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Association of Net Worth and common carotid artery (CCA) cross-sectional compliance as a
risk factor for cardiovascular disease (CVD) in Early Middle-Aged African American Women
with and without systemic lupus erythematosus (SLE)

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By

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B.S.
Davidson College
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Thesis Committee Chair: Dr. Tené T. Lewis, PhD.

An abstract of
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Abstract

Association of Net Worth and common carotid artery (CCA) cross-sectional compliance as a risk factor for cardiovascular disease (CVD) in Early Middle-Aged African American Women with and without systemic lupus erythematosus (SLE)

By Taylor Burey

Importance: African-American women with lupus are at a disproportionate risk for CVD, this is not explained by traditional risk factors. Stressors such as debt have been linked to CVD in other diseases; however, associations have not been studied in African-American women with SLE. NetWorth is a measure of the overall assets that are shaped by race-related historical policies. NetWorth captures longer-term financial stability and economic reserve, therefore; it can analyze debt among African-Americans. We hypothesized that: 1) African American women with SLE would report greater amounts of debt than African-American women without SLE and 2) that the association between debt and CCA compliance will be stronger for African-American women with SLE compared to African-American women without SLE.

Objective: Determine the association of Net Worth and CCA cross-sectional compliance (CSC1_cca) as a risk factor for CVD in young-middle aged African American Women with and without SLE.

Design: Cohort study

Setting: Community-based, southeastern United States.

Participants: African-American women with and without SLE, ages 22-50, without clinical CVD.

Exposures: Self-reported NetWorth (total financial assets minus debt)

Main Outcomes and Measures: Carotid intima media thickness (IMT) variable: CSC1_cca. IMT progression was assessed over a two-year period.

Results: Included 401 African-American women from a range of SES backgrounds and on average were 36.5 years of age (SD=6.9). Women with SLE (N=68) did not report greater amounts of debt than women without SLE (N=68) (P =0.22). The association between NetWorth and CSC1_cca was not stronger in African-American women with SLE (β = 0.016, 95% CI: 0.0018, 0.030; P = 0.028) than African-American women without SLE (β = -0.015, 95% CI: -0.030, -0.00052; P = 0.042).

Conclusion and Relevance: In our cohort study having a negative ("in debt") NetWorth was not associated with a higher risk for CVD or higher carotid media thickness in the form of cross-sectional compliance. Additional research on the type of debt assessed and looking into the differences in education, income and employment across the two groups will be beneficial toward CVD outcomes in this high-risk group of African-American women with SLE.

Association of Net Worth and common carotid artery (CCA) cross-sectional compliance as a risk factor for Cardiovascular disease (CVD) in Early Middle-Aged African American Women with and without systemic lupus erythematosus (SLE)

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Introduction

Systemic lupus erythematosus (SLE) is an autoimmune disease that effects the lives of 1.5 million individuals in the United States. It is a debilitating multisystem, chronic, inflammatory, autoimmune disease that affects 90 % of women. Compared to various racial/ethnic groups, African-American women disproportionally experience SLE rates that are 3 to 4 times higher than other women.[1] Research within the United States, comparing African-American women to women of other racial/ethnic groups, have found that African-American women have disproportionately higher rates of morbidity and mortality related to cardiovascular disease (CVD).[2] We find this particularly interesting among young to middle-aged African-American women with systemic lupus erythematosus (SLE). Research among women with SLE focuses on their risk of heart attacks and related cardiovascular diseases because they have become the leading causes of early mortality in women with lupus, especially in African-American women.[3] When African-American women with SLE are compared to women without SLE, they experience deaths from CVD-related causes almost 20 years earlier.[4] The traditional risk factors that we see for CVD such as blood pressure, diabetes, cholesterol, smoking and additional SLE factors, are not the only cause of the increased risk of CVD related death.[5] This suggest that there are gaps in our literature concerning African-American women with SLE and why they experience such a high risk of early CVD and CVD related deaths. The additional factors that contribute to their increased risk of CVD are unknown. Given the lack of visibility this particular group of women have within the literature, our research will help fill gaps that are crucial to advancing our understanding of the link between the presence (or absence) of assets, measured by the presence of debt and CVD risk.[6]

Our research proposes the inclusion of economic factors that may be playing a role in the increased risk of CVD among African-American women with SLE. Particularly focusing on debt, and their contribution to atherosclerotic progression and inflammation (markers of early CVD) among African-American with SLE. Given that many studies have found that African-American women are disproportionally affected by social stressors, including financial strain, they are vulnerable to the effects

that these social stressors have on adverse CVD related health conditions.[7] Due to the immunocompromised nature of the disease, we can expect any additional social stressors, such as debt and debt stress to exceptionally increase the inflammatory processes that are associated with SLE. Thus, increasing the risk of atherosclerosis and subsequent CVD in African-American women with SLE. As with any long-term illness there are a multitude of financial and social resources that are needed to support treatment for the chronic illness and African-American women with SLE are no exception to this.

