

Sociodemographic Determinants of Health and Well-Being Among Adults Residing in the Combined Kaiser Permanente Regions

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ABSTRACT

Context: Kaiser Permanente commissioned a health and well-being (HWB) survey of adult members and nonmembers in its 8 Regions.

Objective: To estimate the prevalence of HWB indicators and evaluate differences in prevalence of excellent/very good (E/VG) health and thriving overall in life (thriving) by race/ethnicity, age group, sex, education, and financial situation.

Design: Cross-sectional survey conducted by email and phone during Winter 2016-2017 with a racial/ethnic group-stratified quota sample. Participants (N = 26,304) provided sociodemographic characteristics and ratings for 6 HWB indicators. Using population-weighted data, we estimated the prevalence of HWB indicators and used logistic regression models to test for differences in E/VG health and thriving by sociodemographic factors.

Main Outcome Measures: Overall health and overall life evaluation.

Results: Of adults, 52% were in E/VG health and 63% were thriving. Blacks were less likely to be in E/VG health than whites, Hispanics, and Asian/Pacific Islanders, but there was little racial/ethnic variation in those who were thriving. E/VG health and thriving varied significantly by level of education and financial situation. Across all racial/ethnic groups, large differences in percentages were observed in E/VG health and thriving between the lowest and highest levels of education and financial situation but little racial/ethnic variation within education and financial situation strata.

Conclusion: Differences in health status and life evaluation are associated very strongly with financial situation and educational attainment, and these social determinants partially explain racial/ethnic disparities in HWB. The lack of strong correlation of health status and life evaluation suggests these are different domains of well-being.

INTRODUCTION

The Kaiser Permanente (KP) mission is to provide high-quality, affordable health care services and to improve the health of its members and the communities it serves. The organizational vision asserts KP's commitment to total health, which is grounded in a shared belief that total health extends beyond freedom from physical affliction to incorporate mind, body, and spirit. In support of KP's strategy, the Member and Community Health and Well-Being Survey (HWBS) was conducted during Winter 2016-2017 as a baseline assessment of member and community health and well-being (HWB) in the geographic areas covered by the 8 KP Regions.

The HWBS is adapted from an instrument developed by the measurement team for the 100 Million Healthier Lives (100 Million Healthier Lives) initiative, led by the Director of the KP Care Management Institute Center for Population

Health and supported by the Institute for Healthcare Improvement.¹ The 100 Million Healthier Lives measurement team was charged with defining and measuring "healthier lives." After extensive review of the literature and consultation with experts, the team adapted the World Health Organization's definition of *health* ("a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity"²) to include the dimension of spiritual well-being. Following Evans and Stoddart,³ who postulated that health is a component of the broader construct of well-being rather than equivalent to it, overall well-being was conceptualized as comprising physical and mental health and social and spiritual well-being.¹ Through a literature review, the team identified measures that had been validated in multiple populations and developed a brief assessment questionnaire to operationalize the HWB constructs. A version of the resulting

questionnaire was used for the HWBS. A slightly different version of the questionnaire is also being used by the Veterans Administration and communities around the country as part of the 100 Million Healthier Lives campaign.

In this article, we 1) describe the HWBS and report survey results from more than 26,000 members and nonmembers across the 8 KP Regions; 2) provide evidence that overall health status and evaluation of overall life are different domains of well-being; 3) examine how the indicators of excellent/very good (E/VG) health and thriving in life (thriving) differ by age group, sex, race/ethnicity, educational attainment, and perceived financial situation; and 4) demonstrate that racial/ethnic differences in educational attainment and financial situation partially explain population-level racial/ethnic differences in well-being.

METHODS

Study Sample

The final survey respondent sample included 26,304 English-speaking adult members and nonmembers aged 18 years and older residing in one of the KP geographic Regions (Colorado, Georgia, Hawaii, Mid-Atlantic States, Northern California, Northwest, Southern California, and Washington). A quota-driven sampling scheme was used to collect information from approximately 3200 people in each Region, including a target of at least 400 members and 400 nonmembers from each of 4 racial/ethnic

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groups (white, black, Hispanic, Asian/Pacific Islander). The Kaiser Foundation Research Institute's National Compliance Officer determined that this study was not human subjects research and was exempted from review by KP's institutional review board.

Data Collection

The HWBS was administered by an independent vendor who was contracted to provide a de-identified dataset for analysis. The vendor received a database of names, email addresses, phone numbers, and race/ethnicity for a Region-stratified random sample of 294,072 KP members, with proxy identifiers substituted for medical record numbers. Group Health Cooperative (Group Health), which was not yet officially part of KP at the time of the survey, provided a separate dataset of 30,000 members containing the same information. Inclusion criteria included: 1) registration on the KP or Group Health member portal, 2) at least 18 years of age, and 3) English as the primary language. The vendor recruited nonmember respondents primarily from commercial online panels representative of the population. In addition to the age and English-language criteria, nonmember respondents were required to have health insurance.

The survey was conducted from December 2016 to March 2017. Members were sent an email by the vendor indicating that KP or Group Health had engaged the vendor to conduct the survey in support of its mission to improve the health of its members and communities and that their responses would be kept strictly confidential by the vendor and not shared with KP or Group Health in a way that could identify them. A subsample of 10% of members from each racial/ethnic group in each Region was contacted to complete the survey via phone interview to enable assessment of response mode bias. Nonmembers were sent a similar email that did not identify KP or Group Health as the survey sponsor. When regional race/ethnicity quotas for nonmember respondents were not achieved through online panels, the vendor used random-digit dialing phone sampling to attempt to meet quotas via

phone interview. Nonmembers participating as part of an online research panel received a modest financial incentive for completing an online or telephone survey on the basis of their contractual arrangements with the panel vendor. Members and those contacted by phone received no financial incentive. For the online survey, up to 8 email blasts were sent to the online member and nonmember panels. For phone surveys, up to 6 calls were attempted before seeking another participant. Once the racial/ethnic group quota for a survey sample cell (eg, KP, blacks) was met, recruitment for that cell ended.

