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Associations Between Social Determinants of Health, Perceived Discrimination, and Body Mass Index on Symptoms of Depression among Young African American Mothers

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Abstract

Purpose: The association between symptoms of depression and risks for cardiovascular disease (CVD) remains equivocal for African American (AA) mothers. We examined the association between social determinants of health (perceived discrimination), and cardiovascular risk (BMI) on symptoms of depression in a sample of young AA mothers.

Methods: Secondary data from 219 adult AA mothers between the ages of 21 and 46 with an average BMI of 29.8 and yearly family income of \$14,999 were analyzed using a latent growth model that evaluated four time points to assess changes in symptoms of depression.

Results: Initial BMI was significantly associated with initial symptoms of depression ($b = .12$, $p = .019$). Perceived discrimination (unfair treatment) was associated with higher initial symptoms of depression ($b = 1.14$, $p = .017$).

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Declaration of Competing Interest

The authors certify that there is no competing interest with any financial organization regarding the material discussed in the manuscript.

Conclusion: The findings suggest that elevated BMI and perceived discrimination are associated with higher reported symptoms of depression among young, socioeconomically disadvantaged AA mothers. These results advance the scientific understanding of young AA mothers' risk for symptoms of depression and CVD by elucidating the impact of perceived discrimination and social experiences on mental health. Further studies of SDoH and CVD risk factors and perceived racism and depression are needed to shed light on the long-term mental health impact on AA mothers and their children.

Keywords

Body mass index; depression; cardiovascular risk; discrimination; African American women

Introduction

By 2030, it is projected that depression will be the leading cause of the total global disease burden, followed by cardiovascular disease (CVD) (World Health Organization, 2011). Between 2013-2016, approximately 8% of adults in the United States (U.S.) reported having experienced at least one episode of depression, with women being 50% more likely to report depression than men (Brody, Pratt, & Hughes, 2018). Symptoms of depression, often triggered by multidimensional psychosocial stressors, can cause alterations in a person's pathophysiology, increasing the risk of CVD (Healthy People 2020; Larkin & Chantler, 2020; Taylor, Wright, Crusto, & Sun, 2016). Research has shown that one-third of people living with CVD also experience depression, with women having a prevalence rate of 24.4% (Li, Chen, & Hu, 2015). Depression is often observed among racial and ethnic populations like African American (AA) women (Dunn et al., 2016; Hargrove et al., 2020; U.S. Department of Health and Human Services [DHHS], 2001). The deprivation of economic and social resources, combined with other environmental stressors such as discrimination can heighten the risk for depression and CVD, especially among racial and ethnic minority populations (Barile, Kuperminc, & Thompson, 2017; Jackson et al., 2010; Lincoln, 2019). Among AA women, depression and CVD have been found to co-occur (Copeland et al., 2017); however, little is known about the interconnections between environmental stressors such as discrimination, CVD, and depression among young AA women with children.

Social determinants of health (SDoH), defined as the conditions of our physical and social environments, have been postulated as drivers of health disparities observed in racial and ethnic minorities (Commission on the Social Determinants of Health [CSDH], 2008; Wilkinson & Marmot, 2005). A large body of literature consistently demonstrates that certain socio-demographic characteristics such as sex, ethnicity, and race are often associated with economic stability and access to education, which in turn affect people's health and well-being (Healthy People, 2020). Adults with racial and ethnic minority status who have less education and income are more likely to experience feelings of sadness, hopelessness, worthlessness, and mental distress, relative to their white counterparts (Bailey et al., 2019; DHHS, 2001).

Notably, due to the intersecting social identities of AA women, they are often disproportionately burdened by social disadvantages that can affect their health and well-

being (Institute for Women's Policy Research, 2019; Solar & Irwin, 2010). AA women living in low-income communities have been found to experience worse mental health outcomes compared to white residents in low-income communities (Barile et al., 2017). Umberson et al. (2019) found that AA women have worse health outcomes compared to AA men and white men and women; furthermore, low socio-economic status and resource constraints are primary contributors to their differential health outcomes.

