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Original article

## Impact of Social Determinants of Health on Healthcare Disparities in Florida

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**Abstract:** Objective: Healthcare disparities disproportionately affect underserved and marginalized communities due to social determinants of health (SDoH), contributing to significant differences in health outcomes and life expectancy within different communities in Florida. This observational study aimed to understand the impact of SDoH, such as race/ethnicity, income level, and education attainment on healthcare access in Florida. Methods: Self-reported data from the 2020 Behavioral Risk Factor Surveillance System were pooled to evaluate disparities in healthcare access by race/ethnicity, income, and education level in Florida. Results: Health status and healthcare access vary based on characteristics related to SDoH, including race/ethnicity, income level, and educational attainment. Health status and healthcare access increased with income and education attainment. There were no significant disparities in health status and healthcare access among racial and ethnic groups. Conclusion: While race and ethnicity were not significant predictors of health status nor healthcare access, income level and education were positively correlated which may be related to policy including Florida's lack of Medicaid expansion or population characteristics such as health-seeking behaviors. Understanding the prevalence of healthcare disparities based on SDoH can inform and support the implementation of evidence-based strategies for improving the accessibility and affordability of culturally competent care for underserved populations.

**Keywords:** social determinants of health; healthcare access; health disparities

## 1. Introduction

Healthcare disparities, preventable differences in healthcare access or health outcomes, are a significant issue within the United States (U.S.) due to their disproportionate effects on marginalized and disadvantaged communities. Health disparities are intimately associated with social determinants of health (SDoH), including income level, education, and occupational status, which lead to poorer health outcomes [1]. Racial/ethnic minority groups are also less likely to have a consistent healthcare provider and utilize healthcare services, leading to increased prevalence of non-communicable diseases [2]. Disparities associated with socioeconomic status begin early in life and potentially have long-lasting effects on health [1].

The state of Florida is particularly important in population health research as it is currently the fastest-growing state in the U.S., according to the U.S. Census Bureau [3]. In Florida, SDoH contribute to significant differences in health outcomes and life expectancy within different communities [4]. In 2022, the Institute of Healthcare Improvement proposed the "quintuple aim" to improve healthcare quality, increase patient satisfaction, improve population health outcomes, reduce the per capita cost of healthcare, and advance health equity in the United States [5]. An integral step in advancing health equity to support this quintuple aim is identifying health disparities. The objective of this study was to determine if specific aspects of healthcare access and health outcomes in Florida in 2020 differed by race/ethnicity, household income, and educational attainment.

## 2. Materials and Methods

The Behavioral Risk Factor Survey System (BRFSS) is the world's largest continuously conducted health survey system, with approximately 400,000 interviews with adults 18 years and older completed every year using random digit dialing techniques [6]. BRFSS survey results are deidentified, publicly available data. All responses from Florida collected in 2020 were extracted for this study. Healthcare access is measured by availability, utilization, and outcomes [2]. The BRFSS asks several questions pertaining to healthcare access including personal assessment of general health, completion of a routine checkup within the last 5 years, healthcare coverage, inability to seek medical care due to cost, and a personal doctor or healthcare provider. Prevalence for each response based on race/ethnicity, income, and education level was derived from the BRFSS dataset.

## 3. Results

Analysis of health status based on race and ethnicity revealed that most respondents reported good or very good health status across all races and ethnicities. Hispanic respondents had the greatest prevalence (25.7%) of excellent health status while white, non-Hispanic respondents had the greatest prevalence (3.8%) of poor health status (Table 1).

Regarding healthcare access, the percentage of respondents denying healthcare coverage and a personal doctor or healthcare provider was greatest in Hispanic respondents, 27.3% and 41.4% respectively. Additionally, a greater percentage of Hispanic respondents reported being seen by multiple healthcare providers rather than a single provider (41.4%). Black, non-Hispanic respondents reported the greatest prevalence of a routine checkup within the last year (82.9%). White, non-Hispanic respondents reported the greatest prevalence of healthcare coverage (88%), but also the greatest prevalence of inability to seek medical care due to cost (82.9%) and not having a routine checkup in the last 5 years (6.3%).