Most (82.2%) of the surveys were completed online, with significantly lower online completion by nonmembers. The response rate was slightly higher for the online survey than for the phone survey. The overall response rate using the 2 data collection modes and after excluding ineligible respondents was approximately 25%.

Measures

The survey was designed to take approximately 5 minutes to complete online and less than 10 minutes to complete as a phone interview. The questionnaire included questions about sociodemographic characteristics and 9 validated items measuring different dimensions of HWB (Appendix A, available from: www.thepermanentejournal.org/files/2019/18-091-App.pdf).

Sociodemographic Characteristics

Respondents were asked to provide information about age, gender (male, female, transgender, other), Hispanic ethnicity (yes/no), what best described their race (white, black, Asian/Pacific Islander, or other, with multiple options allowed), and the highest level of education completed. Age was categorized as 18 to 44 years (younger adults), 45 to 64 years (middle-aged adults), and 65 years and older (older adults). The vendor assigned respondents to 1 of 4 racial/ethnic groups on the basis of their response to race/ethnicity questions. Those who indicated Hispanic ethnicity were classified as Hispanic irrespective of racial identity. Respondents were classified as Asian/Pacific Islander if they identified themselves as Asian/Pacific Islander but

not as Hispanic, as black if they identified themselves as black but not as Hispanic or Asian/Pacific Islander, and as white if they identified themselves only as white. Education was categorized as less than high school graduate (11th grade or lower), high school graduate (12th grade or general equivalency diploma [GED]), some college (1-3 years of college or technical school), or college graduate (bachelor's degree or ≥ 4 years of college). Because of the small number in the less than high school graduate category, the bottom 2 categories were combined into high school graduate or lower in the analysis. When age or sex data were missing or sex was other than male or female, values were imputed so that the correct weighting factor could be assigned. However, because there were not enough transgender people to identify separately in the analysis, analyses by sex were restricted to self-reported male and female.

Health and Well-Being Indicators: Overall Life Evaluation

Two similar items were used to create the Cantril Self-Anchoring Striving Scale used in the Gallup-Healthways (now Gallup-Sharecare) Well-Being Index.⁴ Individuals were asked to separately rate their current life and their anticipated life in 5 years on a ladder scale from 0 to 10, with 0 representing the worst possible life and 10 representing the best possible life. Following Gallup's algorithm,⁵ respondents who rated their current life as 7 or higher and their anticipated life as 8 or higher were classified as thriving. Those who rated both their current and anticipated life in the 0 to 4 range were classified as suffering. Those who did not fall into either category were classified as struggling. We calculated mean scores for each racial/ethnic group for current, anticipated, and overall life evaluation. We also calculated mean scores for a measure of optimism (difference between an individual's ratings of anticipated and current life).

Physical and Mental Health

Four items comprising the Health-Related Quality of Life-4 (HRQoL-4) assessment used in federal health surveys such as the Behavioral Risk Factor Surveillance System⁶ were included to assess health. A single item assessed overall

health on a scale of excellent, very good, good, fair, or poor, and responses were categorized as E/VG, good, or fair/poor. Additional items asked about the number of days in the past 30 days that the participant's physical health and mental health were not good and that usual activity was limited because of poor physical or mental/emotional health.

Social Well-being

Social well-being was conceptualized as having 2 components: Perceived financial situation and social support. Financial situation was assessed with the Cantril's ladder scale item (worst and best possible financial situation) used by Porter and Garman.⁷ We categorized respondents as thriving financially for ratings of 7 to 10, struggling financially for ratings of 5 to 6, and suffering financially for ratings of 0 to 4. Social support was assessed using a 5-point scale assessing how often respondents received the social and emotional support they need,⁸ with "usually" or "always" classified as high support, "sometimes" as fair support, and "never" or "rarely" as low support.

Spiritual Well-being

Participants were asked how strongly they agreed or disagreed with the statement "I lead a purposeful and meaningful life."⁹ They were classified as high on spiritual well-being if they indicated "agree" or "strongly agree," moderate if they indicated "somewhat agree" or "neither agree or disagree," and low if they disagreed.

Weighting of Survey Data to the Population

Respondents' data were assigned Region-specific population weighting factors to reflect the age, sex, and racial/ethnic composition of the population to which we wanted to generalize the results. Region-specific population weighting factors for members were derived from the number of members in the 2 sex groups, 3 age groups, and 4 racial/ethnic groups in each Region. Weighting factors for nonmembers in each Region were derived from 2010 US Census Bureau data about the numbers of adults in the same sex, age, and racial/ethnic groups in the geographic catchment area for that Region after excluding KP members. Thus, in Regions, the combined weighted

member and nonmember respondent samples reflected the demographic composition of adults in the total Region on the basis of census data. Further assessment indicated that the weighted respondent samples closely approximated the true number and age, sex, and racial/ethnic distribution of members and nonmembers in each Region, on the basis of internal and census data.

Data Analysis

Data were analyzed using SAS statistical software Version 9.3 (SAS Institute Inc, Cary, NC)¹⁰ procedures for data obtained from complex survey designs. All analyses were conducted with weighted data. Sociodemographic and HWB characteristics of the study population were

summarized with descriptive statistics. Correlation analysis was used to assess the association of the overall health status and overall life evaluation indicators, with strength of association characterized as weak ($r < 0.39$), moderate ($r = 0.40-0.59$), or strong ($r < 0.60$).¹¹

Differences in sociodemographic characteristics by race/ethnicity were assessed using logistic regression models and Wald χ^2 tests, and racial/ethnic differences in mean life evaluation and optimism were assessed by linear regression and t -tests. Differences in the lower and upper categories of overall health and overall life evaluation by sociodemographic factors were assessed using logistic regression with Wald χ^2 tests. Multivariable logistic regression models tested for racial/ethnic