Meanwhile, AAs also report more frequent experiences of different kinds of discrimination than their white counterparts, and more often report race as the perceived reason for the encountered discrimination (American Psychological Association, 2016; Jackson & Steptoe, 2018; Woodward, 2011). Exposure to discrimination (e.g., based on one's phenotypic, ethnic, and/or linguistic characteristics) has been shown to increase vulnerability to other life stressors that can have a severe effect on one's well-being (Perry, Harp, & Oser, 2013; Ruiz & Primm, 2010; Vines et al., 2017). In addition, exposure to multiple forms of discrimination, due to membership in more than one marginalized group, has been found to increase risk for depression and CVD (Alvarez-Galvez & Rojas-Garcia, 2019; Gayman & Barragan, 2013). For example, among a sample of AA women of low socio-economic status, Perry et al. (2013) found that higher levels of racial and sex discrimination predict a greater number of individual life stressors, such as employment challenges and relationship difficulties.

Discrimination-related stress, regardless of the type or frequency, creates individual-level stress and contributes to mental and physical health concerns. Exposure to discrimination has been linked to CVD risk as well as depressive symptoms (Cuffee, Hargraves & Allison, 2012; Dolezsar, McGrath, Herzig, & Millender, 2014; Everson-Rose et al., 2015; Lewis, Williams, Tamene & Clark, 2014; Russell, Clavel, Cutrona, Abraham, & Burzette, 2019; Sims et al., 2012). For example, higher perceived discrimination has been shown to have adversely effects on BMI among AA women (Johnson, Risica, Gans, Kirtania, & Kumanyika, 2012; Longmire-Avital & McQueen, 2019); specifically, higher levels of vigilance (i.e., the expectation of discrimination) has been linked to higher BMI (Hicken, Lee, & Hing, 2018). Moreover, studies have shown that the discrimination experiences of AA women are associated with depressive symptoms and increased likelihood of developing Major Depressive Disorder (MDD) (Assari, Watkins, & Caldwell, 2015; Schmitt, Branscombe, Postmes, & Garcia, 2014). Depression and discrimination have been found to induce unhealthy behaviors such as social smoking, poor eating habits, and lack of physical activity, all of which are known to be a significant risk factors for CVD (Gawlik et al., 2018).

AA women have distinct life experiences compared with other social groups. These unique experiences contribute to their risk of depression and CVD; as a result, it is essential to understand the primary and collective SDoH risk factors associated with increases in symptoms of depression among young AA mothers. Most research to date focuses on a single factor related to symptoms of depression. Still, everyday life experiences of AA women expose them to pervasive and multiple, diverse stressors that may directly influence young mothers' risk of developing symptoms of depression.

Meanwhile, researchers document that many AA women also deal with weight-based discrimination (Lincoln, 2019; Rodriquez, Tomiyama, Guardino, & Schetter, 2019), resulting in additional psychosocial stress (Jackson & Steptoe, 2018). This finding is concerning, given that four out of five AA women are categorized as overweight or obese in the U.S. (National Center for Health Statistics, 2018).

Both obesity (body mass index or BMI greater than 30) and depression have been identified as public health priorities requiring immediate action (Wit et al., 2010). As AA women have the highest rates of CVD (Centers for Disease Control and Prevention, 2014) and the second-highest obesity prevalence rates in the U.S. (Hales et al., 2017), they are at a higher risk for depression (Barile et al., 2017). Thus, a better understanding of the co-occurrence of these problems is critical.