In 2020, general self-reported health status increased with income level (Table 2) and education attainment (Table 3). Likewise, the percentage of respondents reporting inability to seek medical care due to cost decreased with income and education level. The percentage of respondents who reported having a routine checkup within the past year also increased with greater educational attainment. However, regardless of income level, the prevalence of completing a routine checkup within the last year was greatest.

**Table 1.** Prevalence estimates of survey responses pertaining to health status and healthcare access in Florida, by race/ethnicity - Behavioral Risk Factor Surveillance System, 2020

Question	Response	Black, Non-Hispanic % (95% CI)	Hispanic % (95% CI)	Multiracial, Non-Hispanic % (95% CI)	Other, Non-Hispanic % (95% CI)	White, Non-Hispanic % (95% CI)
How is your general health?	Poor	-	3 (1.6-4.3)	-	-	3.8 (3.2-4.4)
	Fair	7.8 (5.4-10.1)	15.1 (11.8-18.4)	14.1 (6.2-22)	-	9.7 (8.6-10.8)
	Good	32.7 (26.7-38.7)	25.7 (21.6-29.7)	37.5 (25.9-49.1)	-	27.9 (26.1-29.7)
	Very Good	33.7 (27.2-40.1)	30.5 (26.2-34.9)	19.5 (10.3-28.7)	48.6 (32.9-64.3)	35.9 (33.9-37.8)
	Excellent	20.4 (14.5-26.3)	25.7 (21.6-29.7)	23.5 (14.2-32.8)	18 (8.2-27.8)	22.7 (21-24.4)
About how long has it been since you last visited a doctor for a routine checkup?	Within the past year	82.9 (78.2-87.6)	73.7 (69.8-77.5)	74.1 (62.9-85.4)	81.3 (69.8-92.7)	77.6 (75.9-79.4)
	Within the past 2 years	8.9 (5.2-12.6)	13.1 (10.3-16)	-	-	9.4 (8.2-10.6)
	Within the past 5 years	4.3 (1.8-6.7)	6.2 (4.4-7.9)	-	-	6.1 (5.1-7.1)
	5 or more years ago	3.1 (1.3-4.8)	5.4 (3.1-7.7)	-	-	6.3 (5.2-7.4)
	Never	-	-	-	-	0.5 (0.3-0.8)
Do you have any kind of healthcare coverage?	Yes	80.9 (75.4-86.4)	72.7 (68.7-76.7)	81.4 (71.3-91.5)	77.5 (61.3-93.7)	88 (86.6-89.4)
	No	19.1 (13.6-24.6)	27.3 (23.3-31.3)	18.6 (8.5-28.7)	-	12 (10.6-13.4)
Do you have one person you think of as your personal doctor or health care provider?	No	28.4 (22.1-34.6)	41.4 (36.8-46.1)	29.2 (17.8-40.6)	-	22.8 (21-24.6)
	Yes, only one	65.3 (59-71.7)	53.6 (48.9-58.2)	64.5 (53-76)	72.8 (59.6-86.1)	69.5 (67.6-71.4)
	Yes, more than one	6.3 (3.9-8.7)	5 (3.1-7)	-	-	7.7 (6.7-8.8)
Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?	Yes	78.1 (71.8-84.4)	84 (80.8-87.1)	70.8 (58.6-83)	81 (68.4-93.5)	89.2 (88-90.5)
	No	21.9 (15.6-28.2)	16 (12.9-19.2)	29.2 (17-41.4)	-	10.8 (9.5-12)

**Table 2.** Prevalence estimates of survey responses pertaining to health status and healthcare access in Florida, by household income level - Behavioral Risk Factor Surveillance System, 2020

