Depression Fully Mediates the Effect of Multimorbidity on Self-Rated Health for Economically Disadvantaged African American Men but Not Women

Shervin Assari 1,*, James Smith 1 and Mohsen Bazargan 1,2

1 Department of Family Medicine, Charles R Drew University of Medicine and Science, Los Angeles, CA 90095, USA; jamessmith@cdrewu.edu (J.S.); mobazarg@cdrewu.edu (M.B.)
2 Department of Family Medicine, University of California Los Angeles (UCLA), Los Angeles, CA 90095, USA
* Correspondence: assari@umich.edu; Tel.: +1-734-858-8333

Received: 7 March 2019; Accepted: 10 May 2019; Published: 14 May 2019

Abstract: Background. Although chronic medical conditions (CMCs), depression, and self-rated health (SRH) are associated, their associations may depend on race, ethnicity, gender, and their intersections. In predominantly White samples, SRH is shown to better reflect the risk of mortality and multimorbidity for men than it is for women, which suggests that poor SRH among women may be caused not only by CMCs, but also by conditions like depression and social relations—a phenomenon known as “the sponge hypothesis.” However, little is known about gender differences in the links between multimorbidity, depression, and SRH among African Americans (AAs).

Objective. To study whether depression differently mediates the association between multimorbidity and SRH for economically disadvantaged AA men and women.

Methods. This survey was conducted in South Los Angeles between 2015 to 2018. A total number of 740 AA older adults (age ≥ 55 years) were enrolled in this study, of which 266 were AA men and 474 were AA women. The independent variable was the number of CMCs. The dependent variable was SRH. Age and socioeconomic status (educational attainment and marital status) were covariates. Depression was the mediator. Gender was the moderator. Structural Equation Modeling (SEM) was used to analyze the data.

Results. In the pooled sample that included both genders, depression partially mediated the effect of multimorbidity on SRH. In gender specific models, depression fully mediated the effects of multimorbidity on SRH for AA men but not AA women. For AA women but not AA men, social isolation was associated with depression. Gender differences exist in the role of depression as an underlying mechanism behind the effect of multimorbidity on the SRH of economically disadvantaged AA older adults. For AA men, depression may be the reason people with multimorbidity report worse SRH. For AA women, depression is only one of the many reasons individuals with multiple CMCs report poor SRH. Prevention of depression may differently influence the SRH of low-income AA men and women with multimorbidity.

Conclusion. Gender differences exist in the role of depression as an underlying mechanism behind the effect of multimorbidity on the SRH of economically disadvantaged AA older adults. For AA men, depression may be the reason people with multimorbidity report worse SRH. For AA women, depression is only one of the many reasons individuals with multiple CMCs report poor SRH. Prevention of depression may differently influence the SRH of low-income AA men and women with multimorbidity.

Keywords: race; gender; Blacks; African Americans; ethnic groups; chronic medical conditions; depression; self-rated health

1. Introduction

Self-rated health (SRH) is a widely accepted indicator of overall health. Poor SRH predicts risk of mortality [1–9] in both community [10] and clinical [11] settings. For both the general population [10] and patients with a chronic disease [12], SRH reflects long-term risk of mortality. SRH is a standard outcome in randomized clinical trials (RCTs) [13–16] and in national cohort surveys in...
Europe [17–19] as well as the US [20,21]. In the US, the Health and Retirement Study (HRS) [22], the Panel Study of Income Dynamics (PSID) [20,21], and the National Health and Nutrition Examination Survey (NHANES) [10] all measure health at the population level using SRH. SRH is also used for cross-country comparisons [23–29] and policy development [30–33]. It is used as a reflection of health disparities and inequality [34–37]. SRH is also used to track the subjective health of individuals with index psychiatric or medical conditions [38].

Although SRH is known to be a valid health measure [1–9], SRH may not reflect the same aspects of health across populations distinguished by race, ethnicity, and gender [39]. Although SRH is efficient, cost effective, and time saving [40], poor SRH may not have the same meaning for men as for women [41]. Despite the high acceptability of SRH as a measure of health [1–9], SRH may mean different things for different populations.

The use of SRH for group comparisons may be questioned if it is not universally valid and comparable across racial [39] and gender lines [41]. Age, gender, socioeconomic status (SES), health behaviors, chronic medical conditions (CMCs), and depression may differently influence the SRH of people in different countries [42]. If poor SRH means different things for subsections of populations, any comparison of population groups using SRH would be biased [41,43]. Thus, SRH would not be the ideal tool for measuring health in diverse populations [43,44].

Although not all studies agree [45], a large body of evidence suggests that poor SRH may not reflect the same health for subpopulations classified by age, gender, ethnicity, and health status [45–52]. For example, the meaning of SRH may shift according to developmental stage and age [45,47]. Race and ethnicity alter what poor SRH reflects [53–56]. This is in part because the reference group of each section of the population differs [57–62]. Similarly, non-health determinants of SRH vary by race and gender [63–65]. For example, socioeconomic status [42,43,63,65] and neighborhood [66] differently impact the SRH of racial and gender groups. In addition, the role of physical health in shaping SRH is not constant across various populations [42]. Finally, even within a given patient population, SRH differently reflects the severity of the condition and outcomes in different racial and gender groups [1,67].

Differences in what shapes SRH may result in differences in the validity of SRH as a predictor of the risk of mortality in different groups [41,56]. Thus, while poor SRH may be an excellent marker of mortality risk for White men, it may not be for African Americans (AAs), Hispanics, or even women [42,43,68]. To understand whether cross-gender, cross-racial, and cross-ethnic comparisons of SRH are valid, we need to compare determinants of poor SRH across various groups. Cross-group comparisons of SRH will only be valid if SRH has the same meaning across populations.

**Aims**

To better understand how gender impacts SRH in AA older adults [54,69–71], this study compared the mediating effect of depression on the effect of multimorbidity on SRH between AA men and AA women. In line with the sponge hypothesis [41,67], we expected multimorbidity to have a stronger effect on SRH among AA men than among AA women. We also expected depression to have a stronger effect on SRH among AA women than among AA men. The sponge hypothesis suggests that, for women, SRH is more inclusive, acting like a sponge to absorb a wide array of social and health factors. In contrast with the sponge-like behavior of SRH among women, SRH among men is thought to be a function of CMCs and multimorbidity alone, uninfluenced by other social and health factors [41].

**2. Methods**

**2.1. Design and Setting**

The design was a cross-sectional survey of economically disadvantaged AA older adults in South Los Angeles. The study was performed between 2015 and 2018 [72,73].
2.2. Institutional Review Board (IRB)

The study protocol was approved by the Institutional Review Board (IRB) of the Charles R. Drew University of Medicine and Science (CDU), Los Angeles. All participants signed a written informed consent before being enrolled in the study. Participants received financial incentives.

2.3. Process and Data Collection

The data collection included structured face-to-face interviews and a comprehensive assessment of medications. The interviewers collected data on demographic factors (age and gender), SES (educational attainment, financial difficulty), objective health (CMCs), and subjective health (SRH and depression).

2.4. Participants

The study recruited a convenience sample of economically disadvantaged AA older adults from low-income areas in South Los Angeles, such as the Watts area. Using a convenience sample, AA older adults were eligible if they were AA, were 55 years or older, could complete an interview in English, and resided in the Service Planning Area (SPA) 6. Institutionalized participants were excluded from the study. Other exclusion criteria included being enrolled in any other clinical trials or having poor cognitive performance. This sampling resulted in 740 AAs aged 55 years and older. Our participants were recruited from eleven senior housing apartment units, sixteen predominantly AA churches, and several low-income public housing projects, all located in SPA 6 of Los Angeles County. All of our participants were low-income, underserved, older AAs. The vast majority of older adults in SPA 6 are AAs (49%). About 28% of SPA 6 households are below the federal poverty line (FPL) and 58% of adults have income levels less than 200% of the FPL. About 36% of adults in SPA 6 are uninsured. Between 2013 and 2015, the percentage of homeless AAs in SPA 6 has almost doubled from 39% to 70% [72,73].