BMI and depression have been shown to co-occur at high rates (Copeland et al., 2017; Dhar & Barton, 2016); however, the association between BMI and depression is equivocal for AA women (Carter & Assari, 2016). For example, Assari (2014b) found that the relation between BMI and depression was moderated by sex and ethnicity in a sample of Black women and men (i.e., Black Caribbean and AA). The association between depression and BMI was positive for Black women but negative for Black men and differed between AA women and Black Caribbean women. For AA women in this sample, BMI was primarily associated with anxiety, education, marital status, and region, while for Black Caribbean women BMI was associated with depression and marital status. Meanwhile, a threshold effect was found where BMI levels greater than 40 were associated with increased odds of developing MDD for AA women, but not for Black Caribbean women. Other studies (Ma & Xiao, 2010; Pratt & Brody, 2014; Zhao et al., 2011) have demonstrated that abdominal obesity is associated with major and moderate to severe depressive symptoms for women at higher levels of obesity. Yet, Assari (2016) found that among Black women over age 35 higher BMI levels have been linked to lower perceived purpose in life and physical quality of life; however, among for Black women 66 and older BMI has been associated with fewer mental quality of life days.

In light of these conflicting findings, this study examined the associations between multiple factors such as SDoH (income, education, and discrimination), CVD risks (BMI and smoking), and changes in depressive symptoms over time, among a sample of young AA women with children ages three to five years old. Based on previous research, we proposed the following question and hypothesis: What is the influence of SDoH, and CVD risk on symptoms of depression over time? We hypothesized that the poor SDoH conditions (i.e., low income and education, and greater perceived discrimination) and greater CVD risk (i.e., higher BMI and self-reported smoking) would predict changes in depressive symptoms over time.

Methods

Research Design

This study utilized secondary data from the “Intergeneration Impact of Genetic and Psychological Factors on Blood Pressure (InterGEN) Study” (Crusto, de Mendoza, Connell,

Sun, & Taylor, 2016; Taylor, Wright, Crusto, & Sun, 2016). We examined the independent impact of social determinants of health (income, education, and perceived discrimination) and CVD risks (smoking and BMI) on symptoms of depression using a latent growth model. Latent growth modeling is a robust, powerful approach to examining longitudinal associations that takes into account both factor means and variances (Duncan & Duncan, 2009).

Ethical Considerations

Florida State University provided institutional review board approval for this study. New York University and Yale University provided IRB approval for the parent study.

Parent Study

Sample and setting.—The parent study (InterGEN) sample consisted of mothers ($N = 250$) and their children ($N = 250$) from early childcare centers in Connecticut to study gene-environment interaction effects on blood pressure (Crusto et al., 2016; Taylor et al., 2016). Participants were mothers of young children aged were 21 years or older, self-identified as AA (or Black), had a minimum of one child enrolled in the early education system, spoke English, and had no mental illness to prevent interference with mental health measurements.

Data collection procedures.—Participants were recruited from early care and education centers. Once eligibility was confirmed, written consent was obtained, participants were enrolled, and four study visits were completed at 6-month intervals. Participants were interviewed using audio computer self-assisted interviewing software for demographic and mental health data at four time points (T) in the study: T1 (enrollment), T2 (6 months), T3 (12 months); and T4 (18 months). Clinical data (blood pressure and BMI) were measured at T1 to T4. Enrollment in the parent study began in April 2015 and was completed in October 2018.

Current Study

Sample.—Of the 250 mothers who completed any part of the parent study, only 219 had complete data on all exogenous variables (age, education, income, smoking status, BMI, perceived discrimination, and symptoms of depression). Therefore, the reduced sample size for the current study was 219.

Measures.—We collected data on income, education, discrimination experiences, BMI, and depressive symptoms. The measures used for perceived discrimination and depressive symptoms have demonstrated adequate reliability among diverse populations (see Table 1).

Income and education.—Income and education data were collected via self-report. Mothers were asked two questions to assess their level of income (*collected at T1–T4*) and educational attainment (collected at T1 and only repeated if there were changes from the initial answer). For income, mothers were asked to report the annual household income of the child's family (defined as the family with whom the child has lived for the majority of the past year). For educational attainment, mothers were asked to indicate their highest completed level of education. Response options are presented in Table 2. For this study,

educational attainment was collapsed into two categories, (1) less than a bachelor's degree and (2) bachelor's degree or higher.