Table 1. Characteristics of study sample^a

Characteristics	All, N ^b (wtd %)	White, no. (wtd %)	Black, no. (wtd %)	Hispanic, no. (wtd %)	Asian/Pacific Islander, no. (wtd %)
Age, y					
18-44	10,189 (49.3)	2460 (39.2)	1842 (48.9) ^c	3208 (65.0) ^c	2679 (52.6) ^c
45-64	8827 (33.4)	3119 (35.9)	1902 (35.7)	1733 (27.9)	2073 (34.2)
≥ 65	7288 (17.3)	3648 (24.8)	1219 (15.4) ^c	969 (7.1) ^c	1452 (13.2) ^c
Sex					
Men	10,254 (48.8)	3928 (54.4)	1667 (40.0) ^c	2120 (42.3) ^c	2539 (51.2)
Women	15,805 (50.3)	5235 (45.6)	3249 (58.8)	3714 (56.7)	3607 (48.2)
Transgender	113 (0.7)	33 (0.7)	26 (1.0)	30 (0.8)	24 (0.5)
Other	54 (0.2)	17 (0.1)	11 (0.2)	18 (0.2)	8 (0.1)
Race/ethnicity					
White	9227 (48.0)	9227 (—)	—	—	—
Black	4963 (10.8)	—	4963 (—)	—	—
Hispanic	5910 (28.4)	—	—	5910 (—)	—
Asian/Pacific Islander	6204 (12.9)	—	—	—	6204 (—)
Education					
< HS graduate	876 (3.5)	178 (2.1)	170 (3.7) ^d	359 (6.7) ^c	169 (2.0)
HS graduate	3572 (13.6)	1113 (10.9)	760 (17.3)	1139 (19.6)	560 (7.0)
Some college	7986 (30.1)	2675 (27.8)	1872 (35.4)	2047 (37.1)	1392 (18.8)
≥ 4 years of college or college graduate	13,661 (52.8)	5214 (59.2)	2125 (43.6) ^c	2303 (36.6) ^c	4019 (72.2) ^c
Financial situation					
Suffering	3711 (15.6)	1221 (14.6)	863 (18.9) ^c	893 (17.5) ^d	734 (12.7)
Struggling	6449 (23.0)	2065 (21.6)	1302 (25.7)	1533 (23.3)	1549 (25.2)
Thriving	16,144 (61.4)	5941 (63.8)	2798 (55.3) ^c	3484 (59.1) ^d	3921 (62.0)

^a Data are weighted to the study population. Comparisons of blacks, Hispanics, and Asian/Pacific Islanders with whites were made on the following characteristics: Percentages of younger adults and older adults, men, less than HS graduate and college graduate, and suffering and thriving financially.

^b Total N = 26,304, but 78 people were missing data for sex and 203 were missing data for education.

^c Differs from reference group at $p < 0.001$.

^d Differs from reference group at $p < 0.01$.

HS = high school; wtd = weighted.

differences in E/VG health and thriving after controlling first for age group and sex (Model 1), then for age group, sex, education, and financial situation (Model 2). Reference groups used in all statistical comparisons were age 18 to 44 years, men, white, college graduate, and thriving financially. All logistic regression models excluded respondents missing sex and/or education data ($\leq 1.41\%$ of weighted sample). Logistic regression model fit was assessed using C statistics; values of 0.70 or higher and more than 0.80 respectively indicate good and strong model fit.¹² Age- and sex-standardized comparisons of racial/ethnic groups were done using the Proc Surveyreg procedure (SAS software version 9.3, SAS Institute Inc, Cary, NC) recommended by the Centers for Disease Control and Prevention.¹³ This procedure standardized the weighted estimates for each racial/ethnic group to the same 2010 census age group and sex distribution of adults aged 20 years or older; a second step assessed the statistical significance of differences between racial/ethnic groups and between different strata within racial/ethnic groups.

RESULTS

Characteristics of Study Sample

Table 1 shows that 50.8% of the study participants were women and 49.3% were aged 18 to 44 years (younger adults), 33.4% aged 45 to 64 (middle-aged), and 17.3% aged 65 and older. The racial/ethnic distribution was 48.0% white, 10.8% black, 28.4% Hispanic, and 12.9% Asian/Pacific Islander (Asian/Pacific Islander). More than half (52.8%) were college graduates, and 61.4% were thriving financially. Whites were more likely than blacks, Hispanics, and Asian/Pacific Islanders to be older adults ($p < 0.001$). Blacks and Hispanics were less likely and Asian/Pacific Islanders were more likely than whites to be college graduates ($p < 0.001$ for both). Blacks ($p < 0.001$) and Hispanics ($p < 0.01$) were less likely than whites to be thriving financially and more likely to be suffering financially.

Just over half (52%) of adults assessed their health as E/VG and 35% as good (Figure 1). Sixty-three percent reported they were thriving, 35% were struggling, and 2% were suffering. The distributions

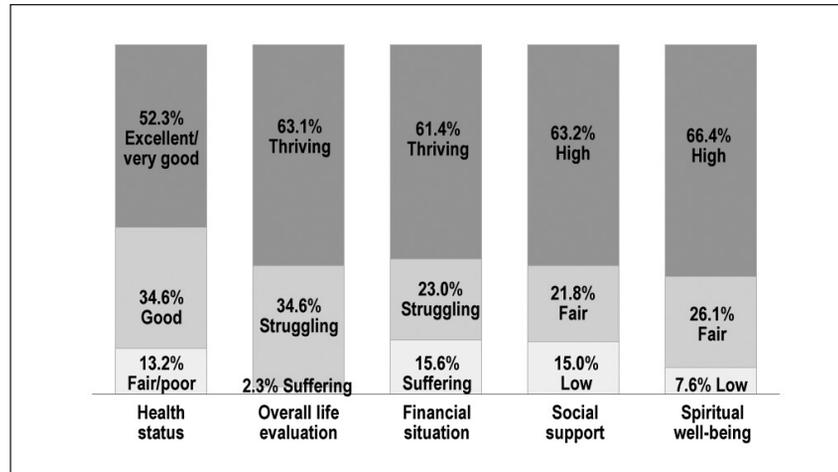


Figure 1. Population distribution of 5 health and well-being indicators

Table 2. Rating of health and life evaluation by sociodemographic factors, weighted percentage (95% margin of error)^a