2.5. Measures

The current study collected data on demographic factors (gender and age), SES (educational attainment and marital status), and health status (multimorbidity, depression, and SRH).

2.5.1. Dependent Variable

Self-rated health. We asked participants about their overall health. The responses ranged from excellent (1) to poor (5). We treated SRH as a continuous variable with a range from 1 to 5, where a higher score reflects worse health. Poor SRH predicts all-cause mortality in the general population [10,74–76] as well as in patients with chronic disease [77,78]. Review articles and multiple original studies have established the high predictive validity of poor SRH as a robust determinant of mortality risk, above and beyond confounders such as SES and health [4,10,79].

2.5.2. Mediator

Depression. This study used the 15-item Geriatric Depression Scale (GDS) Short Form [80] to evaluate depression. Possible responses were “yes” or “no.” A summary score was calculated with a potential range between 0 and 15. A higher score indicated more depression. The GDS Short Form is a highly reliable and valid instrument that has been used extensively in both clinical and community settings to measure depression among older adults [80].

2.5.3. Independent Variable

Multimorbidity/number of chronic medical conditions (CMCs). In this study, multimorbidity was defined as the number of CMCs. Participants were asked about the presence of 11 CMCs. Individuals were asked by the interviewer if a physician had ever told them that they have any of these conditions: Hypertension, heart disease, diabetes, lipid disorder/hypercholesterolemia, cancer, asthma,
osteoarthritis, thyroid disorder, chronic obstructive pulmonary disease, rheumatoid arthritis, or gastrointestinal disease [42,81]. Self-reports provide valid information regarding CMCs, although some bias in this approach is to be expected [39,82–87].

2.5.4. Confounders

Sociodemographic covariates. Age, educational attainment, and marital status were the covariates in this study. Age was treated as an interval variable. Educational attainment was operationalized as an interval variable (years of schooling). Higher scores indicated more years of education. Marital status was a dichotomous variable (1 = married, 0 = unmarried).

2.5.5. Moderator

Gender. Gender was the effect modifier. Gender was treated as a dichotomous variable (1 = female, 0 = male).

2.6. Statistical Analysis

SPSS 22.0 (SPSS Inc., Chicago, IL, USA) and AMOS 22.0 were used to conduct the data analysis. The frequency (%) and the mean (SD) were reported to describe the sample at the baseline and 10 years later. Pearson correlation was used to calculate the bivariate correlations in the overall sample.

A multi-group Structural Equation Model (SEM) was used for multivariable analysis [54]. In our models, groups were defined based on gender. The number of CMCs (multimorbidity) was the predictor, SRH was the outcome, depression was the mediator, and age, education, and marital status were covariates. These variables were selected based on a review of the literature and on the available variables in our data set. The study did not collect data on income; however, most participants were low income AAs and all lived in economically disadvantaged areas of LA County. We did not include health insurance in our analysis because almost all of our participants had health insurance (mostly Medicare or MediCal). To handle missing data, the Full Information Maximum Likelihood (FIML) method was used. Data were missing in less than 1% of the cases. The final SEM model did not include any constraints or co-variances for errors. The model’s goodness-of-fit was assessed using conventional methods: A non-significant chi-square test ($p > 0.05$), a comparative fit index (CFI) larger than 0.95, a root mean squared error of approximation (RMSEA) of less than 0.06, and an X2 with less than 4 degrees of freedom. We reported unstandardized regression coefficients for each path.

3. Results

3.1. Descriptive Statistics

A total number of 740 AA economically disadvantaged older adults 55 years or older were enrolled in this study, of which 266 were AA men and 474 were AA women. Table 1 describes the sample, both pooled and by gender. This table shows that AA men and AA women differed in age, number of CMCs, depression, and SRH.

| Table 1. Descriptive Statistics of the sample, both pooled and by gender. |
|-----------------------------|-----------------------------|-----------------------------|
|                             | All $n = 740$ | African American Men $n = 262$ | African American Women $n = 474$ |
|                             | Mean        | SD           | Mean        | SD           | Mean        | SD           |
| Age *                       | 71.73       | 8.37         | 70.79       | 8.32         | 72.26       | 8.36         |
| Educational Attainment *    | 12.74       | 2.24         | 12.42       | 2.51         | 12.93       | 2.06         |
| Number of CMCs (Multimorbidity) * | 3.86       | 1.86         | 3.58        | 1.88         | 4.03        | 1.83         |
Table 1. Cont.

|               | All $n = 740$ | African American Men $n = 262$ | African American Women $n = 474$ |
|---------------|--------------|--------------------------------|----------------------------------|
|               | Mean         | SD   | Mean         | SD   | Mean         | SD   |
| Depression    | 2.47         | 2.77 | 2.53         | 2.76 | 2.43         | 2.79 |
| Self-Rated Health (SRH) | 3.13         | 1.02 | 3.12         | 1.09 | 3.14         | 0.97 |
| Married *     |              |      |              |      |              |      |
| No            | 640          | 86.5 | 215          | 80.8 | 425          | 89.7 |
| Yes           | 100          | 13.5 | 51           | 19.2 | 49           | 10.3 |
| Living Alone *|              |      |              |      |              |      |
| No            | 294          | 39.7 | 121          | 45.5 | 173          | 36.5 |
| Yes           | 446          | 60.3 | 145          | 54.5 | 301          | 63.5 |

CMC: chronic medical condition; SD: Standard Deviation; * $p < 0.05$ (independent sample $t$-test).

3.2. Bivariate Correlations

Table 2 shows the correlation matrix between all the study variables of the sample, both pooled and by gender. As this table shows, in the pooled sample, number of CMCs, depression, and SRH were correlated in the pooled sample and AA men and AA women.

Table 2. Bivariate correlation matrix of the sample, both pooled and by gender.

| Characteristics | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  |
|-----------------|----|----|----|----|----|----|----|----|
| All             |    |    |    |    |    |    |    |    |
| 1 Gender (Female) | 1  | 0.08 * | 0.11 ** | -0.12 ** | 0.09 * | 0.12 ** | -0.02 | 0.01 |
| 2 Age           | -0.18 ** | -0.00 | 0.06 | -0.02 | -0.25 ** | -0.22 ** |    |    |
| 3 Education     | 1  | 0.06 | -0.04 | -0.09 * | -0.07 | -0.03 |    |    |
| 4 Married       | -0.41 ** | -0.02 | -0.07 | -0.08 * |    |    |    |    |
| 5 Living alone  | 1  | 0.09 * | 0.12 ** | 0.08 * |    |    |    |    |
| 6 Number of CMCs (Multimorbidity) | 1  | 0.32 ** | 0.27 ** |    |    |    |    |
| 7 Depression    |    | 1  | 0.37 ** |    |    |    |    |    |
| 8 Self-Rated Health (SRH) |    |    |    |    |    |    |    |    |
| AA Men          |    |    |    |    |    |    |    |    |
| 2 Age           | 1  | -0.25 ** | 0.01 | -0.04 | -0.06 | -0.23 ** | -0.28 ** |    |
| 3 Education     | 1  | 0.16 ** | -0.10 | -0.07 | -0.06 | -0.04 |    |    |
| 4 Married       | 1  | -0.48 ** | -0.03 | -0.10 | -0.11 |    |    |    |
| 5 Living alone  | 1  | 0.10 | 0.15 * |    | 0.12 |    |    |    |
| 6 Number of CMCs (Multimorbidity) | 1  | 0.38 ** | 0.19 ** |    |    |    |    |
| 7 Depression    |    | 1  | 0.30 ** |    |    |    |    |    |
| 8 Self-Rated Health (SRH) |    |    |    |    |    |    |    |    |
| AA Women        |    |    |    |    |    |    |    |    |
| 2 Age           | 1  | -0.16 ** | 0.00 | 0.10 * | -0.01 | -0.27 ** | -0.19 ** |    |
| 3 Education     | 0.01 | -0.02 | -0.12 ** | -0.07 | -0.03 |    |    |    |
| 4 Married       | 1  | -0.35 ** | 0.02 | -0.05 | -0.06 |    |    |    |
| 5 Living alone  | 1  | 0.06 | 0.11 * |    | 0.05 |    |    |    |
| 6 Number of CMCs (Multimorbidity) | 1  | 0.29 ** | 0.32 ** |    |    |    |    |
| 7 Depression    |    | 1  | 0.41 ** |    |    |    |    |    |
| 8 Self-Rated Health (SRH) |    |    |    |    |    |    |    |    |

*p < 0.05, ** p < 0.01.