Perceived discrimination experiences.—Perceived discrimination was assessed using the Experiences of Discrimination Scale (EOD; Krieger, Smith, Naishadham, Hartman, & Barbeau, 2005). The EOD measures the self-reported experience of discrimination based on race or another reason (e.g., sex, age, height, weight, educational level). Two sub-scales were used from the EOD (Table 1). The experiences of discrimination subscale (DQ) looks specifically at perceived experiences of racial discrimination and the major discrimination subscale (MDQ) looks at perceived experiences of unfair treatment based on multiple forms of perceived discrimination (i.e., race, sex, age, height, weight, educational level, sexual orientation, income, physical disability, or other). For the DQ, respondents answered the following question: “Have you ever experienced discrimination, been prevented from doing something or been hassled or made to feel inferior in any of the following situations because of your race, ethnicity, or color?” Examples of situational response options included “at school” or “getting medical care.” Scores were determined by counting the number of racial discrimination experiences reported by the participant. For the MDQ, an example question is as follows, “At any time in your life, have you ever been unfairly fired?” For both subscales, higher scores indicate more experiences of perceived discrimination.

Symptoms of depression.—Depressive symptoms were assessed using the Beck Depression Inventory (BDI), which has been shown to be reliable with low-income AA populations (Beck, Steer, & Garbin, 1988). The BDI is composed of 21 items that are scored based on the severity of each symptom (low of 0, high of 3). A total score is calculated by summing all items. Total scores are interpreted as follows: 1–10 for normal ups and downs; 11–16 for mild mood disturbance; 17–20 for borderline clinical depression; 21–30 for moderate depression; 31–40 for severe depression; and above 40 for extreme depression.

Cardiovascular risks.—Two indicators were used to assess cardiovascular risks, body mass index and smoking status. For BMI, the height and weight of participants were collected at each time point. To calculate BMI, the following formula was used: weight in kilograms divided by (height in meters)². Mothers' BMI were categorized into underweight (BMI < 18.5), normal weight (BMI = 18.5–24.9), overweight (BMI = 25–29.9), and obese (BMI ≥ 30) (Clark, Taylor, Wu, & Smith, 2013). To determine smoking status, mothers self-identified as either a non-smoker or a smoker.

Statistical Analyses

The total sample used for statistical analyses consisted of 219 AA women, the portion of the original sample that had no missing data on age, income, smoking, education, BMI, the DQ, or the MDQ (the predictors in the model). A latent growth model was tested to determine whether SDoH (income, education, and perceived discrimination) or CVD risks (smoking and BMI) predicted changes over time in symptoms of depression. All analyses were carried out using Mplus v8.3 statistical software (Muthen & Muthen, 2017). Full information, robust maximum likelihood estimator (mlr), was employed to obtain parameter estimates and standard errors robust to nonnormality and missing data under the assumption that

missingness is a random conditional on the covariates (Graham, 2009). A graphical representation of the model appears in Figure 1.

Results

The survey collected data at categorical levels for SDoH (income, education, and discrimination), smoking, and depressive symptoms. BMI and age were measured using continuous-level data. Table 2 presents the descriptive statistics for the sample characteristics.

Bivariate correlations for all study variables were computed and are presented in Table 3. Spearman's rank correlation coefficient (ρ) was chosen over the Pearson's correlation coefficient due to the dichotomous nature of the education variable and the skewed distribution of the discrimination variables (Zar, 2005). A weak correlation (.20) was noted between the experiences of discrimination subscale (DQ) and symptoms of depression (BDI), as well as among the major discrimination subscale (MDQ) and symptoms of depression (.20).

