RESEARCH DIRECTS in HEALTH SCIENCES

2022, Volume 2 (Issue 1): 4 OPEN ACCESS

Identify Social Determinants of Health Related to Ambulatory Care Sensitive Conditions: Decreasing Hospitalizations and Emergency Department Visits

Original Research

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Open Access

Published: January 18, 2022

Research Directs in Health Sciences: *2022, Volume 2 (Issue 1): 4*

ISSN: 2768-492X

Abstract

Introduction: Ambulatory care sensitive conditions (ACSCs) have been linked to higher emergency room and hospitalization rates. Research suggests social determinants of health (SDOH) may play a role; however, there is a limited understanding of the relationship between ACSCs and SDOH. This study's objective was to examine the relationship between structural and intermediary SDOH and chronic ACSC status among United States adults (U.S.).

Methods: Data were drawn from the 2017 Behavioral Risk Surveillance System for 12 states and U.S. territories that completed the SDOH module (N= 111,828). Descriptive statistics and binary logistic regression analysis identified SDOH associated with a chronic ACSC status.

Results: More than 45% of participants had a chronic ACSC. Individuals with ACSCs had higher odds of reporting their neighborhood as unsafe (AOR=1.25; 95%CI=1.05-1.49) than those who reported their neighborhood as extremely safe. Similarly, participants with ACSCs were significantly more likely to report challenges paying their utilities/rent/mortgage (AOR=1.18; 95%CI=1.03-1.36) than to report not experiencing challenges.

Conclusions: To address chronic ACSCs, intersectoral public policies are warranted to diminish educational inequalities and racial disparities. This population would also benefit from community-based interventions that connect them to local resources that reduce stress and improve their financial stability and neighborhood safety level.

Key Words: potentially avoidable hospitalizations, social needs, health inequalities

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Introduction

Although significant progress has been made in increasing access to quality healthcare[1], the number of preventable hospitalizations remains problematic in the United States (U.S.). Preventable hospitalization stays, also known as potentially avoidable hospitalizations, are avoidable episodes of care that have been linked to high healthcare expenditures[2]. A 2020 report by the Agency for Healthcare Research and Quality, indicated there were 3.5 million preventable hospitalization stays in 2017, resulting in $33.7 billion in costs[2]. These inpatient stays were attributable to the treatment of ambulatory care sensitive conditions [ACSCs][2], conditions for which hospital admission could be prevented through the delivery of primary care[3,4]. ACSCs, such as diabetes, are costly conditions that plague U.S. adults. Research shows from 2003-2007, chronic ACSCs were

associated with 12.7% of hospital discharges among 18-64 years[5]. Moreover, a study by Lesser et al. documented 1.8 million ACSC emergency department (ED) visits by older adults in 2016[6].

Studies suggest social determinants of health (SDOH), such as race/ethnicity[7] and socioeconomic status[8], are a driver of chronic ACSCs impacting preventable hospital stays. Previous research has identified racial/ethnic disparities in preventable hospitalizations for chronic ACSCs since 1998[9]. McDermott and Jiang in 2020 examined costs and characteristics of potentially preventable inpatient stays in 2017, in which they included five chronic ACSCs: heart failure, chronic obstructive pulmonary disease, diabetes, hypertension, and asthma[2]. Their findings indicate no substantial change as the 2017 statistics show Blacks (2,198.0) to have the highest preventable inpatient stay rates (per 100,000 population) for chronic ACSCs, followed by Hispanics (992.0), Whites (874.6), then Asian/Pacific Islander (439.2)[2]. Studies also suggest neighborhood-level characteristics should be taken into consideration in addressing chronic ACSCs. In analyzing 2017-2018 administrative claims data Chi and colleagues identified neighborhood-level socioeconomic status as a predictor of preventable hospitalizations[10]. This finding provides supporting evidence for Zhang and colleagues' study, which discovered disadvantaged neighborhood conditions were associated with higher potentially avoidable costs among Medicare beneficiaries[11].

Although research suggests there is a relationship between SDOH and preventable hospital and ED visits, there are gaps in the literature in understanding SDOH associated with ACSCs and the implications on preventable visits. Identifying SDOH associated with ACSCs can inform policies and interventions, such as quality improvement models. Therefore, this study examined the relationship between structural and intermediary SDOH and chronic ACSC status among U.S. adults.