3.3. Structural Equation Modeling (SEM) in the Pooled Sample

The fit of our first model was very good (CMIN = 4.11, degree of freedom [DF] = 3, $p = 0.250$, CMIN/DF = 1.370, CFI = 0.998, RMSEA = 0.022 (90%CI = 0.000–0.070). Figure 1 shows the results of a SEM with multimorbidity (number of CMCs) as the predictor, depression as the mediator, and SRH as the outcome variable in the pooled sample. According to this model, depression only partially mediated the effects of multimorbidity on SRH in the pooled sample (Table 3).
Table 3. Summary of the Structural Equation Modeling (SEM) in the pooled sample.

| Characteristics                      | Estimate (S.E.) | p   |
|--------------------------------------|-----------------|-----|
| **→ Depression**                     |                 |     |
| Gender (female)                      | −0.19 (0.20)    | 0.340 |
| Marital status (married)             | −0.17 (0.30)    | 0.559 |
| Number of CMCs (multimorbidity)      | 0.45 (0.05)     | <0.001 |
| Living alone                         | 0.57 (0.21)     | 0.006 |
| Age                                  | −0.09 (0.01)    | <0.001 |
| Education                            | −0.10 (0.04)    | 0.022 |
| **→ Self-Rated Health (SRH)**        |                 |     |
| Gender (female)                      | 0.02 (0.07)     | 0.795 |
| Age                                  | −0.02 (0.00)    | <0.001 |
| Number of CMCs (multimorbidity)      | 0.10 (0.02)     | <0.001 |
| Depression                           | 0.10 (0.01)     | <0.001 |

SE: Standard Error; CMC: chronic medical condition

3.4. Structural Equation Modeling (SEM) in African American (AA) Men

The fit of our multi-group model was very good (CMIN = 5.22, DF = 6, p = 0.001, CMIN/DF = 8.981, CFI = 1.000, RMSEA = 0.000 (90%CI = 0.000–0.044). Figure 2 shows the results of an SEM with number of CMCs (multimorbidity) as the predictor, depression as the mediator, and SRH as the outcome variable for AA men. According to this model, depression fully mediated the effects of multimorbidity on SRH in the pooled sample. In a model that also included depression (as the mediator), multimorbidity did not impact SRH for AA men (Table 4).
Table 4. Summary of the Structural Equation Modeling (SEM) in African American (AA) men and women.

| Characteristics                  | Estimate (S.E.) | p     | Estimate (S.E.) | p     |
|----------------------------------|-----------------|-------|-----------------|-------|
|                                  |                 |       |                 |       |
| → Depression                     |                 |       |                 |       |
| Marital status (married)         | −0.25 (0.44)    | 0.571 | −0.13 (0.41)    | 0.752 |
| Number of CMCs (multimorbidity)  | 0.51 (0.08)     | <0.001| 0.41 (0.06)     | <0.001|
| Living alone                     | 0.45 (0.35)     | 0.193 | 0.65 (0.26)     | 0.012 |
| Age                              | −0.07 (0.02)    | <0.001| −0.10 (0.01)    | <0.001|
| → Self-Rated Health (SRH)        |                 |       |                 |       |
| Education                        | −0.09 (0.06)    | 0.162 | −0.10 (0.06)    | 0.078 |
| Age                              | −0.03 (0.01)    | <0.001| −0.01 (0.01)    | 0.021 |
| Number of CMCs (multimorbidity)  | 0.06 (0.04)     | 0.115 | 0.12 (0.02)     | <0.001|
| Depression                       | 0.09 (0.03)     | <0.001| 0.11 (0.02)     | <0.001|

SE: Standard Error; CMC: chronic medical condition

3.5. Structural Equation Modeling (SEM) in African American (AA) Women

Figure 3 shows the results of an SEM with multimorbidity as the predictor, depression as the mediator, and SRH as the outcome variable for AA women. According to this model, depression only partially mediated the effects of multimorbidity on SRH in the pooled sample. While depression was in the model, multimorbidity still impacted SRH for AA men (Table 4).
4. Discussion

In this convenience sample of economically disadvantaged AA older adults, there were gender differences in the way depression mediated the association between multimorbidity and SRH. Depression fully mediated the association between multimorbidity and poor SRH in economically disadvantaged AA men, but not in economically disadvantaged AA women. Depression was the reason low-income AA men with multimorbidity reported poor SRH, but it was more than depression that caused low-income AA women with multimorbidity to report poor SRH.

In a recent study of a smaller sample of low-income AA adults, the SRH of women was found to operate like a sponge, absorbing more affective and contextual information, as opposed to AA men’s SRH [83]. However, that study did not differentiate mediators of SRH by gender, as we have done.

Our results contribute to the literature on gender differences in SRH. In studies conducted in mainly White samples, poor SRH predicted the risk of mortality among men much better than among women [41,88]. In one of the studies, the author argued that in women, SRH may reflect more contextual and affective information, whereas for men, the main determinant of SRH is multimorbidity (number of CMCs) [41]. In another study, gender difference in the predictive power of poor SRH on the risk of mortality was attenuated by controlling for co-morbid conditions, suggesting that multimorbidity is one of the reasons SRH better predicts mortality among men than among women [88]. However, most of this research used samples that were predominantly White [41]. The main contribution of this study is to extend this literature to AAs. In a study of AA individuals with diabetes, SRH reflected glucose control for AA men but not for AA women [67]. In another study of people with diabetes, worse glycemic control (higher HbA1c) was associated with worse levels of SRH in males and females only when all age groups were combined. However, in younger people, the same association was stronger for women than for men, probably due to diabetes-related worries as a result of high HbA1c [89].

In contrast to our results, there are also studies that do not confirm major gender differences in SRH. In one study that spanned 12 years, the Health and Retirement Study (HRS), males and females were compared for trajectories and determinants of SRH. The study, which is mainly composed of Whites, did not show gender differences in SRH levels at baseline. However, SRH declined faster for men than for women over time. Onset of development of CMCs, health behaviors such as smoking, and rate of retirement explain this gender difference in trajectory of SRH over time [90]. In a study that used the 2002–2015 National Health Interview Survey (NHIS) data, ordered logistic regression models were applied to predict SRH as a function of two dozen health conditions, including multimorbidity, physical symptoms, mental health, function, healthcare use, and health behaviors, by gender. The study...
found almost no evidence supporting the sponge hypothesis. The study failed to show systematic gender variation in the structure of SRH. The study showed that men and women use a wide-range of health-related frames of reference, mostly in a similar way, to make judgments regarding their own health. The following gender difference was observed: At mid-life and older ages, men are more likely than women to weigh physical functioning and negative health behaviors as a factor contributing to their SRH. This study suggested that women report worse SRH than men only through mid-adulthood. This pattern reverses as they age. The study also showed that the female disadvantage in SRH is fully attributable to SES differences. The authors argued that SRH can be used to measure gender differences in health [45]. A study of veterans also did not find major gender differences; however, it did find that exposure to warfare casualties was more predictive of SRH for men than women [91]. These results, however, differ from our study, which suggests SRH may not be comparable between AA men and women.

