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Demographic and Socioeconomic Determinants of Physical and Mental Self-rated Health Across 10 Ethnic Groups in the United States

Shervin Assari¹, Maryam Moghani Lankarani²

¹Department of Psychiatry, School of Public Health, University of Michigan, USA

²Department of Psychiatry, School of Medicine, University of Michigan, Ann Arbor, Michigan, USA. Center for Research on Ethnicity, Culture and Health, School of Public Health, University of Michigan, Ann Arbor, Michigan, USA

Abstract

Background and aims—The aim of this study was to explore ethnic differences in demographic and socioeconomic determinants of poor physical and mental self-rated health (SRH) in the United States.

Methods—We used data from the Collaborative Psychiatric Epidemiology Surveys (CPES) 2001–2003, which included a national household probability sample of 18237 individuals including 520 Vietnamese, 508 Filipino, 600 Chinese, 656 other Asian, 577 Cuban, 495 Puerto Rican, 1442 Mexican, 1106 other Hispanic, 4746 African American, and 7587 non-Latino Whites. Demographic factors (age and gender), socioeconomic factors (education and income), body mass index (BMI), and physical and mental SRH were measured. Pearson correlation was used to explore correlates of physical and mental SRH across ethnic groups.

Results—While age was positively associated with poor physical SRH, ethnic groups differed in the effect of age on mental SRH. Age was positively associated with mental SRH among Vietnamese, Filipino, Chinese, Cuban, Puerto Rican, and African American individuals, but this was not so for other Asians, Mexicans, other Hispanics, and non-Hispanic Whites. Chinese and Cubans were the only groups where female gender was associated with poor physical and mental SRH. With other Asians being an exception, education and income were protective against poor physical and mental SRH in all ethnic groups. Ethnic groups also differed in how their mental and physical SRH reflect BMI

Conclusion—Demographic and socioeconomic determinants of physical and mental SRH vary across ethnic groups. Poor physical and mental SRH are differently shaped by social determinants

Ethical Approval

The CPES study protocol was approved by the University of Michigan Institutional Review Board (IRB). All participants provided written consent and received financial compensation for participating in this study. All procedures performed in this study involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflict of Interest Disclosures

Authors declare no conflicts of interest.

across ethnic groups. These ethnic differences may cause bias in health measurement in ethnically diverse populations.

Keywords

Ethnic groups; Social determinants; Self-rated health

Introduction

Single-item measures of self-rated health (SRH) provide brief and cost-effective methods for estimating the health of populations in epidemiology.^{1–5} Following recommendation by the Institute of Medicine (IOM), single-item measures of SRH are being used as a tool to monitor the health of the US population.^{6–8} Single item physical and mental SRH predict a wide range of health outcomes, such as utilization of health care,^{10,11} development of chronic medical conditions,^{1,2,12–14} and mortality.¹⁵

Perceived poor health (poor SRH) prompts a complex cognitive process that is required for health care utilization.^{16,17} While a wide range of psychosocial factors such as awareness, trust, stigma, access, and insurance influence health care utilization,¹⁸ individuals would not seek help unless they perceive their own health as poor.^{10,15–22} Given the critical role of SRH in the process of health care use,²³ there is a need to better understand what physical and mental SRH actually measure across ethnic groups.^{12,25–29} The degree by which SRH reflects psychological distress²⁵ and chronic medical and mental disorders^{1,2,12–14} may differ from one ethnic group to another.^{30–36}

The meaning and determinants of SRH are not universal, but population specific.^{12,26,28} Factors associated with SRH also vary across diverse ethnic groups.^{30–36} As a general rule, poor SRH better reflects health problems in non-Hispanic Whites compared to all ethnic minorities such as Blacks, Hispanics, and Asians.¹² Poor SRH also better predicts mortality in Whites than non-Whites.³⁰ Even within a single racial group, ethnicity changes how SRH correlates with health problems.^{28,31} However, very few studies have investigated the heterogeneity of demographic and social determinants of physical and mental SRH across ethnic groups. This study compared 10 ethnic groups for demographic and social determinants of physical and mental SRH in the United States.