Question	Response	Less than	\$15,000-	\$25,000-	\$35,000-	\$50,000+
		\$15,000	\$24,999	\$34,999	\$49,999	\$50,000+
		% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
How is your general health?	Poor	9 (5.9-12.2)	5.8 (4-7.6)	-	2.3 (1.1-3.6)	-
	Fair	23.9 (17.8-29.9)	17.9 (13.9-21.9)	12.3 (8.1-16.4)	7.9 (5.9-9.9)	5.7 (4.4-7)
	Good	31.2 (24.4-37.9)	26.1 (21.4-30.8)	34.5 (28.5-40.4)	35 (29.8-40.2)	24.6 (22-27.2)
	Very Good	16.1 (11.4-20.8)	31.5 (26.7-36.3)	33.2 (27-39.3)	32.9 (27.7-38.2)	40 (36.9-43.1)
	Excellent	19.8 (12.3-27.3)	18.7 (13.8-23.5)	16.3 (12-20.6)	21.8 (17.1-265.)	28 (25.3-30.7)
About how long has it been since you last visited a doctor for a routine checkup?	Within the past year	75.8 (70.1-81.5)	72.8 (68.1-77.4)	73 (67.2-78.9)	78.7 (74.5-82.9)	77.7 (75.1-80.2)
	Within the past 2 years	13.2 (8.9-17.5)	11.5 (8.6-14.5)	10.9 (6.1-15.6)	10.4 (7.3-13.6)	10.5 (8.6-12.4)
	Within the past 5 years	6 (3.6-8.4)	7 (4.6-9.5)	8.3 (5.2-11.4)	5.7 (3.4-8.1)	5.6 (4.3-6.9)
	5 or more years ago	-	7.7 (4.3-11.1)	7 (3.7-10.3)	4.5 (2.4-6.6)	5.6 (4.3-7)
	Never	-	-	-	-	-
Do you have any kind of healthcare coverage?	Yes	67.8 (60.1-75.4)	75.8 (71.3-80.3)	76.6 (70.6-82.6)	82.7 (77.9-87.5)	91.5 (89.8-93.3)
	No	32.2 (24.6-39.9)	24.2 (19.7-28.7)	23.4 (17.4-29.4)	17.3 (12.5-22.1)	8.5 (6.7-10.2)
Do you have one person you think of as your personal doctor or health care provider?	No	35.3 (28.1-42.4)	37 (31.5-42.6)	33.7 (27.3-40.2)	27.3 (22.5-32.2)	21.3 (18.6-24)
	Yes, only one	55.8 (48.4-63.2)	57 (51.6-62.5)	60 (53.5-66.4)	68 (63-72.9)	71.9 (69-74.8)
	Yes, more than one	8.9 (4.8-13)	5.9 (4.1-7.7)	6.3 (3.6-9.1)	4.7 (3.3-6.2)	6.8 (5.3-8.3)
Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?	Yes	26 (19.3-32.7)	23 (17.9-28.2)	18.5 (13-24)	14.6 (10.8-18.3)	7.6 (5.8-9.4)
	No	74 (67.3-80.7)	77 (71.8-82.1)	81.5 (76-87)	85.4 (81.7-89.2)	92.4 (90.6-94.2)

**Table 3.** Prevalence estimates of survey responses pertaining to health status and healthcare access in Florida, by educational attainment - Behavioral Risk Factor Surveillance System, 2020

Question	Response	Less than High	High School or	Some Post-High	College
		School	GED	School	Graduate
		% (95% CI)	% (95% CI)	% (95% CI)	% (95% CI)
How is your general health?	Poor	8.3 (5.5-11.1)	4.5 (2.8-6.2)	3.3 (2.4-4.3)	1.5 (1-2)
	Fair	21.9 (16.6-27.1)	12.4 (10.1-14.6)	9.8 (8-11.5)	5.8 (4.6-7)
	Good	33 (26.8-39.1)	30.4 (26.8-34)	30.8 (27.7-33.9)	38.8 (35.8-41.7)
	Very Good	19.1 (14.4-23.9)	31.8 (28.2-35.3)	34.6 (31.3-37.8)	23.8 (21.1-26.5)
	Excellent	17.7 (12.4-23)	20.9 (17.5-24.4)	21.6 (19-24.1)	30.1(27.2-33)
About how long has it been since you last visited a doctor for a routine checkup?	Within the past year	69.4 (63.3-75.4)	75.3 (72.3-78.4)	78.4 (75.7-81.2)	79.9 (77.5-82.4)
	Within the past 2 years	11.1 (7-15.3)	10.4 (8.3-12.6)	10.1 (8-12.2)	10.9 (9-12.8)
	Within the past 5 years	6.3 (3.9-8.7)	7.3 (5.5-	5.4 (4-6.7)	5.7 (4.1-7.3)
	5 or more years ago	10.2 (5.7-14.7)	6.2 (4.6-7.8)	5.7 (4.1-7.2)	2.9 (2-3.7)
	Never	-	-	-	-
Do you have any kind of healthcare coverage?	Yes	61.3 (54.9-67.7)	78.7 (75.6-81.9)	86.2 (83.9-88.5)	92.9 (91.1-94.7)
	No	38.7 (32.3-45.1)	21.3 (18.1-24.4)	13.8 (11.5-16.1)	7.1 (5.3-8.9)
Do you have one person you think of as your personal doctor or health care provider?	No	45.4 (39-51.9)	33.5 (29.7-37.4)	25.5 (22.4-28.6)	19.8 (17.3-22.2)
	Yes, only one	49 (42.6-55.4)	60.2 (56.3-64.1)	66.7 (63.5-70)	74 (71.3-77.2)
	Yes, more than one	5.6 (3.4-7.8)	6.3 (4.6-8.1)	7.8 (6.1-9.5)	6.3 (5.1-7.5)
Was there a time in the past 12 months when you needed to see a doctor but could not because of cost?	Yes	19.1 (14.3-23.8)	17.3 (13.8-20.8)	13.5 (11.4-15.7)	8.8 (7.1-10.6)
	No	80.9 (76.2-85.7)	82.7 (79.2-86.2)	86.5 (84.3-88.6)	91.2 (89.4-92.9)

