-rated overall health; however, analysis of self-rated mental health did not include the education and employment status controls (see Methods). ^d Including junior college and trade school graduates, current university students, and all levels of education below these. ^e Including people looking for work and those not looking for various reasons (e.g., financially supported by parents with no need to find work; stay-at-home parent not looking for work; retired).

Model 1; and this held across the three models that followed. Age was not associated with mental health; and, as noted previously, education and employment status were withheld from the mental health models.

Model 2 added lifetime experience of sexual violence/abuse. Compared with participants who had not experienced sexual violence/abuse, those who had experienced it had lower odds of reporting good/very good/excellent overall health (OR = .79, [.42, 1.49]) and mental health (AOR = .74, [.39, 1.39]), but these results were not significant. Of the control variables, household income remained significant in this model: those in the middle tertile again had significantly higher odds of reporting good/very good/excellent overall health (**AOR = 2.22 [1.07, 4.62]**), but there was no significant association with self-rated mental health.

Model 3 added two of the substudy's main independent variables: sexual orientation and marital/partner status. Compared with heterosexual people, those with non-heterosexual orientations had significantly lower odds of reporting good/very good/excellent overall health (**AOR = .48 [.23, .996]**). People with non-heterosexual orientations also had lower odds of reporting good/very good/excellent mental health (AOR = .82 [.41, 1.66]), but this result was not significant.

Compared with married people in heterosexual marriages, participants who were divorced or widowed (and single) had significantly lower odds of rating both their overall health (**AOR = .23 [.06, .88]**) and mental health (**AOR = .28 [.08, .992]**) as good/very good/excellent. Other marital/partner status categories did not show significance with either dependent variable.

Model 4 added the third and last of the main independent variables: gender. Compared with men, women had slightly lower odds of reporting good/very good/excellent overall health (AOR = .93 [.10, 3.70]) and substantially lower odds of reporting good/very good/

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

excellent mental health (AOR = .68 [.36, 1.25]), but neither of these results were significant.

With self-rated overall health as the dependent variable, sexual orientation and marital/partner status remained significant in this final model. Compared with heterosexual people, those with non-heterosexual orientations had significantly lower odds of reporting good/very good/excellent overall health (AOR = .48 [.23, .992]). People with non-heterosexual orientations also had lower odds of reporting good/very good/excellent mental health (AOR = .80 [.39, 1.61]), but this result was not significant. Compared with married people in heterosexual marriages, participants who were divorced or widowed (and single) had significantly lower odds of rating their overall health as good/very good/excellent (AOR = .24 [.06, .91]). Divorced or widowed (and single) people also had lower odds of reporting good/very good/excellent mental health, but in this model, that relationship was not significant (AOR = .31 [.09, 1.11]). No other variables in the model demonstrated significance.

4. Discussion

In this substudy within a broader survey study of social determinants of health in Japan ($n = 258$), most participants (65.1%) rated their overall health as good/very good/excellent (i.e., the positive health condition in this analysis); and 63.6% reported their mental health was good/very good/excellent. However, a sizeable minority of participants—over one-third (34.9%)—rated their overall health as poor/fair (i.e., the negative health condition); and an even larger proportion (36.4%) rated their mental health as poor/fair.

These numbers fall between those reported in two relevant studies. Takahashi et al. (2020) analyzed data from 2013 to measure self-rated health in a nationwide survey in Japan. They asked specifically about “current health status” and dichotomized their 5-point scale as “poor/rather poor” (negative health condition) versus “neither good nor poor/good/very good” (positive health condition). They found that 30.0% of participants rated their health as “poor/rather poor.” At first glance, self-rated overall health in my substudy appears to compare a bit unfavorably with the ratings in Takahashi et al. However, with the inclusion of “fair” in my negative health condition (“poor/fair”), it stands to reason that I would capture a broader range of self-rated health, including people with slightly better perceived health. Thus, it would be expected that I would observe a larger proportion of the study sample at this level than Takahashi et al. did in their study. Contrastingly, Takahashi et al.’s use of “rather poor” in their negative health condition (“poor/rather poor”) skewed more strongly toward worse health, so they would be likely to capture a narrower range of self-rated health at the lower end and thus a smaller pro-