Methods

Design and Setting

This cross-sectional study was a secondary analysis of the Collaborative Psychiatric Epidemiology Surveys (CPES), 2001 to 2003, composed of the National Latino and Asian American Study (NLAAS), the National Survey of American Life (NSAL), and the National Comorbidity Survey – Replication (NCS-R). All of these surveys are representative of the US ethnic and racial groups and have employed similar methodologies such as utilizing trained lay-interviewers to conduct interviews primarily in-person. Data were collected by the Institute for Social Research (ISR), University of Michigan, Ann Arbor. Study design and sampling have been described in detail previously.³⁷

Participants

The NCS-R sampled 9282 individuals, the NSAL sampled 6082 individuals, and the NLAAS sampled 4649 individuals. This study included a national household probability sample of 18 237 individuals including 520 Vietnamese, 508 Filipino, 600 Chinese, 656 other Asian, 577 Cuban, 495 Puerto Rican, 1442 Mexican, 1106 other Hispanic, 4746 African American, and 7587 non-Latino Whites. All participants were adults (aged 18 or older). Participants were either American or immigrants in the United States.

Interview

Most interviews were face-to-face and were conducted within participants' homes. The rest of the interviews were conducted using telephone interviews. The average response rate in the CPES was 72.7%.

Measures

Physical and Mental Self-Rated Health.—Participants were asked “How would you rate your overall physical/ mental health - excellent, very good, good, fair, or poor?” Responses included five categories: excellent, very good, good, fair, and poor. Single-item SRH measures have shown strong correlation with multiitem health measures.³⁸ Single-item SRH also predicts mortality, net of demographics, socioeconomic status (SES), and medical risk factors.¹⁵ Test-retest reliability for single-item SRH measures is high.³⁸ These measures also show strong correlations with standard scales on distress and well-being.³⁸

Demographic and Socioeconomic Factors.—Demographic factors included age (continuous measure) and gender (dichotomous measure, male as the reference category). The study also measured 2 socioeconomic indicators, namely education level (less than high school [reference category], high school graduate, some college, and college graduate) and income (continuous measure).

Body Mass Index (BMI) Class.—The CPES measured BMI level based on self-reported weight and height. Weight and height were collected in pounds (1 pound = 0.453 kilograms) and feet (1 foot = 0.3048 meters) / inches (1 inch = 0.0254 meters), respectively. Using the thresholds of equal to or larger than 25, 30, 35, and 40 kg/m², BMI class was categorized as underweight, normal weight, obesity class I, obesity class II, and obesity class III. Although self-reported BMI underestimates actual BMI,³⁹ BMI calculated based on self-reported weight and height is closely correlated with BMI based on direct measures of height and weight.³⁹

Statistical Analysis

As CPES has used a complex sampling design, we used Stata version 13.0 (Stata Corp., College Station, TX, USA) for data analysis. Standard errors were estimated using the Taylor series approximation. We performed Pearson correlation coefficients within each ethnic group. Mental and physical SRH were both treated as continuous measures, with a higher score indicating worse condition. P values less than 0.05 were considered statistically significant.

Results

From the 18 237 participants in this study, 7587 (42% of the total sample) were non-Hispanic Whites, while the remaining 10 650 individuals belonged to an ethnic minority. Following non-Hispanic Whites, there were 4746 African American individuals (26% of the total sample). Table 1 summarizes the sample size for each ethnic group.

Descriptive Statistics

Table 2 provides a summary of characteristics across each ethnic group. Mental SRH was measured as better in Other Asians compared to non-Latino Whites and African Americans.