Factors	Health			Overall life evaluation		
	Fair/poor	Good	Excellent/very good	Suffering	Struggling	Thriving
All	13.2 (0.7)	34.6 (1.0)	52.6 (1.1)	2.3 (0.3)	34.6 (1.0)	63.1 (1.0)
Age, y						
18-44	10.1 (0.9)	32.9 (1.4)	57.0 (1.5)	1.4 (0.3)	33.2 (1.4)	65.4 (1.4)
45-64	15.9 (1.4) ^b	35.9 (1.9)	48.1 (2.0) ^b	3.2 (0.7) ^b	35.1 (1.9)	61.7 (1.9) ^c
≥ 65	16.7 (1.9) ^b	36.7 (2.7)	46.6 (2.8) ^b	3.2 (0.9) ^b	37.7 (2.6)	59.1 (2.7) ^b
Sex^d						
Men	11.8 (1.1)	33.2 (1.6)	55.0 (1.7)	2.3 (0.5)	32.9 (1.6)	64.8 (1.6)
Women	14.2 (1.0)	35.7 (1.3)	50.1 (1.4) ^b	2.2 (0.4)	36.0 (1.3)	61.8 (1.3) ^c
Race/ethnicity						
White	12.5 (1.0)	32.0 (1.5)	55.5 (1.5)	2.8 (0.5)	34.8 (1.5)	62.4 (1.5)
Black	15.7 (1.5) ^b	39.8 (2.2)	44.5 (2.2) ^b	1.6 (0.5) ^c	35.0 (2.1)	63.3 (2.1)
Hispanic	14.3 (1.7)	35.5 (2.4)	50.2 (2.5) ^b	1.9 (0.7) ^e	33.6 (2.4)	64.5 (2.4)
Asian/Pacific Islander	11.1 (1.2)	37.6 (2.0)	51.3 (2.0) ^b	1.9 (0.5) ^e	36.0 (1.9)	62.1 (2.0)
Education						
High school graduate or less	21.3 (2.1) ^b	42.3 (2.7)	36.4 (2.6) ^b	3.8 (1.0) ^b	41.8 (2.7)	54.4 (2.7) ^b
Some college	16.5 (1.5) ^b	38.3 (2.0)	45.3 (2.0) ^b	2.9 (0.7) ^b	39.6 (2.0)	57.4 (2.0) ^b
≥ 4 years college or college graduate	8.7 (0.8)	29.9 (1.3)	61.4 (1.4)	1.5 (0.3)	29.4 (1.4)	69.1 (1.4)
Financial situation						
Suffering	33.8 (2.6) ^b	39.7 (2.7)	26.4 (2.4) ^b	11.9 (1.8) ^b	69.9 (2.6)	19.2 (2.2) ^b
Struggling	18.1 (1.7) ^b	42.7 (2.1)	39.2 (2.1) ^b	1.2 (0.5) ^b	57.1 (2.1)	41.8 (2.1) ^b
Thriving	6.1 (0.7)	30.2 (1.3)	63.7 (1.4)	0.3 (0.2)	17.5 (1.1)	82.2 (1.1)

^a Data are weighted to the study population. Differences in percentages of adults who were in excellent/very good health, fair/poor health, suffering in life, and thriving in life were tested for age group (reference group: 18-44 y), sex (reference group: Men), race/ethnicity (reference group: White), education (reference group: College graduate), and financial situation (reference group: thriving).

^b Differs from reference group at $p < 0.001$.

^c Differs from reference group at $p < 0.01$.

^d Because there were not enough transgender people to identify separately in the analysis, analyses by sex were restricted to men and women.

^e Differs from reference group at $p < 0.05$.

across categories for both the financial situation and social support indicators were similar, with approximately 60% in the highest category and 15% in the lowest category. The distribution across categories of spiritual well-being was slightly wider, with 66% in the highest category, 26% in the middle category, and approximately 8% in the lowest category. Seventy-five percent of adults rated their current life in the 7 to 10 range, 18% as 5 or 6, and 7% in the 0 to 4 range (data not shown); 72% rated their anticipated life in the 8 to 10 range; 23%, in the 5 to 7 range; and 5%, in the 0 to 4 range (data not shown).

Health Status and Life Evaluation by Sociodemographic Factors

Reported health status varied by age, race/ethnicity, financial situation, and educational level. Younger adults were more likely than middle-aged and older adults to report E/VG health and less likely

to report fair/poor health ($p < 0.001$, Table 2). Blacks, Hispanics, and Asian/Pacific Islanders were less likely than whites to report E/VG health ($p < 0.001$), and whites were less likely than blacks to report fair/poor health ($p < 0.001$). The proportion of adults reporting E/VG health increased with financial situation and educational level, a relationship that appeared more pronounced for the former.

Across all age, sex, racial/ethnic groups, and educational levels, less than 4% of adults were suffering, and approximately 35% and 60%, respectively, were struggling and thriving. Younger adults were more likely than middle-aged and older adults to be thriving and less likely to be suffering ($p < 0.001$). Men were more likely than women to be thriving ($p < 0.01$), but suffering did not vary by sex. No significant differences in thriving by race/ethnicity were observed. Differences in thriving across levels of financial situation

were larger than those observed for E/VG health. There was no difference in thriving between respondents at the 2 lowest levels of education and only a modest difference between respondents at those levels and college graduates.