Results from the conditional growth model are presented in Table 4. The analysis resulted in a well-fitting model ($X^2(19) = 27.01, p = .12, CFI = .97, RMSEA = .04$) (Hu & Bentler, 1998). Interpreted similarly to a traditional regression coefficient, we found that initial BMI (Time 1) was significantly associated with initial symptoms of depression ($b = .12, p = .02$). We also found the MDQ (unfair treatment) was significantly associated with higher initial symptoms of depression ($b = 1.11, p = .02$). No significant changes were found over time in depression symptomatology, with the exception of age, which was associated with a higher BDI score. The total variance explained was 23% for the BDI intercept and 9% for the BDI slope.

Discussion and Future Research

This study examined the relationships among multiple SDoH factors (income, education, and discrimination), cardiovascular health (BMI and smoking), and depressive symptoms among a sample of young AA women with children ages 3–5 years over time. This paper focuses on the relationship between perceived discrimination and BMI on depression. Key findings from the study show (a) a significant correlation between BMI and self-reported symptoms for depression, and (b) a significant correlation between unfair treatment and higher initial symptoms of depression. These findings are consistent, in part, with the existing research.

Our findings show that depression is associated with BMI among AA women is generally congruent with the known literature. Sachs-Ericsson and colleagues (2007) found that BMI predicts depression among AA adults but, more specifically, among AAs with less education. Similarly, Carson, Jackson, Nolan, Williams, & Baskin (2017) showed that Black women with lower depression scores have lower BMI than those with higher depression scores. Assari (2014a) examined the additive effects of anxiety and depression on BMI among Blacks and found major depressive disorder to be associated with BMI for Caribbean

Black women but not for AA women. Assari (2014b) found that MDD is associated with BMI greater than 40 among AA women.

Most research on BMI and depression focuses on AA or white populations; less is known about the subcultural groups within the African diaspora. Future research should focus on cultural differences, including the perception of depression and mental illness between and within AA, Afro-Caribbean, and Afro-Latina women. Also, given the inconsistent research findings with BMI and depression, more research is needed in this area.

In our study, the depression variable explained 23% of the total variance, which calls for routine or systematic assessment for depression as part of holistic and integrated care for AA women. The need for more mental health assessment is supported by Hahn, Le-Cook, Ault-Brutus & Alegria (2015) who found Black females are less likely to be screened for depression than white males and females and Black males. This lack of early depression screening will continue to widen race-ethnicity and sex mental health disparities disproportionately. By not identifying depression early, the ability to prevent mental health crises such as hospital admissions increases substantially.

Our study also found that the MDQ subscale that assessed various forms of discrimination significantly correlated with self-reported symptoms of depression in this sample of AA mothers. Our findings align with previous studies that demonstrate an association between discrimination and elevated depressive symptoms. Assari, Watkins, & Caldwell (2015) examined the effect of race on everyday discrimination and MDD among AA and Caribbean Blacks in the U.S. Their study also assessed whether the intersection of ethnicity and sex influenced this effect. Their findings indicate that AA women's link between discrimination and MDD do not depend on race alone but is part of an intricate pattern of association between ethnicity, sex, discrimination, and race in relation to major depressive disorder. Likewise, Taylor & Turner (2002) examined whether perceived discrimination stress contributed independently to depression in a sample that included both sex. Their study found that AA adults are more likely to experience perceived discrimination that is also linked independently to depression. Furthermore, Earnshaw et al., 2018 found that members of the same community can share diverse experiences of discrimination such as, for example, unfair treatment related to sexism or racism. Even small doses of discrimination, regardless of type, throughout the lifespan of AA mothers has been linked to adverse mental health consequences related to parenting behaviors (Rosenthal et al., 2015; Rosenthal et al., 2018; Schulz et al., 2006). Further research is needed to understand better the effects of different types and frequency of discrimination exposure on depression among AA and Black Caribbean mothers.