portion of their study sample. A more favorable comparison can be made with a study by Honjo et al. (2006). With data from 2002–2003, the researchers examined self-rated physical and mental health in four Japanese prefectures: Okayama, Kagoshima, Nagasaki, and Tochigi. Honjo et al. used the same scales as in my substudy and dichotomized the scales in the same way, but they found worse self-rated health: 48.3% of participants reported poor/fair physical health, and 41.3% reported poor/fair mental health.

On the surface, these comparisons suggest that self-rated health—whether explicitly described as “overall health,” “current health status,” or “physical health”—was better among survey respondents in Japan in 2024–2025 than more than 20 years before in 2002–2003; and it might have been a little worse than self-rated health from 11–12 years before in 2013, though this latter assertion is made with less confidence given the differences in phrasing and measurement across studies, as previously mentioned. Likewise, self-rated mental health seems to have improved somewhat since 2002–2003. Such comparative findings could represent real changes in people’s health over time; or they merely could reflect changes in perceptions of health based on shifts in social norms over time—or simply be an artifact of differences in sample characteristics in the studies under comparison, including age, gender distribution, and regions and prefectures captured in the research. Nevertheless, measures of self-rated health are commonly used in health research, and multiple studies have shown that they are strongly associated with health outcomes (Lee & Shankai, 2003; Bjorner et al., 1998), including chronic diseases (Yang et al., 2021), mental health (Mulsant et al., 1997; Yang et al., 2021), and mortality (Wuorela et al., 2020). So, self-rated health is important to track.

In this substudy, I tested three primary hypotheses. Based on analyses with the current sample, hypothesis test decisions are as follows:

Hypothesis 1: I was unable to reject the null hypothesis that gender would not be associated with self-rated overall health and mental health, meaning my hypothesis was not supported. Gender did trend in the predicted direction: in bivariate analysis, when compared with men, women had 9% lower odds of reporting good/very good/excellent overall health, 40% lower odds of reporting good/very good/excellent mental health, and were more likely to report poor/fair overall health and mental health. None of these findings were statistically significant, though the results with mental health approached significance. In multivariate analysis, while adjusting for key socio-demographic/economic control variables and all other covariates, women had 7% lower odds of reporting good/very good/excellent overall health than men and 64% lower odds of reporting good/very good/excellent mental health, but, again, neither result was significant.

Hypothesis 2: Results partially supported this hypothesis. In bivariate analysis, compared with heterosexual/straight participants, those with all other sexual orientations had 49% lower odds of reporting good/very good/excellent overall health and 27% lower odds

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

of reporting good/very good/excellent mental health; and they were more likely to report poor/fair overall health. In multivariate analysis, people with non-heterosexual orientations had 52% lower odds of reporting good/very good/excellent overall health than heterosexual people—a finding that was nearly identical (except for a miniscule difference in confidence intervals) in both models in which it was tested. All of these findings to this point were significant. However, whereas in both bivariate and multivariate analyses, sexual orientation trended in the predicted direction with self-rated mental health, those results were not significant.

Hypothesis 3: This hypothesis was almost fully supported. In bivariate analyses, compared with participants who were married in a heterosexual marriage, people who were divorced or widowed (and also single) had 81% lower odds of reporting good/very good/excellent overall health; and they were significantly more likely to report poor/fair overall health than people in any other marital/partner status category. Regarding mental health at the bivariate level: compared with people who were married in a heterosexual marriage, people who were divorced or widowed (and also single) had 75% lower odds of reporting good/very good/excellent mental health; and those who were single and never married had 44% lower odds of reporting good/very good/excellent mental health. Divorced/widowed (and single) participants were significantly more likely to report poor/fair mental health than people in any other marital/partner status category. These associations also generally held in multivariate analysis. For overall health, significance was maintained across both models in which the marital/partner status variable was included: those who were divorced or widowed (and single) had 76%–77% lower odds of rating their overall health as good/very good/excellent. For mental health, divorced or widowed (and single) participants had 72% lower odds of rating their mental health as good/very good/excellent in Model 3, which was significant; however, in Model 4, the adjusted odds ratio approached significance but did not meet the threshold.