Sociodemographic Factors as Predictors of Excellent/Very Good Health and Thriving

Table 3 shows the results of the logistic regression models evaluating the independent contributions of sociodemographic factors to predicting E/VG health and thriving. Each outcome was first separately modeled using age, sex, and race ethnicity (Model 1) before adding education and financial situation (Model 2). For both E/VG health and thriving, relationships between age group, sex, and race/ethnicity observed in bivariate analyses did not change after simultaneously controlling for these factors; C statistics were moderate at 0.57 for E/VG health and 0.53 for thriving. Respondents without a college degree were less likely than college graduates to have E/VG health and be thriving. Similarly, those who were suffering or struggling financially were less likely than those who were thriving financially to have E/VG health and be thriving in life. Adding education and financial situation to the E/VG health model reduced or eliminated differences related to age group and sex, reduced differences for blacks and Asian/Pacific Islanders compared with whites, and increased the difference between Hispanics and whites. Adding education and financial situation to the thriving model reduced the age group difference, reversed the sex difference, and made differences between blacks and Asian/Pacific Islanders and whites statistically significant ($p < 0.01$ and $p < 0.05$, respectively). C statistics for Model 2 were 0.69 for E/VG health and 0.78 for thriving. In an additional analysis, adding financial situation alone to Model 1 for E/VG health and thriving resulted in C statistics that approximated those of Model 2 for each, whereas adding education alone resulted in little improvement over the first models (data not shown).

Figure 2 shows age and sex-standardized prevalence estimates of E/VG health

Table 3. Multivariable logistic regression models of excellent/very good health and thriving overall in life, odds ratios (95% confidence intervals)

Factors	Excellent/very good health		Thriving overall in life	
	Model 1	Model 2	Model 1	Model 2
Age, y				
18-44	Reference	Reference	Reference	Reference
45-64	0.65 (0.59-0.72) ^a	0.59 (0.53-0.66) ^a	0.84 (0.75-0.93) ^a	0.70 (0.61-0.79) ^a
≥ 65	0.59 (0.51-0.67) ^a	0.48 (0.41-0.55) ^a	0.75 (0.66-0.86) ^a	0.46 (0.39-0.54) ^a
Sex^b				
Men	Reference	Reference	Reference	Reference
Women	0.82 (0.75-0.89) ^a	0.96 (0.87-1.06)	0.86 (0.78-0.94) ^c	1.14 (1.02-1.27) ^d
Race/ethnicity				
White	Reference	Reference	Reference	Reference
Black	0.69 (0.62-0.77) ^a	0.77 (0.68-0.86) ^a	0.99 (0.88-1.11)	1.19 (1.04-1.37) ^d
Hispanic	0.77 (0.68-0.87) ^a	0.87 (0.77-0.99) ^d	1.03 (0.90-1.16)	1.13 (0.97-1.32)
Asian/Pacific Islander	0.81 (0.73-0.90) ^a	0.73 (0.65-0.82) ^a	0.90 (0.80-1.00)	0.84 (0.74-0.96) ^c
Education				
≥ 4 years of college or college graduate	—	Reference	—	Reference
Some college	—	0.63 (0.57-0.71) ^a	—	0.84 (0.74-0.96) ^c
High school graduate or less	—	0.43 (0.38-0.50) ^a	—	0.73 (0.63-0.85) ^a
Financial situation				
Thriving	—	Reference	—	Reference
Struggling	—	0.36 (0.33-0.41) ^a	—	0.14 (0.13-0.16) ^a
Suffering	—	0.22 (0.19-0.25) ^a	—	0.05 (0.04-0.05) ^a

^a $p < 0.001$.
^b Because there were not enough transgender people to identify separately in the analysis, analyses by sex were restricted to men and women.
^c $p < 0.01$.
^d $p < 0.05$.

and thriving for racial/ethnic groups, stratified by education and financial situation. E/VG health varied by race/ethnicity only for respondents with at least some college. Among respondents with at least some college, blacks were significantly less likely than whites to have E/VG health and be thriving (35.8% vs 48.6% and 55.0% vs 65.0%, respectively; $p < 0.001$ for both). Asian/Pacific Islanders who were college graduates were significantly less likely than whites to have E/VG health (54.7% vs 65.0%, $p < 0.001$). No racial/ethnic group differences in E/VG health were observed among those who were suffering financially. However, blacks, Hispanics, and Asian/Pacific Islanders who were struggling or thriving financially were significantly less likely than whites to report E/VG health (30.8%, 35.7%, and 37.0% vs 43.2%, and 57.8%, 62.5%, and 59.8% vs 68.2%, respectively; $p < 0.05$ for all).

Among college graduates, blacks and whites did not differ on thriving. However, among those with no postsecondary education, blacks were more likely than whites to be thriving (59.2% vs 50.8%, $p < 0.01$), as were blacks with some college (59.0% vs 53.2%, $p < 0.05$). Hispanics with some college were more likely than whites to be thriving (66.0% vs 53.2%, $p < 0.001$). Asian/Pacific Islanders who were college graduates were less likely than whites to be thriving (65.5% vs 69.8%, $p < 0.01$). Blacks were more likely than whites to be thriving in life at the levels of financially suffering (22.7% vs 16.5%, $p < 0.05$) and financially thriving (86.0% vs 81.9%, $p < 0.01$). Asian/Pacific Islanders who were struggling financially were less likely than whites to be thriving (34.5% vs 40.4%, $p < 0.01$). Hispanics and whites did not differ on the thriving by financial situation.

For all racial/ethnic groups, E/VG health and thriving prevalence varied substantially by level of education and financial situation (Figure 2). In comparison to college graduates, the prevalence of E/VG health among those with a high school education or less was approximately 30 percentage points lower for whites and 17, 26, and 22 percentage points lower for blacks, Hispanics, and Asian/Pacific Islanders, respectively. Disparities in the prevalence of E/VG health by financial

situation were even greater. The difference in prevalence of E/VG health between those thriving financially and those suffering financially was approximately 40 percentage points for whites and Hispanics, 34 percentage points for blacks, and 27 percentage points for Asian/Pacific Islanders. Differences within racial/ethnic groups in prevalence of thriving between those with a high school education or less and college graduates ranged from 11 percentage points among blacks to 19 percentage points among whites. In contrast, differences within racial/ethnic groups in prevalence of thriving between those who were financially suffering and financially thriving ranged from 50 to 64 percentage points.