Our study supports the findings of most researchers that race/ethnicity, gender, and SES have complex effects in shaping what poor SRH means [68,81,92–94]. For example, education and income improve the SRH of White but not AA individuals and families [63–65]. At the same time, SRH predicts risk of mortality of Whites but not AAs [1,56]. This is because SRH does not reflect the same aspect of health for ethnic groups [43,44] and also across countries [42,95–97]. In the Fragile Families and Child Well-Being Study, which followed 2407 AAs and 894 Whites for five years for changes in SRH, in all ethnic groups, anxiety and drinking problems were predictive of poor SRH at baseline and over time. The study documented cross-ethnic variation in the combined (additive) effects of anxiety and depression on SRH. For AAs, depression and anxiety both predicted a worse trajectory of SRH over time. For Whites, depression predicted worse baseline SRH, while anxiety predicted better SRH at baseline and over time [92]. In another cross-sectional study, which borrowed data from the National Survey of American Life 2003 and included 3570 AAs, anxiety and depression had independent (i.e., separate) effects on mental SRH [68].

Our results suggest that AA men demonstrate lower SRH when depressed compared to AA women. This is an interesting finding that highlights a relative disadvantage of AA men compared to AA women when it comes to the impact of depression on SRH in the presence of multimorbidity. This finding contributes to the literature on race, gender, and health. The older work of James Stewart [98] and the more recent work of Tommy Curry (The Man-Not) [99] help us understand the contribution of structural racism in the life of AA men. Studies by Watkin [100,101], Powell [102–104], Neighbors [105], and Griffith [106] show us the interpersonal aspects of depression among AA men. Their work helps us understand the multi-level determinants of depression in AA men, suggesting that a combination of masculinity and racism increases the risk of depression for AA men. This is probably why even among high SES AA men, but not among high SES AA women, we observe an increased risk of depression and psychological distress [81,107,108].

One of the findings of this study was that AA women may be more vulnerable to the effects of living alone on depression compared to AA men. While social support is shown to be important for mental health in all groups [109–111], social relations are particularly consequential for AAs [112–116]. Social support promotes mental health directly and buffers the effect of stress [117]. There is literature that suggests social support may be more crucial for mental health of AAs than Whites [118–121]. In these studies, social support shows a stronger effect on the mental health of AAs than Whites. There are also many studies showing different relevance of social support to the health and wellbeing of men and women [70,122–134].

Limitations

There are several limitations to this study, which may be inherent to our study design. Due to a cross-sectional study design, we cannot infer causal associations. We also did not have data on personal or household income. We did not expect a large distribution of income, as all participants were of retirement age and were living in one of the most economically disadvantaged areas of South LA.
Health insurance was also present in almost all our participants. Finally, we did not include marital status to reduce collinearity, because we had living alone as a confounder. Furthermore, self-reporting bias must be recognized as a possibility since we did not have access to clinical validations of CMCs or formal diagnoses by mental health providers. There is a need for future studies to replicate these findings using medical chart review or administrative data. The smaller number of AA men in comparison with AA women in our sample may have resulted in differential statistical power. Finally, non-random sampling reduces the generalizability of our results. These limitations were inevitable because we performed a secondary analysis of an existing data set. Despite these limitations, this study contributes to the literature on the intersections of race, gender, and the meaning of SRH, with a particular focus on older adults in a low-income urban setting.

5. Conclusions

In summary, there are gender differences in SRH among low-income AA older men and women with multimorbidity. For low-income AA older men, depression is the reason individuals with multimorbidity report poor SRH. For low-income AA older women, more than depression is involved. More research is needed to investigate other factors contributing to poor SRH among AAs with multimorbidity. Future research should examine whether pain, anxiety, social isolation, or other domains have an impact on SRH among low-income AA women with multiple CMCs.

Author Contributions: M.B. designed the study, conducted the study, collected data, and revised the manuscript. J.S. contributed in the data collection and performing the study. S.A. prepared the first draft of the paper. All authors approved the final draft.

Funding: This study was supported by the Center for Medicare and Medicaid Services (CMS) Grant 1H0CMS331621 to Charles R. Drew University of Medicine and Science (PI: M. Bazargan). Additionally, Bazargan is supported by the NIH under Award # “54MD008149” and # R25 MD007598 (PI: J. Vadgama), and U54 TR001627 (PIs: S. Dubinett, and R. Jenders). Assari is partly supported by the CMS grant 1H0CMS331621 (PI: M. Bazargan) and the National Institute on Minority Health and Health Disparities (NIMHD) grant U54 MD007598 (PI = M. Bazargan).

Conflicts of Interest: The authors declare no conflicts of interest.

References

1. Assari, S. Self-rated Health and Mortality due to Kidney Diseases: Racial Differences in the United States. *Adv. Biomed. Res.* **2018**, *7*, 4. [CrossRef]
2. Godaert, L.; Godard-Sebillotte, C.; Allard Saint-Albin, L.; Bousquet, L.; Bourdel-Marchasson, I.; Fanon, J.L.; Drame, M. Self-rated health as a predictor of mid-term and long-term mortality in older Afro-Caribbeans hospitalised via the emergency department. *Qual. Life Res.* **2018**, *27*, 91–96. [CrossRef] [PubMed]
3. Grove, B.E.; Schougaard, L.M.; Hjollund, N.H.; Ivarsen, P. Self-rated health, quality of life and appetite as predictors of initiation of dialysis and mortality in patients with chronic kidney disease stages 4-5: A prospective cohort study. *BMC Res. Notes* **2018**, *11*, 371. [CrossRef]
4. Phung, T.K.T.; Siersma, V.; Vingerling, J.R.; Waldemar, G. Self-rated versus Caregiver-rated Health for Patients with Mild Dementia as Predictors of Patient Mortality. *Am. J. Geriatr. Psychiatry* **2018**, *26*, 375–385. [CrossRef] [PubMed]
5. Schnittker, J.; Bacak, V. The increasing predictive validity of self-rated health. *PLoS ONE* **2014**, *9*, e84933. [CrossRef]
6. Szybalska, A.; Broczek, K.; Puzianowska-Kuznicka, M.; Slusarczyk, P.; Chudek, J.; Skalska, A.; Mossakowska, M. Self-rated health and its association with all-cause mortality of older adults in Poland: The PoIsenior project. *Arch. Gerontol. Geriatr.* **2018**, *79*, 13–20. [CrossRef]
9. Thong, M.S.; Kaptein, A.A.; Benyamini, Y.; Krediet, R.T.; Boeschoten, E.W.; Dekker, F.W.; Netherlands Cooperative Study on the Adequacy of Dialysis Study Group. Association between a self-rated health question and mortality in young and old dialysis patients: A cohort study. *Am. J. Kidney Dis.* 2008, 52, 111–117. [CrossRef]

10. Idler, E.L.; Angel, R.J. Self-rated health and mortality in the NHANES-I Epidemiologic Follow-up Study. *Am. J. Public Health* 1990, 80, 446–452. [CrossRef]

11. Lainscak, M.; Farkas, J.; Frantal, S.; Singer, P.; Bauer, P.; Hiesmayr, M.; Schindler, K. Self-rated health, nutritional intake and mortality in adult hospitalized patients. *Eur. J. Clin. Invest.* 2014, 44, 813–824. [CrossRef]