The association of depressive symptoms with BMI and discrimination in young AA mothers has important public health implications. AA mothers are disproportionately affected by high BMI and discrimination, which in turn increases their risks for depression and CVD (Lincoln, 2019). AA mothers are often considered to be the “backbone” of many families and communities. Therefore, ensuring their mental health and physical well-being benefits the broader community and society. AA mothers with symptoms of depression and CVD may present with low levels of energy that affect their ability to care for themselves and

others (Rosenthal et al., 2015; Rosenthal et al., 2018), increasing the potential for transgenerational transmission of poor mental health and discrimination to their children. Future research should address the potential transmission or risk of depressive symptoms and discrimination in the children of AA women and their long-term health outcomes. Our study shows that both discrimination and BMI correlated with depression, providing a rationale for interventions and policy efforts to address comorbid mental and physical conditions.

Limitations

Our study has several limitations, including the use of secondary data that did not allow for a longitudinal analysis of discrimination, although the dataset did include depression measures over time. The utilization of BMI instead of waist circumference was not the most optimal assessment for AA women (Lincoln, 2019). Last but not least, we only focus on depressive symptoms, which are one of many attributes of psychological stress.

Research shows that depressive symptoms are a consequence of chronic stress and an indirect form of stress (Brody, Pratt, & Hughes, 2018; Dunn et al., 2016; Li et al., 2015). Further research would benefit from the use of specific measures (Millender & Lowe, 2016) to explain the discrimination link to depression and cardiovascular risk. Although a significant association between discrimination and depressive symptoms has been established, depression disparities are more likely the result of multiple social factors (e.g., different types of discrimination) and multiple environmental exposures (poverty, neighborhood, social support). More research is needed to address depression inequities, which could conceivably be the sequelae of adverse social and environmental exposures.

Finally, the study did not account for other CVD variables such as waist-weight ratio. Although our study analyzed BMI, this method does not provide the most accurate measurement of cardiovascular risks (Lincoln, 2019). Future studies should utilize blood pressure values, triglycerides levels, muscle-to-fat ratio, waist circumference-to-BMI ratio, or cholesterol levels, which may be more culturally appropriate and accurate indicators of CVD.

Implications for Nursing and Healthcare

The findings of this study further elucidate that exposure to perceived experiences of discrimination and high BMI may increase symptoms of depression among young AA mothers. Given the diversity of the population with co-occurring mental and physical conditions that psychiatric mental health (PMH) nurses care for, PMH nurses need to understand the relationship of perceived discrimination and high BMI to symptoms of depression and the importance of assessing patients for these factors. PMH nurses must recognize that the perception of discrimination is a unique experience for every patient. That experience can be composed of different forms of discrimination but not limited to race, such as sex, age, disability, weight-based, or socioeconomic conditions, to name a few. AA women can often experience a cumulation of various forms of discrimination over a lifespan resulting in higher risk for depression. PMH nurses should screen for discrimination and high BMI when caring for AA women with symptoms of depression. Ideally, screening for

discrimination and high BMI should take place with each assessment. PMH nurses should engage in these conversations, recognizing that they can be emotional, given the PMH nurse and patient background, and the fear of saying the wrong thing. The good news is that PMH nurses are trained to feel comfortable engaging in difficult conversations with patients and their families. Having these types of conversations can be the first step to eliminating stigma, allowing patients to freely communicate how these experiences affect their lives and health. Besides, these conversations can potentially increase early screening and treatment that is critical in decreasing BMI and depression inequities among AA women. Knowing and assessing the population and types of discriminative exposure can aid in identifying the cardiovascular risks and enable the development of innovative interventions that are culturally appropriate for individuals who are living with or at risk for depression.

PMH nurses often work in an integrated and mediator role as mental and physical health connectors. AA women have been dealt a one-two punch of multiple forms of discrimination and elevated risk for high BMI. These circumstances may be exacerbated by health care professionals who lack awareness of AA women's needs, experiences of discrimination, and cultural beliefs. When providing mental health assessments, PMH nurses should not dismiss the importance of perceived discrimination and high BMI, which requires a culturally sensitive approach to impact risk for depression.