Scientific Methods

Participants

A cross-sectional study was performed using secondary data from the 2017 Behavioral Risk Surveillance System (BRFSS) dataset. The BRFSS is conducted by the Centers for Disease Control and Prevention (CDC) in all 50 U.S. states, the District of Columbia, Guam, and Puerto Rico[12]. The BRFSS is an extensive survey that utilizes a computer-assisted telephone interviews system to collect data on health-related risk behaviors, chronic health conditions, and use of preventive services from the non-institutionalized U.S. adult population [≥ 18 years][12]. The BRFSS applied a complex sampling weighting methodology to address sample bias due to nonresponses and selection probabilities during the data collection process[12]. Review by the Institutional Review Board was not required, as the study consisted of de-identified publicly available data.

The BRFSS questionnaire consists of a core component, optional modules, and state-added questions[12]. In 2017, the BRFSS incorporated an SDOH module conducted via landline and cell phone. With the SDOH module being optional, only 12 states included it within their data collection; Florida, Georgia, Iowa, Massachusetts, Minnesota, Mississippi, New Hampshire, Pennsylvania, Utah, West Virginia, Wisconsin, Wyoming (N=111,828 participants). Therefore, these states were included in the study.

Measurement Tool

Dependent Variable

The BRFSS participants self-reported a diagnosis of one of five types of high cost associated chronic ACSCs, which included: (1) "Ever told you had angina or coronary heart disease?", (2) "Ever told you had asthma?", (3) "Ever told you have chronic obstructive pulmonary disease or (COPD), emphysema or chronic bronchitis?", (4) "Ever told you have diabetes?" (If 'yes' and the respondent is female, ask: 'Was this only when you were pregnant?'), and (5) "Have you ever been told by a doctor, nurse or other health professional that you have high blood pressure?" (If 'yes', and the respondent is female, ask "Was this only when you were pregnant?"). The five variables were combined to create the dependent variable: have a chronic ACSC (yes/no). Specifically, those who responded 'yes' to any of the five questions were considered to have an ACSC. Whereas participants who stated 'no' to any of the five questions were considered not to have an ACSC. Additionally, females who reported hypertension or diabetes diagnosis during pregnancy were considered not to have an ACSC.

Independent Variable

SDOH questions were categorized as intermediary or structural determinants. The intermediary determinants were neighborhood characteristics, money and resources, access to healthcare, and emotional health. To assess

neighborhood safety, participants were asked: "How safe from crime do you consider your neighborhood to be?" (extremely safe/safe/unsafe/extremely unsafe).

Financial status variables were: "During the last 12 months, was there a time when you were not able to pay your mortgage, rent or utility bills?" (yes/no), "In the last 12 months, how many times have you moved from one home to another?", and "In general, how do your finances usually work out at the end of the month?" (end up with some money leftover/have just enough money to make ends meet/not have enough money to make ends meet).
Food stability indicators included: "I couldn't afford to eat balanced meals." (often true/sometimes true/never true), and "The food that I bought just didn't last, and I didn't have money to get more." (often true/sometimes true/never true).

Regarding access to healthcare, individuals were asked: "During the last 12 months, was there a time when you needed to see a doctor but could not because of cost? (yes/no), "Do you have one person you think of as your personal doctor or health care provider?" (yes/no), and "Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare, or Indian Health Service?" (yes/no). Lastly, participants' emotional health was assessed with the following question: "Within the last 30 days, how often have you felt this kind of stress?" (none of the time/a little of the time/some of the time/most of the time/all of the time).

For structural determinants, race/ethnicity, education level, and employment status were included. Participants' race/ethnicity was characterized as: White, Black, American Indian or Alaskan Native, Asian, Native Hawaiian/other, Pacific Islander, Other race (non-Hispanic), Multiracial, and Hispanic. The level of education completed was classified as: did not graduate high school, graduated high school, attended college or technical school, or graduated from college or technical school. The final variable, employment status, was categorized as: employed for wages, self-employed, out of work for 1 year or more, out of work for less than 1 year, a homemaker, a student, retired, and unable to work.