12. Wennberg, P.; Rolandsson, O.; Jerden, L.; Boeing, H.; Sluijk, D.; Kaaks, R.; Teucher, B.; Spijkerman, A.; Bueno de Mesquita, B.; Dethlefsen, C.; et al. Self-rated health and mortality in individuals with diabetes mellitus: Prospective cohort study. *BMJ Open* 2012, 2, e000760. [CrossRef]

13. Gonzalez, M.; Sjolin, I.; Back, M.; Ogmundsdottir Michelsen, H.; Tanha, T.; Sandberg, C.; Schiopu, A.; Leosdottir, M. Effect of a lifestyle-focused electronic patient support application for improving risk factor management, self-rated health, and prognosis in post-myocardial infarction patients: Study protocol for a multi-center randomized controlled trial. *Trials* 2019, 20, 76. [CrossRef]

14. Duberg, A.; Hagberg, L.; Sunnvisson, H.; Moller, M. Influencing self-rated health among adolescent girls with dance intervention: A randomized controlled trial. *JAMA Pediatr.* 2013, 167, 27–31. [CrossRef]

15. Diaz, E.; Bruce, N.; Pope, D.; Diaz, A.; Smith, K.R.; Smith-Sivertsen, T. Self-rated health among Mayan women participating in a randomised intervention trial reducing indoor air pollution in Guatemala. *BMC Int. Health Hum. Rights* 2008, 8, 7. [CrossRef]

16. Steptoe, A.; Perkins-Porras, L.; Hilton, S.; Rink, E.; Cappuccio, F.P. Quality of life and self-rated health in relation to changes in fruit and vegetable intake and in plasma vitamins C and E in a randomised trial of behavioural and nutritional education counselling. *Br. J. Nutr.* 2004, 92, 177–184. [CrossRef]

17. Mavaddat, N.; Kinmonth, A.L.; Sanderson, S.; Surtees, P.; Bingham, S.; Khaw, K.T. What determines Self-Rated Health (SRH)? A cross-sectional study of SF-36 health domains in the EPIC-Norfolk cohort. *J. Epidemiol. Community Health* 2011, 65, 800–806. [CrossRef]

18. Westerlund, H.; Kivimaki, M.; Singh-Manoux, A.; Melchior, M.; Ferrie, J.E.; Pentti, J.; Jokela, M.; Leineweber, C.; Goldberg, M.; Zins, M.; et al. Self-rated health before and after retirement in France (GAZEL): A cohort study. *Lancet* 2009, 374, 1889–1896. [CrossRef]

19. Delpierre, C.; Datta, G.D.; Kelly-Irving, M.; Lauwers-Cances, V.; Berkman, L.; Lang, T. What role does socio-economic position play in the link between functional limitations and self-rated health: France vs. USA? *Eur. J. Public Health* 2012, 22, 317–321. [CrossRef]

20. Etherington, N. Re-evaluating gender differences in self-rated health: The importance of cohort. *J. Aging Women* 2017, 29, 150–162. [CrossRef]

21. McDonough, P.; Berglund, P. Histories of poverty and self-rated health trajectories. *J. Health Soc. Behav.* 2003, 44, 198–214. [CrossRef]

22. Lee, S.J.; Moody-Ayers, S.Y.; Landefeld, C.S.; Walter, L.C.; Lindquist, K.; Segal, M.R.; Covinsky, K.E. The relationship between self-rated health and mortality in older black and white Americans. *J. Am. Geriatr. Soc.* 2007, 55, 1624–1629. [CrossRef]

23. Torsheim, T.; Nygren, J.M.; Rasmussen, M.; Arnarsson, A.M.; Bendsøe, P.; Schnohr, C.W.; Nielsen, L.; Nyholm, M. Social inequalities in self-rated health: A comparative cross-national study among 32,560 Nordic adolescents. *Scand. J. Public Health* 2018, 46, 150–156. [CrossRef]

24. Lee, Y. Does Context Matter? Literacy Disparities in Self-rated Health Using Evidence from 17 Developed Countries. *Am. J. Health Behav.* 2017, 41, 287–300. [CrossRef]

25. Kim, S.; Kim, C.Y.; You, M.S. Civic participation and self-rated health: A cross-national multi-level analysis using the world value survey. *J. Prev. Med. Public Health* 2015, 48, 18–27. [CrossRef]

26. French, D.J.; Browning, C.; Kendig, H.; Luszcz, M.A.; Saito, Y.; Sargent-Cox, K.; Anstey, K.J. A simple measure with complex determinants: Investigation of the correlates of self-rated health in older men and women from three continents. *BMC Public Health* 2012, 12, 649. [CrossRef]

27. Prus, S.G. Comparing social determinants of self-rated health across the United States and Canada. *Soc. Sci. Med.* 2011, 73, 50–59. [CrossRef] [PubMed]
28. Hanibuchi, T.; Nakaya, T.; Murata, C. Socio-economic status and self-rated health in East Asia: A comparison of China, Japan, South Korea and Taiwan. *Eur. J. Public Health* 2012, 22, 47–52. [CrossRef]

29. Bardage, C.; Pluijm, S.M.F.; Pedersen, N.L.; Deeg, D.J.H.; Jylha, M.; Noale, M.; Blumstein, T.; Otero, A. Self-rated health among older adults: A cross-national comparison. *Eur. J. Ageing* 2005, 2, 149–158. [CrossRef]

30. Gonzales, G.; Ehrenfeld, J.M. The Association between State Policy Environments and Self-Rated Health Disparities for Sexual Minorities in the United States. *Int. J. Environ. Res. Public Health* 2018, 15, 1136. [CrossRef]

31. Dowling, A.; Enticott, J.; Russell, G. Measuring self-rated health status among resettled adult refugee populations to inform practice and policy—A scoping review. *BMC Health Serv. Res.* 2017, 17, 817. [CrossRef]

32. Badland, H.; Mavoa, S.; Livingston, M.; David, S.; Giles-Corti, B. Testing spatial measures of alcohol outlet density with self-rated health in the Australian context: Implications for policy and practice. *Drug Alcohol Rev.* 2016, 35, 298–306. [CrossRef] [PubMed]

33. Spurling, G.; Hayman, N. Self-rated health status in an urban indigenous primary care setting: Implications for clinicians and public health policy. *Aust. N. Z. J. Public Health* 2010, 34, 598–601. [CrossRef]

34. Kravitz-Wirtz, N. Cumulative Effects of Growing Up in Separate and Unequal Neighborhoods on Racial Disparities in Self-rated Health in Early Adulthood. *J. Health Soc. Behav.* 2016, 57, 453–470. [CrossRef] [PubMed]

35. Sibai, A.M.; Rizk, A.; Chemaitelly, H. Self-rated health disparities among disadvantaged older adults in ethnically diverse urban neighborhoods in a Middle Eastern country. *Ethn. Health* 2017, 22, 490–509. [CrossRef] [PubMed]

36. Centers for Disease Control and Prevention. Racial/ethnic disparities in self-rated health status among adults with and without disabilities—United States, 2004–2006. *MMWR Morb. Mortal. Wkly. Rep.* 2008, 57, 1069–1073.