We also compared racial/ethnic groups on mean ratings of current and anticipated life and optimism about the future using

age- and sex-standardized data (Table 4). All groups had similar mean ratings for current life. However, the mean rating for anticipated life was higher for blacks and Hispanics than for whites and Asian/Pacific Islanders. Optimism among blacks was greater than among whites, Hispanics, and Asian/Pacific Islanders, and optimism among Hispanics was also greater than among whites and Asian/Pacific Islanders.

Finally, we examined the relationship between overall health and overall life evaluation measures. They were not strongly correlated ($r = 0.38$), suggesting that they represent different dimensions of overall well-being. We also studied the effect of entering health status and overall life evaluation into the full sociodemographic logistic regression models (Model 2). Compared with adults in E/VG health,

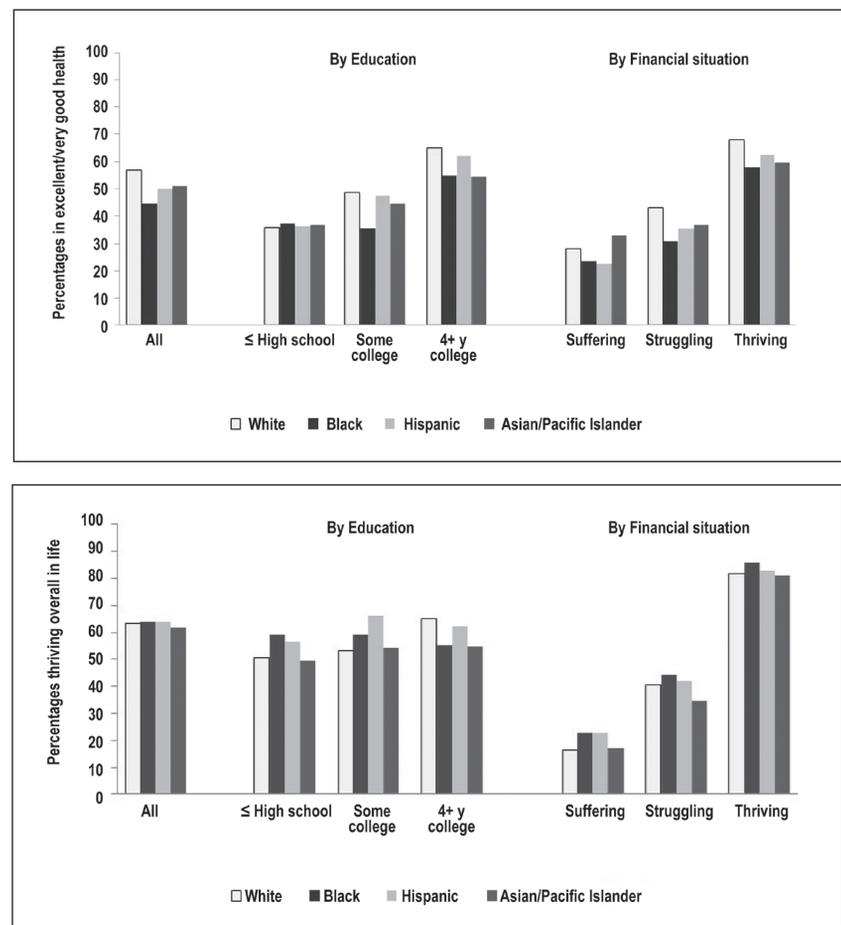


Figure 2. Prevalence of excellent/very good health and thriving in life by race/ethnicity, stratified by education and financial situation

those in good health (odds ratio = 0.43, 95% confidence interval = 0.38-0.48) or fair/poor health (odds ratio = 0.22, 95% confidence interval = 0.18-0.26) were less likely to be thriving. Similarly, compared with adults who were thriving, those who were suffering or struggling were less likely (odds ratio = 0.37, 95% confidence interval = 0.33-0.41) to be in E/VG health. However, model fit did not improve in either case (Table 5).

DISCUSSION

In a survey of a geographically and racially/ethnically diverse population of US adults in the 8 Regions served by KP, we found that most adults were doing well on indicators of HWB. Approximately half the population reported E/VG health, and more than 60% were thriving, thought their financial situation was good, usually got enough social and emotional support, and felt their life was purposeful and meaningful.

We benchmarked our survey results for health status against state-level data from the 2016 Behavioral Risk Factor Surveillance Survey (BRFSS)¹⁴ and benchmarked overall life evaluation against state-level data from the 2016 Gallup-Sharecare Well-Being Survey (GSWBS),¹⁵ restricting our analyses of national survey data to adults in the states where KP Regions are located. A similar percentage of adults were in E/VG health in the HWBS and the BRFSS. The percentage of adults who were thriving in the HWBS was higher than in the GSWBS (63% vs 56%); both surveys reported a similarly low percentage of adults who were suffering.

The relationships of sociodemographic characteristics to overall health in the HWBS were similar to those found in the BRFSS; younger adults were more likely to report E/VG health than were middle-aged and older adults, with no significant differences between the 2 latter groups. Adults with some college or a college degree were significantly more likely than adults with less education to be in E/VG health, although the percentage of adults in the HWBS with some college who rated their health as E/VG was lower than in the BRFSS. Our financial situation measure differs from the BRFSS household income measure, but we

Table 4. Mean ratings of current life, anticipated life in 5 years, and optimism, by race/ethnicity, mean (95% confidence interval)^a

Race/ethnicity	Current life	Anticipated life	Optimism about future
All	7.43 (7.39-7.47)	8.04 (8.00-8.08)	+ 0.61 (0.58-0.64)
White	7.45 (7.39-7.51) ^b	7.96 (7.91-8.02) ^c	+ 0.51 (0.47-0.56) ^c
Black	7.34 (7.26-7.43) ^d	8.33 (8.25-8.41) ^e	+ 0.99 (0.91-1.06) ^e
Hispanic	7.47 (7.37-7.58)	8.16 (8.06-8.26) ^{c,e}	+ 0.69 (0.61-0.77) ^{c,e}
Asian/Pacific Islander	7.37 (7.29-7.44)	7.86 (7.79-7.93) ^c	+ 0.49 (0.44-0.55) ^c

^a All means are based on weighted data that were age- and sex-standardized to the 2010 US adult population.