I also tested secondary hypotheses that included exploratory independent variables beyond but highly relevant to the main independent variables. Hypotheses 4 and 5 included independent variables that were variants of the main four-category marital/partner status variable:

Hypothesis 4: The results partially supported this hypothesis. In bivariate analyses, being in a relationship legally recognized in Japan tracked in the predicted direction when tested with self-rated overall health, but the relationship was not significantly significant. The tests with self-rated mental health were significant: people *not* in a relationship legally recognized in Japan had 45% lower odds of reporting good/very good/excellent mental health and were significantly more likely to report poor/fair mental health. I also tested this variable in multivariate analysis, but it was not significant with either dependent variable.

Hypothesis 5: The results partially supported this hypothesis. Similar to the variable and results of Hypothesis 4, being in a committed relationship (regardless of legal recognition) was significantly associated with self-rated mental health: people who were *not* currently in this type of relationship had 49% lower odds of reporting good/very good/excellent mental health and were significantly more likely to report poor/fair mental health. However, this variable was not significantly associated with self-rated overall health in bivariate analysis or with either dependent variable in multivariate analysis.

In the current substudy sample, prevalences of perceived gender bias, sexual orientation bias, and experience of sexual violence/abuse in Japan were notably high. Hypotheses 6–8 included these variables. Perceived biases were tested only in bivariate analyses, but sexual violence/abuse was also included in the multivariate models (see Methods):

Hypotheses 6 and 7: I was unable to reject the null hypotheses that gender bias and sexual orientation bias would not be associated with the dependent variables. Both of these independent variables trended in the hypothesized direction with self-rated overall health, but they trended in the opposite direction to the hypothesis with self-rated mental health. None of these results were statistically significant.

Hypothesis 8: I was unable to reject the null hypothesis that sexual violence/abuse would not be associated with self-rated overall health and mental health. In both bivariate and multivariate analyses, lifetime experience of sexual violence or sexual abuse trended in the hypothesized direction but was not significantly associated with either dependent variable.

The null findings on gender were contrary to expectations grounded in theory. However, those results are not entirely surprising when women's longer life expectancy in Japan is considered (MHLW, 2025b), and in light of other research showing narrow differences between women and men on self-rated overall health and mental health that sometimes have not been statistically significant (e.g., Honjo et al., 2006; Tanaka et al., 2021; Takahashi et al., 2020).

Although there was adequate statistical power for the analyses undertaken in the current substudy, I did not have abundant power to spare. Bearing in mind that the independent variables generally trended in the hypothesized directions (with a few exceptions), variables that did not demonstrate significance might have done so if I had a larger analytic sample and, therefore, greater power.

Implications of this substudy include the negative effects of stubbornly problematic sociocultural contexts for sexual minorities (in spite of recent improvements) and the potentially cascading and enduring effects of grief and loneliness secondary to being widowed and divorced. However, more optimistically, the results showed the health-protective effects of being married—at least in a heterosexual marriage. There was also limited support for the protective effects, specifically on mental health, of being in a rela-

GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

tionship legally recognized in Japan and being in a committed relationship (regardless of legal recognition). Taken together, the various results on marital/partner status in this substudy suggest that the protection from poor health conferred by legally sanctioned relationships, including marriage, should be available to all people irrespective of sexual orientation and gender. It is my hope that mounting evidence to this effect across multiple studies in the research literature will move the Japanese government to make this issue a policy priority at the national level.

A final implication involves the null results on gender, which imply the possibility—at least in this modest sample—that the efforts of countless women and their allies of other genders to rectify the status quo on gender inequality have shown a positive effect on perceived health in Japan.

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GENDER, SEXUAL ORIENTATION, AND MARITAL/PARTNER STATUS

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