#### 4. Discussion

SDoH, including race/ethnicity, income level, and education attainment, impact health status and healthcare access. Our data revealed that race and ethnicity were not significant predictors of healthcare status as white, non-Hispanic respondents reported the greatest prevalence of healthcare coverage but also the greatest prevalence of inability to seek care due to cost and not having a routine checkup in the last 5 years. However, other studies have suggested that the combination of race with income can have more detrimental effects [8]. Consistent with other studies, health status and healthcare access increased with income level [8]. In 2021, 32.3% of Florida residents were 200% below the federal poverty level, and more than 12% of residents were uninsured without Medicaid Expansion, decreasing healthcare access and health outcomes [9]. Overall, health status and healthcare access also increased with education level. This aligns with previous studies concluding that higher socioeconomic status and educational attainment are positively correlated with health-seeking behaviors [10]. Additionally, education attainment is positively correlated with greater continuity of care established by a single provider overseeing a patient's health. This increases trust in the healthcare system, higher quality of life, and greater treatment satisfaction [10]. Our results indicate that healthcare access in Florida differed by race/ethnicity, income level, and educational attainment in 2020. This underscores the importance of further research on the role of SDoH in healthcare delivery and the interaction between different SDoH domains.

#### *Limitations*

Limitations of this study are related to the BRFSS data collection process and analysis. Survey administration is limited to households with telephone numbers, innately excluding participation from specific geographical areas or demographic groups. As BRFSS is a cross-sectional survey, causal inference between measures of healthcare access and SDOH cannot be concluded. Furthermore, BRFSS relies on self-reported responses from respondents and is subject to self-report, recall, and social desirability biases [6]. The survey collection process may also lead to nonresponse bias, resulting in incomplete data collection, as evident in our results, because the percentage of respondents does not add to a total of 100% in several categories. However, BRFSS reports using weighted sampling methodology to adjust for this type of bias [6]. Another limitation of our results is the lack of stratification based on confounding factors such as age and sex. Further analysis should account for these variables to better understand their impact on healthcare status and access as related to this study.

#### *Implications for Public Health Practice*

Healthcare access varies based on characteristics related to SDoH, including race/ethnicity, income level, and educational attainment. Identification of healthcare disparities underscores the importance of improving accessibility and affordability of culturally competent care for underserved populations. National and state agencies such as Centers for Medicare and Medicaid services, Medicaid program's State Plan Authority, and Massachusetts's Health Policy Commission leverage data in this area to invest in improvements to statewide healthcare programs such as their "MassUP" program to advance health equity. The results of this study draw attention to healthcare disparities associated with SDoH and encourage the implementation of similar innovative, evidence-based strategies and care models to improve healthcare access and health outcomes for underserved populations in Florida.

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Factors Data Portal at <https://data.cdc.gov/Behavioral-Risk-Factors/Behavioral-Risk-Factor-Surveillance-System-BRFSS-P/dttw-5yxu>.

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