37. Cagney, K.A.; Browning, C.R.; Wen, M. Racial disparities in self-rated health at older ages: What difference does the neighborhood make? *J. Gerontol. B Psychol. Sci. Soc. Sci.* 2005, 60, S181–S190. [CrossRef]

38. Maguire, P.A.; Reay, R.E.; Raphael, B. Correlates of a single-item Self-Rated Mental Health Question in people with schizophrenia. *Australas. Psychiatry* 2016, 24, 473–477. [CrossRef]

39. Chandola, T.; Jenkinson, C. Validating self-rated health in different ethnic groups. *Ethn. Health* 2000, 5, 151–159. [CrossRef]

40. Meng, Q.; Xie, Z.; Zhang, T. A single-item self-rated health measure correlates with objective health status in the elderly: A survey in suburban beijing. *Front. Public Health* 2014, 2, 27. [CrossRef]

41. Assari, S. Gender differences in the predictive role of self-rated health on short-term risk of mortality among older adults. *SAGE Open Med.* 2016, 4, 2050312116666975. [CrossRef]

42. Assari, S.; Lankarani, M.M. Does Multi-morbidity Mediate the Effect of Socioeconomics on Self-rated Health? Cross-country Differences. *Int. J. Prev. Med.* 2015, 6, 85. [CrossRef]

43. Assari, S. Psychiatric Disorders Differently Correlate with Physical Self-Rated Health across Ethnic Groups. *J. Pers. Med.* 2017, 7, 6. [CrossRef] [PubMed]

44. Assari, S. Ethnic Groups Differ in How Poor Self-Rated Mental Health Reflects Psychiatric Disorders. *J. Racial Ethn. Health Disparities* 2018, 5, 728–736. [CrossRef]

45. Zajacova, A.; Huzurbazar, S.; Todd, M. Gender and the structure of self-rated health across the adult life span. *Soc. Sci. Med.* 2017, 187, 58–66. [CrossRef] [PubMed]

46. McAlpine, D.D.; McCready, E.; Alang, S. The Meaning and Predictive Value of Self-rated Mental Health among Persons with a Mental Health Problem. *J. Health Soc. Behav.* 2018, 59, 200–214. [CrossRef] [PubMed]

47. Spuling, S.M.; Wolff, J.K.; Wurm, S. Response shift in self-rated health after serious health events in old age. *Soc. Sci. Med.* 2017, 192, 85–93. [CrossRef]

48. Altman, C.E.; Van Hook, J.; Hillemeier, M. What Does Self-rated Health Mean? Changes and Variations in the Association of Obesity with Objective and Subjective Components Of Self-rated Health. *J. Health Soc. Behav.* 2016, 57, 39–58. [CrossRef]

49. Lee, S.; Schwarz, N.; Goldstein, L.S. Culture-Sensitive Question Order Effects of Self-Rated Health Between Older Hispanic and Non-Hispanic Adults in the United States. *J. Aging Health* 2014, 26, 860–883. [CrossRef]

50. Lee, S.; Schwarz, N. Question context and priming meaning of health: Effect on differences in self-rated health between Hispanics and non-Hispanic Whites. *Am. J. Public Health* 2014, 104, 179–185. [CrossRef]
51. Peersman, W.; Cambier, D.; De Maeseneer, J.; Willems, S. Gender, educational and age differences in meanings that underlie global self-rated health. *Int. J. Public Health* **2012**, *57*, 513–523. [CrossRef] [PubMed]
52. McMullen, C.K.; Luborsky, M.R. Self-rated health appraisal as cultural and identity process: African American elders’ health and evaluative rationales. *Gerontologist* **2006**, *46*, 431–438. [CrossRef] [PubMed]
53. Garbarski, D.; Dykema, J.; Croes, K.D.; Edwards, D.F. How participants report their health status: Cognitive interviews of self-rated health across race/ethnicity, gender, age, and educational attainment. *BMC Public Health* **2017**, *17*, 771. [CrossRef] [PubMed]
54. Kawada, T. Self-rated health and mortality with special reference to black-white difference. *Ann. Epidemiol.* **2017**, *27*, 295. [CrossRef]
55. Alang, S.M.; McCreedy, E.M.; McAlpine, D.D. Race, Ethnicity, and Self-Rated Health Among Immigrants in the United States. *J. Racial Ethn. Health Disparities* **2015**, *2*, 565–572. [CrossRef] [PubMed]
56. Assari, S.; Caldwell, C.H.; Mincy, R.B. Maternal Educational Attainment at Birth Promotes Future Self-Rated Oral Health: Diminished Return among Hispanic Whites. *J. Health Care Poor Underserved* **2018**, *29*, 117. [CrossRef] [PubMed]
57. Chand, R.; Parker, E.; Jamieson, L. Differences in, and Frames of Reference of, Indigenous Australians’ Self-rated General and Oral Health. *J. Health Care Poor Underserved* **2017**, *28*, 1087–1103. [CrossRef]
58. Siordia, C.; Nguyen, H.T. The Comparative Frame of Reference in Self-Rated Health Questions Matters When Predicting Difficulty with Activities of Daily Living. *J. Frailty Aging* **2015**, *4*, 175–180. [CrossRef]
59. Sargent-Cox, K.A.; Anstey, K.J.; Luszcz, M.A. Patterns of longitudinal change in older adults’ self-rated health: The effect of the point of reference. *Health Psychol.* **2010**, *29*, 143–152. [CrossRef]
60. Sargent-Cox, K.A.; Anstey, K.J.; Luszcz, M.A. Determinants of self-rated health items with different points of reference: Implications for health measurement of older adults. *J. Aging Health* **2008**, *20*, 739–761. [CrossRef]
61. Manderbacka, K.; Kareholt, I.; Martikainen, P.; Lundberg, O. The effect of point of reference on the association between self-rated health and mortality. *Soc. Sci. Med.* **2003**, *56*, 1447–1452. [CrossRef]
62. Manderbacka, K.; Lundberg, O. Examining points of reference of self-rated health among Swedish oldest old. *Arch. Gerontol. Geriatr.* **1996**, *23*, 47–60. [CrossRef]
63. Assari, S. Socioeconomic Status and Self-Rated Oral Health; Diminished Return among Hispanic Whites. *Dent. J.* **2018**, *6*, 11. [CrossRef]
64. Assari, S.; Caldwell, C.H.; Mincy, R.B. Maternal Educational Attainment at Birth Promotes Future Self-Rated Health of White but Not Black Youth: A 15-Year Cohort of a National Sample. *J. Clin. Med.* **2018**, *7*, 93. [CrossRef] [PubMed]
65. Assari, S.; Lapeyrouse, L.M.; Neighbors, H.W. Income and Self-Rated Mental Health: Diminished Returns for High Income Black Americans. *Behav. Sci.* **2018**, *8*, 50. [CrossRef]
66. Assari, S.; Caldwell, C.H.; Zimmerman, M.A. Perceived Neighborhood Safety During Adolescence Predicts Subsequent Deterioration of Subjective Health Two Decades Later; Gender Differences in a Racially-Diverse Sample. *Int. J. Prev. Med.* **2015**, *6*, 117. [CrossRef]
67. Assari, S.; Lankarani, M.M.; Piette, J.D.; Aikens, J.E. Self-Rated Health and Glycemic Control in Type 2 Diabetes: Race by Gender Differences. *J. Racial Ethn. Health Disparities* **2018**, *5*, 721–727. [CrossRef]
68. Assari, S.; Dejman, M.; Neighbors, H.W. Ethnic Differences in Separate and Additive Effects of Anxiety and Depression on Self-rated Mental Health Among Blacks. *J. Racial Ethn. Health Disparities* **2016**, *3*, 423–430. [CrossRef]
69. Okamoto, K.; Momose, Y.; Fujino, A.; Osawa, Y. Gender differences in the relationship between self-rated health (SRH) and 6-year mortality risks among the elderly in Japan. *Arch. Gerontol. Geriatr.* **2008**, *47*, 311–317. [CrossRef] [PubMed]
70. Kavanagh, A.M.; Bentley, R.; Turrell, G.; Broom, D.H.; Subramanian, S.V. Does gender modify associations between self rated health and the social and economic characteristics of local environments? *J. Epidemiol. Community Health* **2006**, *60*, 490–495. [CrossRef] [PubMed]
71. Spiers, N.; Jagger, C.; Clarke, M.; Arthur, A. Are gender differences in the relationship between self-rated health and mortality enduring? Results from three birth cohorts in Melton Mowbray, United Kingdom. *Gerontologist* **2003**, *43*, 406–411, discussion 372–405. [CrossRef] [PubMed]
72. Assari, S.; Smith, J.L.; Zimmerman, M.A.; Bazargan, M. Cigarette Smoking among Economically Disadvantaged African-American Older Adults in South Los Angeles: Gender Differences. *Int. J. Environ. Res. Public Health* **2019**, *16*, 1208. [CrossRef] [PubMed]
73. Bazargan, M.; Smith, J.L.; Cobb, S.; Barkley, L.; Wisseh, C.; Ngula, E.; Thomas, R.J.; Assari, S. Emergency Department Utilization among Underserved African American Older Adults in South Los Angeles. *Int. J. Environ. Res. Public Health* 2019, 16, 1177. [CrossRef] [PubMed]