Correlates of Physical and Mental Self-rated Health

Table 3 provides a summary of the correlation matrix between demographics, SES, and physical and mental SRH across ethnic groups. As shown in this table, while age was positively associated with poor physical SRH in all ethnic groups, ethnic groups differed in the effect of age on mental SRH. Age was positively associated with mental SRH among Vietnamese, Filipino, Chinese, Cuban, Puerto Rican, and African American individuals, but not among other Asians, Mexicans, other Hispanics, and non-Hispanic Whites (Table 3).

Chinese and Cubans were the only groups where gender was associated with poor physical and mental SRH. With Other Asians being the only exception, education and income were associated with physical and mental SRH in all ethnic groups (Table 3). Ethnic groups differed in how their mental and physical SRH reflect their BMI (Table 3).

Discussion

Major and systematic ethnic differences were found in demographic and social determinants of physical and mental SRH in the United States population. While age was positively associated with poor physical SRH, ethnic groups differed in the effect of age on mental SRH. Age was positively associated with mental SRH among Vietnamese, Filipino, Chinese, Cuban, Puerto Rican, and African American individuals, but not among other Asians, Mexicans, other Hispanics, and non-Hispanic Whites. Chinese and Cubans were the only groups where female gender was associated with poor physical and mental SRH. Education and income were protective against poor physical and mental SRH in all ethnic groups, with Other Asians being an exception. Our findings also suggest that ethnic groups differed in how their mental and physical SRH reflect high BMI.

Both meaning and determinants of physical and mental SRH may be specific to ethnic groups. Our findings are also consistent with previous research which has documented major ethnic differences in the associations between mental and physical SRH and psychiatric disorders.^{12,26,28} It is still not clear how poor physical and mental SRH reflect the past, current, and future health needs of individuals from diverse backgrounds.^{25,29} Still, there is a need for additional research on ethnic differences on how demographics, SES, and health factors shape SRH.^{40–53}

Our finding has implications for clinical and public health practice. Based on these results, sole reliance on single-item SRH measures will result in bias across ethnically diverse population, as SRH is differently influenced by social and medical determinants across groups.^{32,54,55} Thus, single item physical and mental SRH measures are not ideal tools for the measurement of health disparities across ethnic groups.⁵⁶ Using SRH items to screen individuals with a need for health care may also result in the enrollment of a population with heterogenic health care needs. Currently, physical and mental SRH items are being used as screening tools to detect individuals at high risk.^{57,58} Combining single-item SRH measures with other measures is recommended, at least in ethnically diverse populations.

Our findings advocate for designing more accurate screening tools for the screening of health problems in ethnically diverse populations. Although still useful information to assess, poor physical and mental SRH does not universally reflect demographic and SES status across all ethnic groups.

The findings reported here emphasize the complexity and non-linear association between ethnicity, demographic factors, socioeconomics, and SRH.¹² Different ethnic groups differ in how they perceive and interpret health or illness, which influences their health care use. Similarly, SES status may differently shape SRH of ethnic groups.²⁸ There is a present need for the creation of health measures that are comparable across ethnic groups. Before then, SRH items should be carefully used as a tool for comparison of health status across ethnic groups. It is still unclear why demographics and SES differently shape the SRH of different ethnic groups, and whether this variation is biological or social.^{59–63} Ethnic groups differ in biology, as well as historical life experiences, knowledge, SES, values, cognitive styles,^{59–69} emotion processing,^{70,71} regulation,^{64–69} and culture,^{72–82} all of which can shape our perception of health and illness.

The study is not free of limitations. First, due to its cross-sectional design, findings should be interpreted as associations not causations. Second, the sample size was not balanced across groups. Third, validity of mental and physical SRH may depend on ethnicity. Fourth, a number of confounders such as nativity, immigration status, and number of years in the United States were not included in this study. Fifth, we did not use multivariable analysis, due to the exploratory design of this study. Sixth, single-item SRH measures are sensitive to the contextual effects of preceding questions in survey instruments, which vary across CPES surveys.³⁸ Finally, we did not measure social desirability or current health status in this study. Despite all these limitations, using nationally representative data and a large sample size were 2 major strengths of the current secondary analysis. To conclude, demographic and socioeconomic determinants of physical and mental SRH vary across ethnic groups. Poor physical and mental SRH are differently shaped by social determinants across ethnic groups. These ethnic differences may cause bias in health measurement in ethnically diverse populations.