Covariates
Participants' demographic characteristics were included as covariates. These characteristics were age in years (18–24, 25–34, 35–44, 45–54, and 55), sex (female/male), and state the survey was conducted (Florida, Georgia, Iowa, Massachusetts, Minnesota, Mississippi, New Hampshire, Pennsylvania, Utah, West Virginia, Wisconsin, and Wyoming).

Statistical Analysis
The data were weighted according to BRFSS' recommendations to obtain state-level estimates, which use iterative proportional fitting to adjust for demographic differences[12]. Descriptive statistics and binary logistic regression analysis were performed to examine the relationship between chronic ACSCs and SDOH while controlling for covariates. All analyses were performed using STATA MP14[13]. The Hosmer-Lemeshow goodness of fit test confirmed model fit[14]. A $p \leq 0.05$ was considered as the significance level.

Results
Among the five chronic ACSCs, hypertension was the most common condition participants reported being diagnosed with (32.54%) [Figure 1]. Asthma was the second most common (14.16%) followed by diabetes (10.89%). The least common conditions were COPD, emphysema, or chronic bronchitis (6.54%), and angina or coronary heart disease (4.05%).

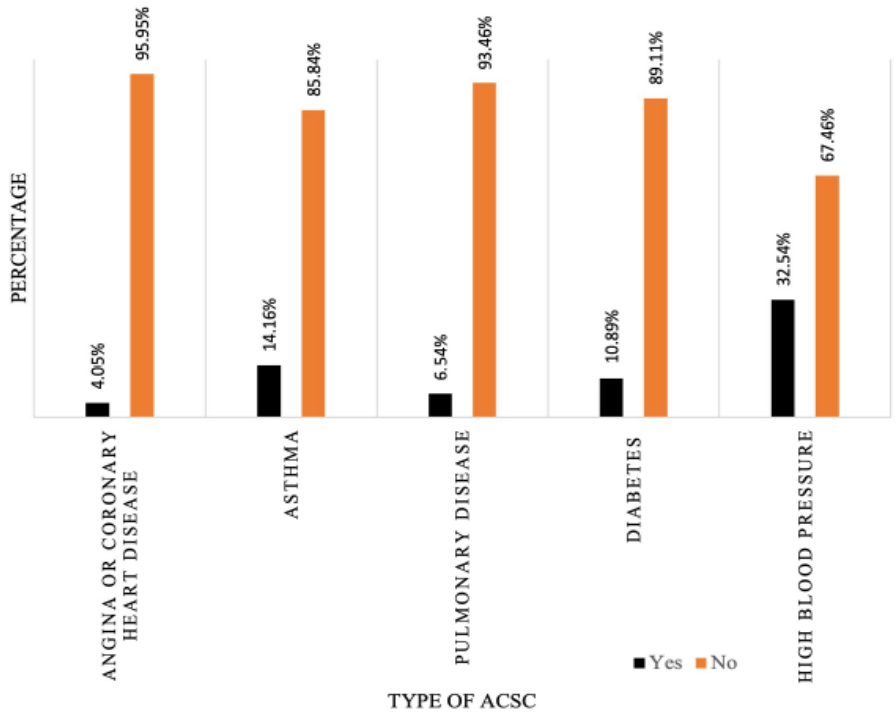

Figure 1. Weighted Proportions of Participants Displaying ACSCs in 2017 BRFSS

Table 1 shows the characteristics of participants by their ACSC status among the 111,828 participants. A larger percentage of participants were females who did not have ACSCs (54.52%); however, a slightly greater percentage of males than females had ACSCs (46.85% versus 45.48%). A larger proportion of participants who had ACSCs (58.82%) could not pay their mortgage, rent, or utility bill within the 12 months compared to participants who did not have ACSCs (41.18%).

The greatest percentage of participants who had ACSCs felt extremely unsafe in their neighborhood (55.46%). In contrast, the largest portion of participants who did not have ACSCs reported feeling extremely safe in their neighborhood (55.76%). A higher percentage of participants with ACSCs (51.59%) were likely to report not being able to see a doctor due to cost than participants with no ACSCs (48.41%).