74. Schoenfeld, D.E.; Malmrose, L.C.; Blazer, D.G.; Gold, D.T.; Seeman, T.E. Self-rated health and mortality in the high-functioning elderly—A closer look at healthy individuals: MacArthur field study of successful aging. *J. Gerontol.* 1994, 49, M109–M115. [CrossRef]

75. Heidrich, J.; Liese, A.D.; Lowel, H.; Keil, U. Self-rated health and its relation to all-cause and cardiovascular mortality in southern Germany. Results from the MONICA Augsburg cohort study 1984–1995. *Ann. Epidemiol.* 2002, 12, 338–345. [CrossRef]

76. Moreno, X.; Huerta, M.; Albala, C. Global self-rated health and mortality in older people. *Gac. Sanit.* 2014, 28, 246–252. [CrossRef] [PubMed]

77. Dasbach, E.J.; Klein, R.; Klein, B.E.; Moss, S.E. Self-rated health and mortality in people with diabetes. *Am. J. Public Health* 1994, 84, 1775–1779. [CrossRef] [PubMed]

78. Mavaddat, N.; Parker, R.A.; Sanderson, S.; Mant, J.; Kinmonth, A.L. Relationship of self-rated health with fatal and non-fatal outcomes in cardiovascular disease: A systematic review and meta-analysis. *PLoS ONE* 2014, 9, e103509. [CrossRef] [PubMed]

79. Idler, E.L.; Russell, L.B.; Davis, D. Survival, functional limitations, and self-rated health in the NHANES I Epidemiologic Follow-up Study, 1992. First National Health and Nutrition Examination Survey. *Am. J. Epidemiol.* 2000, 152, 874–883. [CrossRef]

80. Kurkowitz, L. The Geriatric Depression Scale (GDS). *Geriatr. Nurs.* 1999, 20, 212–213. [CrossRef]

81. Assari, S. Combined Racial and Gender Differences in the Long-Term Predictive Role of Education on Depressive Symptoms and Chronic Medical Conditions. *J. Racial Ethn. Health Disparities* 2017, 4, 385–396. [CrossRef]

82. Martin, L.M.; Leff, M.; Calonge, N.; Garrett, C.; Nelson, D.E. Validation of self-reported chronic conditions and health services in a managed care population. *Am. J. Prev. Med.* 2000, 18, 215–218. [CrossRef]

83. Agyemang, C.; Denktas, S.; Bruinzeels, M.; Foets, M. Validity of the single-item question on self-rated health status in first generation Turkish and Moroccans versus native Dutch in the Netherlands. *Public Health* 2006, 120, 543–550. [CrossRef] [PubMed]

84. Radeos, M.S.; Cydulka, R.K.; Rowe, B.H.; Barr, R.G.; Clark, S.; Camargo, C.A., Jr. Validation of self-reported chronic obstructive pulmonary disease among patients in the ED. *Am. J. Emerg. Med.* 2009, 27, 191–196. [CrossRef]

85. Pastorino, S.; Richards, M.; Hardy, R.; Abington, J.; Wills, A.; Kuh, D.; Pierce, M.; The National Survey of Older Age: An Examination of Differential Exposure and Differential Vulnerability. *J. Aging Health* 2014, 26, 35–41. [CrossRef]

86. Fontanelli, M.M.; Teixeira, J.A.; Sales, C.H.; Castro, M.A.; Cesar, C.L.; Alves, M.C.; Goldbaum, M.; Marchioni, D.M.; Fisberg, R.M. Validation of self-reported diabetes in a representative sample of Sao Paulo city. *Rev. Saúde Publica* 2017, 51, 20. [CrossRef]

87. Nishi, A.; Kawachi, I.; Shirai, K.; Hirai, H.; Jeong, S.; Kondo, K. Sex/gender and socioeconomic differences in the predictive ability of self-rated health for mortality. *PLoS ONE* 2012, 7, e30179. [CrossRef] [PubMed]

88. Unden, A.L.; Elofsson, S.; Andreasson, A.; Hållered, E.; Eriksson, I.; Brismar, K. Gender differences in self-rated health, quality of life, quality of care, and metabolic control in patients with diabetes. *Gend. Med.* 2008, 5, 162–180. [CrossRef]

89. Rohlfse, L.S.; Jacobs Kronenfeld, J. Gender Differences in Trajectories of Self-Rated Health in Middle and Old Age: An Examination of Differential Exposure and Differential Vulnerability. *J. Aging Health* 2014, 26, 637–662. [CrossRef]