^b Differs from blacks at p < 0.05.

^c Differs from blacks at p < 0.001.

^d Differs from whites at p < 0.05.

^e Differs from whites at p < 0.001.

+ = overall, the group anticipated that their life would be better in the future.

Table 5. Model 2 for excellent/very good health without and with health status and for thriving without and with overall life evaluation, odds ratio (95% confidence interval)

Characteristic	Excellent/very good health		Thriving overall in life	
	Model 2 ^a	With overall life evaluation	Model 2 ^a	With health status
Age, y				
18-44	Reference	Reference	Reference	Reference
45-64	0.60 (0.53-0.66) ^b	0.62 (0.56-0.69) ^b	0.70 (0.61-0.79) ^b	0.80 (0.70-0.91) ^b
≥ 65	0.47 (0.41-0.54) ^b	0.53 (0.46-0.61) ^b	0.46 (0.40-0.54) ^b	0.55 (0.47-0.65) ^b
Sex^c				
Men	Reference	Reference	Reference	Reference
Women	0.96 (0.88-1.06)	0.93 (0.85-1.03)	1.14 (1.02-1.27) ^d	1.15 (1.03-1.29) ^d
Race/ethnicity				
White	Reference	Reference	Reference	Reference
Black	0.70 (0.63-0.79) ^b	0.73 (0.65-0.83) ^b	1.30 (1.14-1.49) ^b	1.30 (1.13-1.50) ^b
Hispanic	0.82 (0.72-0.94) ^b	0.85 (0.74-0.97) ^d	1.16 (0.98-1.37)	1.19 (1.01-1.41) ^d
Asian/Pacific Islander	0.70 (0.62-0.78) ^b	0.74 (0.66-0.84) ^b	0.87 (0.77-0.99) ^d	0.89 (0.78-1.02)
Education				
≥ 4 years of college or college graduate	Reference	Reference	Reference	Reference
Some college	0.63 (0.57-0.71) ^b	0.64 (0.57-0.72) ^b	0.84 (0.74-0.96) ^c	0.94 (0.82-1.08)
High school graduate or less	0.43 (0.38-0.50) ^b	0.44 (0.39-0.51) ^b	0.73 (0.63-0.85) ^b	0.91 (0.77-1.07)
Financial situation				
Thriving	Reference	Reference	Reference	Reference
Struggling	0.36 (0.33-0.41) ^b	0.53 (0.47-0.60) ^b	0.14 (0.13-0.16) ^b	0.17 (0.15-0.19) ^b
Suffering	0.22 (0.19-0.25) ^b	0.39 (0.34-0.46) ^b	0.05 (0.04-0.05) ^b	0.06 (0.05-0.07) ^b
Overall life evaluation				
Thriving	—	Reference	—	—
Struggling/suffering	—	0.37 (0.33-0.41) ^b	—	—
Overall health				
Excellent/very good	—	—	—	Reference
Good	—	—	—	0.43 (0.38-0.48) ^b
Fair/poor	—	—	—	0.22 (0.18-0.26) ^b
Model C statistic	0.68	0.73	0.78	0.81

^a As reported in Table 3.

^b p < 0.001.

^c Because there were not enough transgender people to identify separately in the analysis, analyses by sex were restricted to men and women.

^d p < 0.05.

^e p < 0.01.

observed a similar pattern of an increasing percentage of respondents reporting E/VG health as perceived financial situation improved. As in the 2014 GSWBS, the prevalence of thriving in the HWBS was negatively associated with age and positively associated with financial situation.¹⁶ Although we were unable to find published GSWBS statistics showing the relationship of educational attainment to thriving at the individual level, the Gallup World Poll shows a positive association at the country level.¹⁷

In terms of racial/ethnic group differences in overall health and overall life evaluation, the percentages of whites, blacks, and Asian/Pacific Islanders in E/VG health and fair/poor health closely approximated those in the BRFSS, and both surveys found substantial disparities between whites and blacks at the upper and lower levels of health status. However, compared with the BRFSS, Hispanics in the HWBS were more likely to be in E/VG health (50.2% vs 37.4%) and less likely to be in fair/poor health (14.3% vs 26.2%). This resulted in a relatively small disparity in the HWBS between Hispanics and whites regarding E/VG health and no disparity in fair/poor health, whereas white-Hispanic disparities in the BRFSS on both health measures were larger than those between whites and blacks.

In the HWBS, we found no significant racial/ethnic differences in the percentage of adults who were thriving. Although the percentage of Asian/Pacific Islanders who were thriving in the HWBS was the same as that reported by the GSWBS for the national sample, the percentages of whites, blacks, and Hispanics who were thriving were significantly higher in the HWBS than in the GSWBS (62%-64% vs 53%-56%).¹⁸

As in the GSWBS, we found that at the group level, blacks and Hispanics rated their anticipated life situation significantly higher than did whites and Asian/Pacific Islanders. Blacks and Hispanics also exhibited significantly greater optimism about the future than did whites and Asian/Pacific Islanders, with optimism among blacks being significantly greater than among whites, Hispanics, and Asian/Pacific Islanders, even though the average rating on the current life item

in the HWBS was higher than that in the GSWBS.¹⁹ According to Gallup, during the 8 years of Barack Obama's presidency, blacks consistently exhibited higher levels of optimism about the future than did the other 3 racial/ethnic groups.¹⁹ However, the discrepancy between mean ratings of anticipated life and current life in surveys conducted 5 years later is much larger for blacks than for the other racial/ethnic groups, suggesting that these positive expectations were generally not met. It has been suggested that this optimism, manifested more by blacks and Hispanics than by whites and Asian/Pacific Islanders, may contribute to resiliency in the face of poor financial situation, discrimination, and harassment.^{20,21}

The positive associations of health status with education²²⁻²⁶ and income²⁷⁻²⁹ and negative association of health status with financial resource strain^{30,31} are well documented. This led the Institute of Medicine (now the National Academy of Medicine) to identify both educational attainment and financial resource strain as important social determinants of health.³² We found that disparities across educational levels were greater for E/VG health than for thriving, whereas disparities across levels of financial situation were greater for thriving than for E/VG health. Furthermore, for both these outcomes, disparities between the lowest and highest levels of financial situation were greater than disparities between the lowest and highest levels of education.