Table 1. Characteristics of Participants by their ACSC Status, 2017 BRFSS.

Characteristics	**No ACSCs n (%)**	**Have ACSCs n (%)**	**Total**
Demographics			
Age in years			
18-24	5,350 (74.42)	1,776 (25.58)	7126
25-34	9,094 (71.89)	3,420 (28.11)	12514
35-44	8,940 (66.08)	4,498 (33.92)	13438
45-54	9,670 (55.84)	7,860 (44.16)	17530
55+	20,772 (34.09)	40,448 (65.91)	61220
Sex			
Male	24,022 (53.15)	26,303 (46.85)	50325
Female	29,777 (54.52)	31,676 (45.48)	61453
Intermediary Determinants			
How safe from crime do you consider your neighborhood to be			
Extremely safe	19,133 (55.76)	18,570 (44.24)	37703
Safe	21,583 (52.33)	24,649 (47.67)	46232
Unsafe	1,144 (45.30)	1,801 (54.70)	2945

Extremely unsafe	191 (44.54)	364 (55.46)	555
Unable to pay rent, mortgage, or utility bills (last 12 months)			
Yes	2,598 (41.18)	4,501 (58.82)	7099
No	39,617 (54.49)	41,166 (45.51)	80783
Times moved from one home to another (last 12 months)			
Never-2	41,662 (53.23)	45,197 (46.77)	86859
3 or more	563 (53.31)	526 (46.69)	1089
I couldn't afford to eat balanced meals (last 12 months)			
Often true	1,492 (43.16)	2,761 (56.84)	4253
Sometimes true	3,775 (47.84)	5,124 (52.16)	8899
Never true	36,696 (54.69)	37,489 (45.31)	74185
The food I bought just didn't last, and I didn't have money to get more (last 12 months)			
Often true	1,010 (39.29)	2,128 (60.71)	3138
Sometimes true	3,429 (46.21)	4,944 (53.79)	8373
Never true	37,540 (54.91)	38,315 (45.09)	75855
How finances work out at end of month			
Some money left over	24,930 (57.94)	23,077 (42.06)	48007
Just enough money to make ends meet	13,951 (51.21)	16,575 (48.79)	30526
Not enough money to make ends meet	2,274 (35.49)	4,754 (64.51)	7028
Needed to see doctor but could not because of cost (last 12 months)			
Yes	5,378 (48.41)	7,179 (51.59)	12557
No	48,306 (54.69)	50,635 (45.31)	98941
Have personal doctor or healthcare provider			
Yes, only one	36,700 (49.74)	46,356 (50.26)	83056
More than one	3,365 (43.24)	5,274 (56.76)	8639
No	13,518 (70.54)	6,173 (29.46)	19691
Have healthcare coverage			
Yes	47,859 (52.61)	53,977 (47.39)	101836
No	5,657 (62.92)	3,820 (37.08)	9477
Felt stress in last 30 days			
None of the time	18,808 (55.24)	19,825 (44.76)	38633
Little of the time	12,217 (56.65)	11,366 (43.35)	23583
Some of the time	7,028 (51.82)	7,947 (48.18)	14975
Most of the time	2,600 (45.25)	3,732 (54.75)	6332
All of the time	1,229 (35.33)	2,417 (64.67)	3646
Structural Determinants			
Race/Ethnicity			
White	43,183 (52.21)	47,075 (47.79)	90258
Black	3,135 (52.12)	5,039 (47.88)	8174
American Indian or Alaskan Native	457 (44.02)	737 (55.98)	1194
Asian	1,091 (78.02)	356 (21.98)	1447
Native Hawaiian/Other Pacific Islander	98 (63.61)	62 (36.39)	160
Other	253 (54.09)	235 (45.91)	488
Multiracial	672 (49.44)	870 (50.56)	1542
Hispanic	3,886 (60.69)	2,489 (39.31)	6375
Level of education			
Less than high school	2,937 (43.11)	5,083 (56.89)	8020
Graduated high school	13,547 (50.91)	17,855 (49.09)	31402
Attended college or technical school	14,999 (53.76)	16,995 (46.24)	31994
Graduated from college or technical school	22,101 (62.18)	17,862 (37.82)	39963
Employment status			
Employed for wages	28,339 (63.68)	18,235 (36.32)	46574
Self-employed	5,574 (61.74)	3,858 (38.26)	9432
Out of work for 1+ years	1,125 (43.63)	1,682 (56.37)	2807
Out of work for <1 year	1,173 (57.44)	993 (42.56)	2166