Conclusions

It is essential to inform nurses and health professionals of the influences of both BMI and discrimination on depression in young AA mothers that can potentially impact their children, workplace, and communities. AA mothers deal with ongoing exposure to diverse types of discrimination in addition to having a high risk for increased BMI that can result in increased symptoms of depression and collectively increase their morbidity and mortality rate. When evaluating symptoms of depression, we must also assess the cultural and social effects of perceived discrimination and BMI, given that these components have emerged as significant factors related to depression. Experiencing perceived discrimination has a negative impact on the mental health and physical well-being of the mother and the child she is caring for (Schmitt et al., 2014). These results advance the scientific understanding of young AA mothers' risk for mild symptoms of depression and CVD risk by elucidating the impact of perceived racism and discrimination on social experiences of mental health. Thus, CVD prevention should include screening for depression and perceptions of discrimination, as well as the development of a treatment plan to address positive findings. Further studies on perceived racism and depression are needed to shed light on the long-term health impact of symptoms of depression for AA mothers and their children.

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Highlights

- Initial Body Mass Index or BMI was significantly associated with initial (time 1) symptoms of depression
- Initial perceived racism and discrimination were significantly associated with higher initial (time 1) symptoms of depression.
- Elevated BMI, perceived racism and discrimination were associated with greater symptoms of depression in young African American mothers

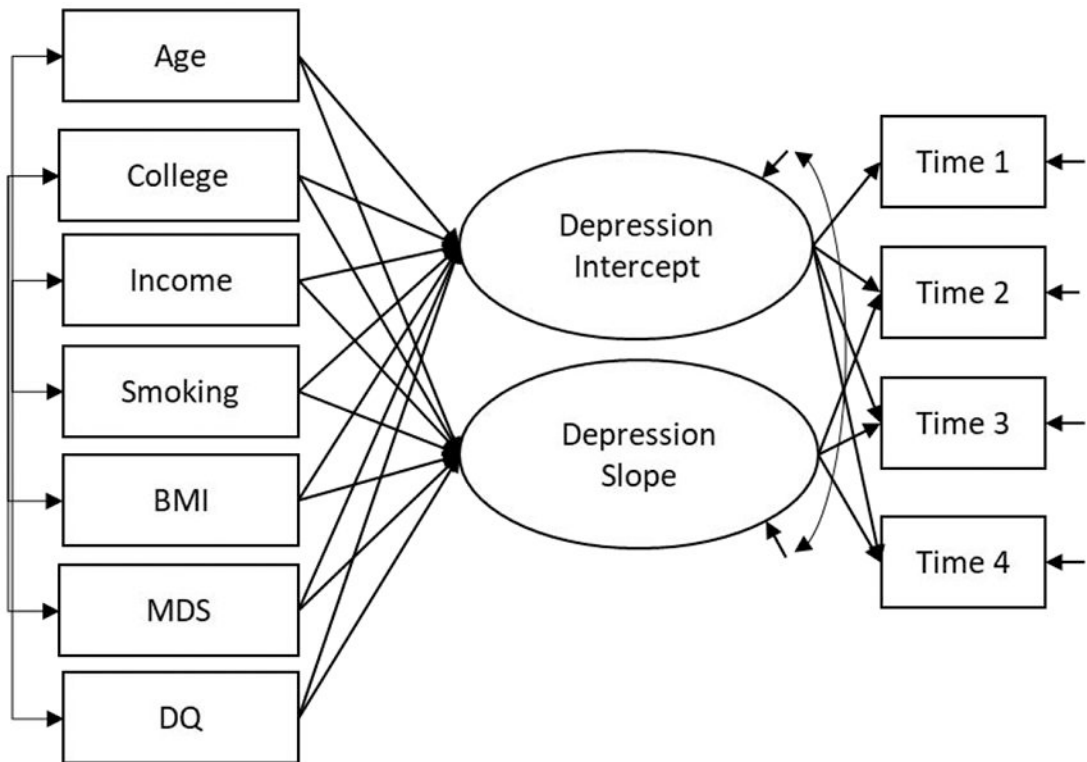


Figure 1:

A Graphical Representation of the Assessed Latent Growth Model.