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Table 1:

Weighted and unweighted sample size

Ethnicity	%	n	Weighted N
Vietnamese	2.85	520	1156292
Filipino	2.79	508	1909580
Chinese	3.29	600	2533495
All Other Asian	3.60	656	3452027
Cuban	3.16	577	1060586
Puerto Rican	2.71	495	1864484
Mexican	7.91	1442	15763471
All Other Hispanic	6.06	1106	5869754
African American	26.02	4746	22049686
Non-Latino Whites	41.60	7587	1.48E+08
All	100.00	18237	2.03E+08

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Table 2:

Descriptive statistics

Variable	Vietnamese		Filipino		Chinese		All Other Asian		Cuban		Puerto Rican		Mexican		All Other Hispanic		African American		Non-Latino Whites	
	M	SE	M	SE	M	SE	M	SE	M	SE	M	SE	M	SE	M	SE	M	SE	M	SE
Mental health rating	2.40	0.05	2.00	0.04	2.41	0.04	1.86	0.04	2.17	0.05	2.22	0.05	2.32	0.03	2.11	0.03	2.15	0.02	2.18	0.02
Physical health rating	2.71	0.05	2.44	0.04	2.76	0.04	2.30	0.04	2.56	0.05	2.75	0.05	2.86	0.04	2.63	0.04	2.59	0.02	2.57	0.02
Age	43.73	0.67	42.98	0.75	42.88	0.61	38.10	0.68	48.97	0.73	41.17	0.72	36.68	0.48	38.38	0.52	42.19	0.27	46.73	0.45
Sex	1.55	0.02	1.55	0.02	1.54	0.02	1.50	0.02	1.48	0.02	1.51	0.02	1.47	0.02	1.52	0.02	1.56	0.01	1.53	0.01
Years of education (4 categories)	2.33	0.05	2.92	0.05	2.90	0.05	3.24	0.04	2.39	0.05	2.14	0.05	1.82	0.03	2.25	0.04	2.28	0.02	2.69	0.02
Household Income	51.25	2.18	79.01	2.54	74.32	2.56	76.07	2.59	52.22	2.25	50.52	2.18	41.40	1.30	49.43	1.54	37.12	0.54	61.72	1.08
BMI Classes	2.14	0.03	2.72	0.04	2.22	0.03	2.49	0.04	2.97	0.04	3.09	0.05	3.15	0.04	2.95	0.04	3.25	0.02	2.90	0.03

Table 3:

Correlates of physical and mental SRH across ethnic groups

	1	2	3	4	5	6	7
Vietnamese							
1 Mental health rating	1.00	0.67	0.28	0.09	-0.14	-0.19	-0.02
2 Physical health rating		1.00	0.27	0.09	-0.13	-0.21	-0.08
3 Age			1.00	0.07	-0.33	-0.10	0.12
4 Sex				1.00	-0.22	-0.08	-0.09
5 Years of education (4 categories)					1.00	0.33	-0.04
6 Household Income						1.00	0.02
7 BMI Classes							1.00
Filipino							
1 Mental health rating	1.00	0.54	0.12	-0.03	-0.20	-0.09	0.08
2 Physical health rating		1.00	0.18	-0.01	-0.14	-0.23	0.20
3 Age			1.00	0.02	-0.12	-0.06	-0.03
4 Sex				1.00	0.03	-0.06	-0.20
5 Years of education (4 categories)					1.00	0.32	0.06
6 Household Income						1.00	0.00
7 BMI Classes							1.00
Chinese							
1 Mental health rating	1.00	0.63	0.14	0.19	-0.31	-0.22	-0.14
2 Physical health rating		1.00	0.17	0.15	-0.23	-0.19	-0.07
3 Age			1.00	0.06	-0.31	-0.12	0.02
4 Sex				1.00	-0.12	-0.09	-0.23
5 Years of education (4 categories)					1.00	0.30	0.01
6 Household Income						1.00	0.06
7 BMI Classes							1.00
All Other Asian							
1 Mental health rating	1.00	0.54	0.09	0.17	-0.07	-0.06	0.02
2 Physical health rating		1.00	0.15	0.07	-0.02	0.03	0.17
3 Age			1.00	-0.01	0.06	0.07	0.14
4 Sex				1.00	-0.02	-0.04	-0.09
5 Years of education (4 categories)					1.00	0.08	-0.04
6 Household Income						1.00	0.01
7 BMI Classes							1.00
Cuban							
1 Mental health rating	1.00	0.58	0.20	0.18	-0.26	-0.25	0.05
2 Physical health rating		1.00	0.32	0.17	-0.21	-0.26	0.16
3 Age			1.00	0.07	-0.28	-0.25	0.04
4 Sex				1.00	-0.01	-0.09	-0.04
5 Years of education (4 categories)					1.00	0.46	0.07
6 Household Income						1.00	0.00

	1	2	3	4	5	6	7
7 BMI Classes							1.00
Puerto Rican							
1 Mental health rating	1.00	0.58	0.15	0.12	-0.30	-0.24	0.11
2 Physical health rating		1.00	0.28	0.08	-0.29	-0.30	0.21
3 Age			1.00	-0.01	-0.08	-0.08	0.11
4 Sex				1.00	-0.03	-0.06	0.07
5 Years of education (4 categories)					1.00	0.41	-0.03
6 Household Income						1.00	-0.06
7 BMI Classes							1.00
Mexican							
1 Mental health rating	1.00	0.47	0.01	0.04	-0.21	-0.14	0.01
2 Physical health rating		1.00	0.18	0.07	-0.17	-0.10	0.15
3 Age			1.00	0.06	-0.07	0.04	0.14
4 Sex				1.00	-0.01	-0.14	0.00
5 Years of education (4 categories)					1.00	0.30	-0.01
6 Household Income						1.00	0.02
7 BMI Classes							1.00
All Other Hispanic							
1 Mental health rating	1.00	0.46	0.06	0.07	-0.14	-0.11	0.05
2 Physical health rating		1.00	0.21	0.21	-0.20	-0.14	0.19
3 Age			1.00	0.08	-0.12	-0.02	0.14
4 Sex				1.00	-0.02	-0.09	-0.07
5 Years of education (4 categories)					1.00	0.39	-0.07
6 Household Income						1.00	-0.05
7 BMI Classes							1.00
African American							
1 Mental health rating	1.00	0.49	0.17	0.09	-0.15	-0.13	0.03
2 Physical health rating		1.00	0.23	0.09	-0.16	-0.15	0.16
3 Age			1.00	0.02	-0.08	-0.02	0.09
4 Sex				1.00	-0.01	-0.15	0.09
5 Years of education (4 categories)					1.00	0.40	-0.05
6 Household Income						1.00	-0.02
7 BMI Classes							1.00
Non-Hispanic Whites							
1 Mental health rating	1.00	0.43	-0.05	-0.01	-0.14	-0.16	0.05
2 Physical health rating		1.00	0.14	-0.03	-0.22	-0.22	0.19
3 Age			1.00	0.04	-0.13	-0.08	0.06
4 Sex				1.00	0.02	-0.14	-0.10
5 Years of education (4 categories)					1.00	0.31	-0.06
6 Household Income						1.00	-0.02
7 BMI Classes							1.00

Numbers in bold reflect statistically significant correlation coefficients.

Self-rated health (SRH); Body Mass Index (BMI).

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