Homemaker	3,180 (60.10)	2,618 (39.90)	5798
Student	2,394 (75.73)	811 (24.27)	3205
Retired	9,633 (29.78)	22,692 (70.22)	32325
Unable to work	1,765 (23.58)	6,712 (76.42)	8477

Table 2 depicts the results of the binary logistic regression model adjusted for covariates. Male participants had significantly higher adjusted odds than females of having ACSCs (AOR=1.34; 95% CI=1.25-1.43). When comparing races, participants who self-identified as Black had higher adjusted odds than White participants of having ACSCs (AOR=1.16; 95% CI=1.04-1.30). Participants who reported challenges paying their utility bills in the past 12 months were significantly more likely to have ACSCs than those who did not report experiencing this challenge (AOR=1.18; 95% CI=1.03-1.36). Those who reported they did not have enough money to make ends meet had 1.38 higher adjusted odds of having ACSCs than those who had some money left to make ends meet (AOR=1.38; 95% CI=1.19-1.61). As compared with those who felt stressed none of the time in the last 30 days, those who felt stressed all of the time were two times more likely to have ACSCs (AOR=2.24; 95% CI=1.88-2.67). Participants who lived in West Virginia were more likely to have ACSCs than those who reside in Florida (AOR=1.44; 95% CI=1.28-1.61).

Table 2. Relationship between ACSCs and SDOH, adjusting for covariates, 2017 BRFSS

	Adjusted Odds Ratio (95% Confidence Interval)	***p*-value***
Intermediary Determinants		
How safe from crime do you consider your neighborhood to be		
Extremely safe (Reference)		
Safe	1.10 (1.03-1.17)	<0.001
Unsafe	1.24 (1.03-1.48)	0.02
Extremely unsafe	1.09 (0.73-1.61)	0.68
Unable to pay rent, mortgage, or utility bills (last 12 months)		
No (Reference)		
Yes	1.18 (1.03-1.36)	0.02
Times moved from one place to another		
Never-2 (Reference)		
3 or more	1.24 (0.91-1.70)	0.18
I couldn't afford to eat balanced meals (last 12 months)		
Often true (Reference)		
Sometimes true	1.12 (0.93-1.36)	0.22
Never true	0.96 (0.79-1.15)	0.64
The food I bought just didn't last, and I didn't have money to get more (last 12 months)		
Never true (Reference)		
Often true	1.08 (0.86-1.36)	0.50
Sometimes true	1.14 (0.99-1.31)	0.07
How finances work out at end of the month		
Some money left over (Reference)		
Just enough money to make ends meet	1.19 (1.11-1.28)	<0.001
Not enough money to make ends meet	1.38 (1.19-1.61)	<0.001
Needed to see a doctor but could not because of cost		
No (Reference)		
Yes	1.18 (1.06-1.32)	<0.001
Have a personal doctor or healthcare provider		
Yes, only one (Reference)		
More than one	1.22 (1.08-1.36)	<0.001
No	0.53 (0.48-0.58)	<0.001
Have healthcare coverage		
No (Reference)		
Yes	0.88 (0.77-0.99)	0.04
Felt stressed in the last 30 days		