We also found that racial/ethnic group disparities in the prevalence of E/VG health and thriving within levels of educational and financial situation were relatively small, although stratification did not eliminate differences between whites and blacks on health status. However, in all racial/ethnic groups, disparities in the prevalence of E/VG health and thriving between the lowest and highest levels of education and the lowest and highest levels of financial situation were much larger than the disparities between racial/ethnic groups of similar education and financial situation. Similar findings have been reported for income.^{33,34} These results suggest that education and financial situation partially explain the population-level racial/ethnic disparities in HWB.

Education and financial situation were both significant independent predictors of E/VG health and thriving in our multivariate models. However, financial situation appeared to be a stronger predictor than education for both outcomes; it accounted for most of the added precision resulting from incorporating financial situation and education into models that included age, sex, and race/ethnicity. This does not mean that education is a less important factor than financial situation. It has been hypothesized that higher educational attainment exerts both a direct effect on health status by increasing health-promoting behaviors and reducing exposure to occupational risks and an indirect effect through its association with higher income level. Compared with people with low levels of educational attainment, those with high levels of educational attainment are more likely to have sufficient financial resources to purchase healthy foods, live in low-deprivation neighborhoods, have good access to health care, and experience lower financial strain, all of which contribute to better health.^{25,35}

In our survey, we chose to ask about financial situation rather than asking about income. There is less evidence about the relationship of subjective assessment of financial situation to health status and life evaluation than there is for income. Perceived financial situation (also called financial well-being and financial satisfaction) differs from more traditional measures of household income or salary in that it incorporates subjective evaluation of demands on available income, financial aspirations, and sense of financial security, which can vary by age and social reference group. Perceived financial situation also differs from financial resource strain in that, like income, it is viewed as a continuum rather than focused only on the ability to pay for necessities. Higher levels of income or financial satisfaction have been shown to be associated with high life satisfaction³⁶⁻³⁹ and life evaluation.¹⁶ Using Gallup World Poll data, Ng and Diener⁴⁰ found that, in many countries, financial satisfaction was a stronger predictor of positive life evaluation than income.

There is also some evidence that asking about financial situation rather than income provides a better indication of financial

strain.^{30,31} Tucker-Seeley et al³¹ suggest that a person's perception of his/her financial situation may be a more robust predictor of self-rated health. We think that this likely extends to predicting overall life evaluation as well. Tucker-Seeley also has suggested that individuals at all income levels are going to be more comfortable and truthful responding to a question about their financial situation rather than being asked about their household income.⁴¹

Although the Gallup World Poll found a positive association between higher educational attainment and life satisfaction at the country level,⁴² this relationship may be influenced by age, pre-adult socioeconomic status, and the job market at the time of college graduation. For instance, for younger and middle-aged adults from lower and middle socioeconomic status households, acquiring a college degree may lead to the type of job, income, and social status they aspired to while growing up. In contrast, those who began life in a higher socioeconomic status household or graduated into a depressed job market may experience an occupational and financial situation worse than they had expected, leading to less satisfaction with their life situation. Reported satisfaction may be related to comparison of outcomes to aspirations.⁴³

Finally, our results suggest that organizations and governments interested in assessing the total health of populations should be measuring multiple domains of HWB, not just health status. The 100 Million Lives initiative is using a version of this instrument as a standard measure of HWB across participating communities and has developed a version of the questionnaire for use with adolescents. In addition, well-being is increasingly being used as an important outcome measure for governments and large systems.⁴⁴

The strengths of our study include a large, racially/ethnically, and geographically diverse, population-weighted study sample and the use of validated well-being variables. However, several limitations deserve mention. As with many quota-driven and random-digit dial surveys, our response rate was relatively low. The survey was conducted primarily online with members who were registered to use KP's patient portal and with commercial

online panels of nonmembers; even after weighting to regional age, sex, and race/ethnicity composition based on census data, the respondent sample may not be representative of the study population on other characteristics, such as education and income. This may partially explain differences in estimates of E/VG health and thriving for racial/ethnic groups in the HWBS, compared with the benchmark surveys. For example, compared with BRFSS data for states where KP Regions are located, all racial/ethnic groups in the HWBS had significantly higher percentages of college graduates. Because high educational attainment and thriving financially were both associated with greater likelihood of E/VG health and thriving, the greater similarity of blacks and Hispanics to whites and Asians on these social determinants likely accounts for the smaller racial/ethnic disparities we found on the HWB indicators than have been found in other studies.

CONCLUSION

This study demonstrates that the brief HWB survey instrument can provide useful data to assess community HWB at a population level, and potentially at the individual patient level as well. Similar instruments have been developed to assess and monitor similar aspects of HWB constructs.⁴⁵⁻⁴⁷ Findings from this study demonstrate that differences in overall health status and overall life evaluation are associated very strongly with financial well-being and with educational attainment, and these social determinants partially explain racial/ethnic disparities in HWB at the population level. Findings also suggest that life evaluation and health status are distinct dimensions of well-being. Future research will focus on the use of HWBS data to compare the HWB of members and nonmembers in the 8 KP Regions and to examine the association of social support and spiritual well-being with health status and overall life evaluation. We are also in the process of developing and validating a summary well-being index score that incorporates individuals' evaluation of their health, life situation, financial situation, social support, and spiritual well-being. ❖

Disclosure Statement

The author(s) have no conflicts of interest to disclose.

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