90. Assari, S. Separate and Combined Effects of Anxiety, Depression and Problem Drinking on Subjective Health among Black, Hispanic and Non-Hispanic White Men. *Int. J. Prev. Med.* 2014, 5, 269–279.
93. Assari, S. Suicide Attempts in Michigan HealthCare System; Racial Differences. *Brain Sci.* 2018, 8, 124. [CrossRef] [PubMed]
94. Assari, S.; Moazzen-Zadeh, E. Ethnic Variation in the Cross-sectional Association between Domains of Depressive Symptoms and Clinical Depression. *Front. Psychiatry* 2016, 7, 53. [CrossRef]
95. Assari, S. Cross-country variation in additive effects of socio-economics, health behaviors, and comorbidities on subjective health of patients with diabetes. *J. Diabetes Metab. Disord.* 2014, 13, 36. [CrossRef] [PubMed]
96. Desesquelles, A.F.; Egidi, V.; Salvatore, M.A. Why do Italian people rate their health worse than French people do? An exploration of cross-country differentials of self-rated health. *Soc. Sci. Med.* 2009, 68, 1124–1128. [CrossRef] [PubMed]
97. Jiao, J.; Drewnowski, A.; Moudon, A.V.; Aggarwal, A.; Oppert, J.M.; Chariehe, H.; Chais, B. The impact of area residential property values on self-rated health: A cross-sectional comparative study of Seattle and Paris. *Prev. Med. Rep.* 2016, 4, 68–74. [CrossRef] [PubMed]
98. Stewart, J.B.; Scott, J.W. The institutionalized decimation of Black American males. *West. J. Black Stud.* 1978, 2, 82.
99. Curry, T.J. *The Man-Not: Race, Class, Genre, and the Dilemmas of Black Manhood*; Temple University Press: Philadelphia, PA, USA, 2017.
100. Watkins, D.C.; Walker, R.L.; Griffith, D.M. A meta-study of Black male mental health and well-being. *J. Black Psychol.* 2010, 36, 303–330. [CrossRef]
101. Watkins, D.C. Depression over the adult life course for African American men: Toward a framework for research and practice. *Am. J. Men's Health* 2012, 6, 194–210. [CrossRef] [PubMed]
102. Matthews, D.D.; Hammond, W.P.; Cole-Lewis, Y.; Nuru-Jeter, A.; Melvin, T. Racial Discrimination and Depressive Symptoms Among African-American Men: The Mediating and Moderating Roles of Masculine Self-Reliance and John Henryism. *Psychol. Men Masc.* 2013, 14, 35–46. [CrossRef]
103. Hammond, W.P. Taking it like a man: Masculine role norms as moderators of the racial discrimination-depressive symptoms association among African American men. *Am. J. Public Health* 2012, 102 (Suppl. 2), S232–S241. [CrossRef]
104. Hammond, P. Real men get depressed. *Nurs. Times* 1995, 91, 58.
105. Sellers, S.L.; Neighbors, H.W.; Bonham, V.L. Goal-striving stress and the mental health of college-educated Black American men: The protective effects of system-blame. *Am. J. Orthopsychiatry* 2011, 81, 507–518. [CrossRef] [PubMed]
106. Griffith, D.M. “I AM a Man”: Manhood, Minority Men’s Health and Health Equity. *Ethn. Dis.* 2015, 25, 287–293. [CrossRef] [PubMed]
107. Assari, S.; Gibbons, F.X.; Simons, R. Depression among Black Youth; Interaction of Class and Place. *Brain Sci.* 2018, 8, 108. [CrossRef]
108. Assari, S. Educational Attainment Better Protects African American Women than African American Men Against Depressive Symptoms and Psychological Distress. *Brain Sci.* 2018, 8, 182. [CrossRef]
109. Wang, J.; Mann, F.; Lloyd-Evans, B.; Ma, R.; Johnson, S. Associations between loneliness and perceived social support and outcomes of mental health problems: A systematic review. *BMC Psychiatry* 2018, 18, 156. [CrossRef]
110. Snowden, M.B.; Steinman, L.E.; Carlson, W.L.; Mochan, K.N.; Abraid-Lanza, A.F.; Bryant, L.L.; Duffy, M.; Knight, B.G.; Jeste, D.V.; Leith, K.H.; et al. Effect of physical activity, social support, and skills training on late-life emotional health: A systematic literature review and implications for public health research. *Front. Public Health* 2014, 2, 213. [CrossRef] [PubMed]
111. Haber, M.G.; Cohen, J.L.; Lucas, T.; Baltes, B.B. The relationship between self-reported received and perceived social support: A meta-analytic review. *Am. J. Community Psychol.* 2007, 39, 133–144. [CrossRef] [PubMed]
112. Taylor, R.J.; Chatters, L.M.; Lincoln, K.; Woodward, A.T. Church-Based Exchanges of Informal Social Support among African Americans. *Race Soc. Probl.* 2017, 9, 53–62. [CrossRef]
113. Nguyen, A.W.; Taylor, R.J.; Mouzon, D.M. Social Support from Family and Friends and Subjective Well-Being of Older African Americans. *J. Happiness Stud.* 2016, 17, 959–979. [CrossRef]
114. Cross, C.J.; Taylor, R.J.; Chatters, L.M. Family Social Support Networks of African American and Black Caribbean Adolescents. *J. Child Fam. Stud.* 2018, 27, 2757–2771. [CrossRef] [PubMed]
116. Chatters, L.M.; Taylor, R.J.; Woodward, A.T.; Nicklett, E.J. Social support from church and family members and depressive symptoms among older African Americans. *Am. J. Geriatr. Psychiatry* 2015, 23, 559–567. [CrossRef] [PubMed]

117. Krause, N. Exploring the stress-buffering effects of church-based and secular social support on self-rated health in late life. *J. Gerontol. B Psychol. Sci. Soc. Sci.* 2006, 61, S35–S43. [CrossRef] [PubMed]

118. Assari, S.; Moghani Lankarani, M. Secular and Religious Social Support Better Protect Blacks than Whites against Depressive Symptoms. *Behav. Sci.* 2018, 8, 46. [CrossRef]

119. Assari, S. Race and Ethnicity, Religion Involvement, Church-based Social Support and Subjective Health in United States: A Case of Moderated Mediation. *Int. J. Prev. Med.* 2013, 4, 208–217.

120. Lincoln, K.D.; Chatters, L.M.; Taylor, R.J. Psychological distress among black and white Americans: Differential effects of social support, negative interaction and personal control. *J. Health Soc. Behav.* 2003, 44, 390–407. [CrossRef]

121. Krause, N. Church-based social support and health in old age: Exploring variations by race. *J. Gerontol. B Psychol. Sci. Soc. Sci.* 2002, 57, S332–S347. [CrossRef]

122. Sonnenberg, C.M.; Deeg, D.J.; van Tilburg, T.G.; Vink, D.; Stek, M.L.; Beekman, A.T. Gender differences in the relation between depression and social support in later life. *Int. Psychogeriatr.* 2013, 25, 61–70. [CrossRef]

123. Sacco, P.; Bucholz, K.K.; Harrington, D. Gender differences in stressful life events, social support, perceived stress, and alcohol use among older adults: Results from a National Survey. *Subst. Use Misuse* 2014, 49, 456–465. [CrossRef] [PubMed]

124. Okamoto, K.; Tanaka, Y. Gender differences in the relationship between social support and subjective health among elderly persons in Japan. *Prev. Med.* 2004, 38, 318–322. [CrossRef] [PubMed]

125. Landman-Peeters, K.M.; Hartman, C.A.; van der Pompe, G.; den Boer, J.A.; Minderaa, R.B.; Ormel, J. Gender differences in the relation between social support, problems in parent-offspring communication, and depression and anxiety. *Soc. Sci. Med.* 2005, 60, 2549–2559. [CrossRef]

126. Honjo, K.; Kawakami, N.; Takeshima, T.; Tachimori, H.; Ono, Y.; Uda, H.; Hata, Y.; Nakane, Y.; Nakane, H.; Iwata, N.; et al. Social class inequalities in self-rated health and their gender and age group differences in Japan. *J. Epidemiol.* 2006, 16, 223–232. [CrossRef] [PubMed]

127. Hajek, A.; Breitbach-Kamper, C.; Lange, C.; Posselt, T.; Wiese, B.; Steinmann, S.; Weyerer, S.; Werle, J.; Pentzek, M.; Fuchs, A.; et al. Gender differences in the effect of social support on health-related quality of life: Results of a population-based prospective cohort study in old age in Germany. *Qual. Life Res.* 2016, 25, 1159–1168. [CrossRef]

128. Cross, C.J.; Taylor, R.J.; Chatters, L.M. Ethnic and Gender Differences in Family Social Support among Black Adolescents. *Healthcare* 2018, 6, 20. [CrossRef]

129. Cheng, S.T.; Chan, A.C. Social support and self-rated health revisited: Is there a gender difference in later life? *Soc. Sci. Med.* 2006, 63, 118–122. [CrossRef] [PubMed]

130. Chemaitelly, H.; Kanaan, C.; Beydoun, H.; Shaaya, M.; Kanaan, M.; Sibai, A.M. The role of gender in the association of social capital, social support, and economic security with self-rated health among older adults in deprived communities in Beirut. *Qual. Life Res.* 2013, 22, 1371–1379. [CrossRef] [PubMed]

131. Caetano, S.C.; Silva, C.M.; Vettore, M.V. Gender differences in the association of perceived social support and social network with self-rated health status among older adults: A population-based study in Brazil. *BMC Geriatr.* 2013, 13, 122. [CrossRef]

132. Berard, D.M.; Vandenkerkhof, E.G.; Harrison, M.; Tranmer, J.E. Gender differences in the influence of social support on one-year changes in functional status in older patients with heart failure. *Cardiol. Res. Pract.* 2012, 2012, 616372. [CrossRef] [PubMed]

133. Bartley, M.; Martikainen, P.; Shipley, M.; Marmot, M. Gender differences in the relationship of partner’s social class to behavioural risk factors and social support in the Whitehall II study. *Soc. Sci. Med.* 2004, 59, 1925–1936. [CrossRef] [PubMed]

134. Cobb, S.; Assari, S. Self-Rated Health in African American Men and Women; Evidence for Sponge Hypothesis. *Int. J. Environ. Res. Public Health.* 2019, Under Review.