None of the time (Reference)		
Little of the time	1.21 (1.12-1.30)	<0.001
Some of the time	1.41 (1.28-1.54)	<0.001
Most of the time	1.69 (1.48-1.93)	<0.001
All of the time	2.24 (1.88-2.67)	<0.001
Structural Determinants		
Race/Ethnicity		
White (Reference)		
Black	1.16 (1.04-1.30)	0.01
Asian	0.61 (0.48-0.78)	<0.001
Native Hawaiian or other Pacific Islander	0.98 (0.50-1.93)	0.95
Other race (non-Hispanic)	0.92 (0.55-1.54)	0.76
Level of education		
Did not graduate high school (Reference)		
Graduated high school	0.82 (0.72-0.94)	0.01
Attended college or technical School	0.81 (0.70-0.93)	<0.001
Graduated from college or technical school	0.61 (0.53-0.71)	<0.001
Employment status		
Employment for wages (Reference)		
Self-employed	0.90 (0.80-1.01)	0.08
Out of work for 1+ years	1.53 (1.26-1.87)	<0.001
Out of work for <1 year	1.11 (0.89-1.40)	0.36
Homemaker	0.99 (0.87-1.14)	0.91
Student	0.96 (0.77-1.19)	0.70
Retired	1.90 (1.74-2.07)	<0.001
Unable to work	2.31 (2.00-2.67)	<0.001
Covariates		
Age in years		
18-24 (Reference)		
25-34	1.28 (1.07-1.52)	0.01
35-44	1.57 (1.32-1.87)	<0.001
45-54	2.17 (1.84-2.57)	<0.001
55+	4.57 (3.88-5.38)	<0.001
Sex		
Female (Reference)		
Male	1.34 (1.25-1.43)	<0.001
State		
Florida (Reference)		
Georgia	1.06 (0.95-1.19)	0.31
Iowa	0.99 (0.89-1.09)	0.81
Massachusetts	1.01 (0.89-1.14)	0.91
Minnesota	0.79 (0.72-0.86)	<0.001
Mississippi	1.18 (1.04-1.35)	0.01
New Hampshire	0.99 (0.88-1.12)	0.92
Pennsylvania	1.09 (0.97-1.21)	0.14
Utah	0.93 (0.85-1.03)	0.18
West Virginia	1.44 (1.28-1.61)	<0.001
Wisconsin	0.88 (0.78-0.99)	0.03
Wyoming	1.00 (0.89-1.13)	0.96

*A $p < 0.05$ was considered as the significance level.

Discussion

The binary logistic regression analysis outcomes show that males are more likely to have ACSCs than females. Previous research has reported females as more likely to be hospitalized or visit emergency departments with ACSCs[15]. In examining emergency department visits with an ACSCs diagnosis among adults, Johnson and colleagues determined 61.6% of these visits were females versus 38.4% of visits were by males[15]. Therefore, men having higher odds of having

ACSCs may be associated with their use of health services. Prior research has discussed men's underutilization of health services and factors related to their use[16-18]. Furthermore, research has discussed men with chronic conditions having lower confidence in taking actions to prevent symptoms for their health and knowing when to get medical care[16]. This suggests men may be more likely to have ACSCs, but their conditions are underreported due to their lower use of healthcare. Further research should be conducted to examine gender differences in the prevalence of ACSCs. This research can inform the development and implementation of population-based interventions.

Participants who self-reported their race as Black were significantly more likely to have ACSCs. This finding aligns with the literature, which discusses racial/ethnic disparities in hospitalizations for ACSCs[7]. Furthermore, research shows this racial disparity has increased since the 1990s, with limited to no improvement in the decrease in hospitalizations for ACSCs among Blacks over time[7]. The latest statistics depict no change in this disparity, as 2017 statistics show Blacks' (2,198.0 per 100,000 population) preventable inpatient stays are twice the rate of their Whites (874.6 per 100,000 population)[2]. Research suggests that SDOH, such as socioeconomic status, may play a role in this racial inequality[7,19]. Therefore, the results provide supporting evidence for implementing policies to address determinants (e.g., costs) that deter this population's use of health services for their ACSCs.