Note: BMI = Body mass index; MDS = Major discrimination subscale; DQ = Racial discrimination subscale.

Table 1

Study Variables

Concept in Model	Variables	Measures	#Items/Time collected	Reliability
Social Determinants of Health	Income	Demographics	Collected T1	NA
	Education level	Demographics	Collected T1	NA
Discrimination	Experiences of Discrimination subscale (DQ)	Measures self-reported perceived experiences of racial discrimination in adults of all races/ethnicities from working backgrounds	11 Questions Collected T1-T4	DQ $\alpha = .82$
	Major Discrimination Subscale (MDQ)	Measures self-reported perceived experiences of unfair treatment from multiple forms of discrimination	9 Questions Collected T1	MDQ $\alpha = .71$
Mental Health	Symptoms of depression	Beck Depression Inventory (BDI) Measures symptoms of depression, including sadness, guilt, agitation, sleep loss, and appetite loss	21 Questions Collected T1-T4	$\alpha = .92$
Cardiovascular Risk	BMI	Body Mass Index values	Collected T1-T4	NA
	Smoking	Smoker or non-smoker	Collected T1-T4	NA

Note. Reliability of the DQ and MDQ subscales was established with a diverse sample that included working-class AAs (Krieger et al., 2005).

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Table 2

Descriptive Statistics (n = 219)

Characteristics	Mean	Range	SD	%
Mother's age at Time 1	31.29	21–46	5.83	
Income	4.16	1–10	2.59	
1 = Less than \$5,000				23
2 = \$5,000 to \$9,999				13
3 = \$10,000 to \$14,999				11
4 = \$15,000 to \$19,999				8
5 = \$20,000 to \$24,999				9
6 = \$25,000 to \$34,999				13
7 = \$35,000 to \$49,999				13
8 = \$50,000 to \$74,999				6
9 = \$75,000 to \$99,999				3
10 = \$100,000 or higher				1
Smokers				24
Education				
1 = Less than high school				5
2 = High school diploma/GED				37
3 = Some college, no degree				33
4 = Associate degree				11
5 = Bachelor's degree				10
6 = Master's degree				3
7 = Doctorate				1
Other significant findings				
BMI	29.79	14–59		
Symptoms of Depression	6.41			

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Table 3

Spearman's Bivariate Correlations

	Age	College	Income	Smoker	BMI	MDS	DQ	BDI
College	.20**	--						
Income	.31**	.43**	--					
Smoker	-.10	-.16*	-.19**					
BMI	.13*	-.08	-.12	.00	--			
MDS	.14*	.12	.20**	-.02	.06	--		
DQ	.14*	.11	.21**	.01	.02	.61**	--	
BDI	-.01	.00	.03	-.03	.08	.20**	.20**	--

Note.

* p < .05

** p < .01.

BMI = Body mass index; MDS = Major discrimination subscale; DQ = Discrimination subscale; BDI = Beck Depression Inventory.

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Table 4

Findings from the Assessed Growth Model for Depression

	Depression – Intercept			Depression – Slope		
	<i>b</i>	SE	<i>p</i>	<i>b</i>	SE	<i>p</i>
Age	-0.11	0.07	0.13	0.08	0.03	0.02
College	-0.15	1.08	0.89	0.08	0.42	0.85
Income	-0.03	0.18	0.86	-0.06	0.07	0.42
Smoking	0.50	1.03	0.63	0.34	0.42	0.42
BMI	0.12	0.05	0.02	-0.02	0.02	0.36
MDQ	1.11	0.49	0.02	-0.18	0.21	0.41
DQ	0.21	0.32	0.52	0.03	0.17	0.88

Note. BMI = Body mass index; MDQ = Major discrimination subscale DQ = Racial discrimination subscale.

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