Previous research has reported Hispanics more likely to have chronic ACSCs than their White counterparts[2]. Thus, it was surprising that Hispanics were not significantly more likely to have chronic ACSCs than their White counterparts in this study. Two potential reasons for these findings are Hispanics with ACSCs may be underreported. Research shows Hispanics are less likely to access healthcare services due to a lack of health insurance[20]. A literature review published in 2016 highlights the effects of health insurance on Hispanics' access and use of health services. It notes that before implementing the Affordable Care Act (ACA), 30% of Hispanics compared to 11% of non-Hispanic Whites reported not having health insurance. Although the ACA decreased the uninsured rate (2010-2016) among Hispanics from 32.6% to 19.1%[21]. The 2019 statistics show the uninsured rate of Hispanics continues to be substantially higher among Hispanics (20.0%) than Whites (7.8%)[21]. As a result of not having insurance, this population may be more likely to utilize healthcare services once their symptoms have exacerbated, resulting in the need for hospitalization. This may influence the reporting of ACSCs among this population. A second potential reason is the type and number of ACSCs (i.e., chronic versus acute conditions) incorporated in this study, which may not align with those commonly diagnosed in Hispanic adults. This would diminish the association between ACSCs and Hispanics in this study.

The findings of this study suggest financial stability significantly influences an ACSC status. Specifically, participants who reported just enough or not enough money to make ends meet had higher adjusted odds of having ACSCs than those who reported having sufficient funds. Similarly, participants who reported not being able to pay their bills (rent, mortgage, or utility) had higher adjusted odds of having ACSCs than those who did not experience any difficulty. However, previous research has reported socioeconomic status to significantly influence ACSCs. This study adds to the literature by providing a more in-depth understanding of the role of income and by identifying specific income factors (i.e., ability to make ends meet and pay bills), which can inform the development of targeted interventions that address these factors among this population.

Participants who reported their neighborhood as extremely unsafe from crime had higher odds of having ACSCs than those who reported their neighborhood as extremely safe from crime. These findings provide supporting evidence to research conducted by Huang and colleagues in 2018, which determined neighborhood socioeconomics was significantly associated with emergency department visits for ACSCs among older adults[22]. These findings can inform community-based interventions to improve safety and evaluate their impact on ACSCs among residents.

Table 2 shows a significant relationship between stress and ACSCs. Previous research has also identified a relationship between stress and ACSCs[23]. In 2017, Prior et al. found that being in the highest perceived stress group was associated with 2.13 times higher risk for ACSCs than those in the lowest stress group[23]. Participants' stress may stem from underlying factors such as their financial security and neighborhood characteristics. Additional research is needed to confirm underlying factors to inform interventional efforts effectively. This population may also benefit from stress coping programs to aid them in navigating stressful events.

This study has several limitations that should be considered. One limitation of this study to be considered is that it included participants from twelve states; therefore, the findings of this study cannot be generalized to all U.S. states and territories. Another limitation is that this study used a cross-sectional study design, which prohibits determining a

causal relationship. This study did not include all ACSCs; however, the conditions included are common and high healthcare costs conditions. Addressing these conditions alone have the potential to substantially improve health outcomes and reduce costs. Lastly, response bias may have occurred due to participants self-reporting their ACSCs, resulting in an over-or under-estimation of their conditions.

On the other hand, this study also had several strengths. This study consisted of a large sample size, which aided in examining a substantial number of SDOH. Another strength of this study is the type and number of SDOH examined, including intermediary (e.g., neighborhood crime) and structural (e.g., race/ethnicity) determinants that have not been simultaneously assessed in previous studies related to ACSCs.

Conclusions

It is evident that chronic ACSCs are associated with an increase in emergency room visits and hospitalizations[2-4,6]. This study adds to the literature by identifying SDOH significantly associated with these conditions. Race/ethnicity and education level were structural SDOH significantly associated with chronic ACSCs. Due to the complexity of these determinants, addressing them can be challenging. Therefore, intersectoral public policies[24] (e.g., improving access to quality education and health services, and diminishing racial discrimination) are warranted to address these determinants. Food insecurity, the inability to pay bills in the past 12 months, stress levels, a sense of safety in one's neighborhoods, and having access to a primary care provider are intermediary determinants associated with chronic ACSCs. This population would benefit from the implementation of community-based interventions that connect them to local organizations that provide services for these determinants. Several hospitals and health systems have developed SDOH programs consisting of partnerships with local organizations to assist their patients in addressing their social needs[25]. However, these SDOH programs are not required or standardized, which creates a gap in this population receiving these services. Therefore, further research is needed to assess the effectiveness of these SDOH programs to increase their uptake among hospitals and health systems.

Conflict of Interest

No conflict of interest.

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