Debt is found to be a significant burden in other illnesses (e.g. cancer and depression) and it may be relevant for women with SLE as well. Due to the limited research available on African-American women with SLE, cancer research has provided the general trends we see with debt/financial stress among women suffering from illnesses. Studies found that those who were most vulnerable to financial decline attributable to breast cancer were racial and ethnic minority patients, even after income, education and employment were adjusted for.[8] When considering the role of depression among women with SLE, research has found that high financial strain was a significant predictor of new-onset depression in women with SLE.[9] Socioeconomic status (SES) trends that we see in the literature are similar to the impact that variations in income, education and employment have on women with SLE compared to women without SLE. Financial strain is a common factor present in those with lower SES and studies show that lower SES has contributed to lupus related disability via perceived stress and depressive symptoms.[10] Given the effect that financial strain has on depression, there may be a relationship between the amount of debt and debt stress that contributes a woman's susceptibility to CVD. Particularly among African-American women with SLE, given the marginalization that African-American women face in the United States. We have seen that higher levels of depression can contribute to a greater magnitude of disability among those women who are already diagnosed with SLE.[10]

We currently don't know enough about debt among African-American women with SLE and our research aims to help fill this gap in understanding the role that debt plays in their risk for CVD. Risk of CVD will be measured by the outcome variable common carotid artery (CCA) cross-sectional compliance (CSC1_cca) in this analysis with the exposure variable being debt. In previous studies, debt has been

linked to CVD risk in healthy African-American women, this may be relevant for measuring CVD risk in women with SLE as well.[11] In our analysis debt is a measure of wealth, which is defined as the total value of all accumulated assets minus any liabilities or debts.[6] The analysis conducted in this paper sought to examine associations between debt and CSC1_cca as a risk factor for Cardiovascular disease (CVD) in young to middle aged African American Women with SLE. This allows us to take a different approach to measuring CVD risk, instead of solely focusing on sociodemographic factors, we will be analyzing economic factors such as debt. We hypothesized that: 1) African American women with SLE would report greater amounts of debt than African-American women without SLE and 2) that the association between debt and CCA compliance will be stronger for African-American women with SLE compared to African-American women without SLE.

Methods

Study Population

Data was collected from participants in the Vascular Aging, Inflammation, and Stress in African American Women's Health Research Study (VISTA). The VISTA study focused on examining associations among psychosocial stressors, resilience factors and risk for early cardiovascular disease (CVD) experienced by young to middle aged African American women with SLE that may contribute to their atherosclerotic progression. The study population consisted of N=402 African- American women, ages 22 to 50 years old with SLE. Our cohort of women, with and without SLE, were sourced from the metropolitan Atlanta, GA area. They were recruited from the Georgians Organized Against Lupus (GOAL) longitudinal cohort and the Georgia Lupus registry (GLR) for the VISTA study.[12]

In order to be considered a case, the women participants in the GLR had to either meet ≥ 4 of the revised American College of Rheumatology (ACR) Criteria or 3 of the ACR criteria and a diagnosis of SLE by the individual's board-certified rheumatologist documented in the medical record.[13] African American women without SLE were selected from marketing lists to reflect the geographical distribution

of women with SLE recruited from GOAL. All participants self-identified as African American women were premenopausal and did not have a history of diabetes, clinical CVD (a history of myocardial infarction, symptoms of angina, intermittent claudication, cerebral ischemia or revascularization) or end stage renal disease at the time of study enrollment. Participants without SLE enrolled into the comparison group were also free of any additional autoimmune or chronic inflammatory diseases. Participant data was collected at baseline, with ongoing visits scheduled for 12 months and 24 months. The analysis of this paper only examines participant data collected at baseline.

Clinic Visit

All of the participants in the VISTA study were required to attend a clinic visit at Emory University. During the visit, participants completed an interviewer-administered questionnaire on demographics, psychosocial characteristics, reproductive and health history, behaviors and experiences of stress and support. Trained study staff measured height, weight and blood pressure as well as conducting a carotid ultrasound assessment. All the VISTA study procedures were approved by the Institutional Review Board of Emory University and all participants provided written informed consent.

Ultrasound Scan

The carotid intima media thickness (IMT) compliance was measured by B-mode ultrasonography using standard protocols.[14] After having the participant rest supine for 10 minutes, right brachial blood pressures were obtained in duplicate and ECG electrodes were attached. Duplex ultrasound scans of the carotid arteries were then obtained by trained and certified vascular sonographers at Emory using a Mindray M7 system equipped with a linear transducer (L12-4s). Bilateral clips of 10 mm segments from the common carotid artery (CCA) just proximal to the bifurcation at 3 angles (anterior, lateral and

posterior) were obtained. Each clip included four QRS complexes. The clips were saved and streamed to the University of Pittsburgh Ultrasound Research Lab for later reading and measurement of CCA compliance.

The Carotid Analyzer from the software suite Vascular Research Tools 5 (Medical Imaging Applications, LLC, Coralville, IA) was used to measure IMT of the near and far walls of the CCA. For each study scan, IMT was measured on CCA images obtained from all 3 angles. Using these same image clips, the Carotid Analyzer software was used to determine compliance in the common carotid artery. The best distal CCA loop recorded for IMT was used for compliance assessment. For these measures, the reader selected the frame (training frame) with the best media-adventitia interfaces to use as the training frame and outlined the near and far wall media-adventitia borders. Once the reader chose the appropriate image sequence to analyze, the average brachial systolic and diastolic blood pressures were entered into the software program which then computed the compliance and distensibility measures using a complete cardiac cycle. Multiple cycles per participant were available and the cycle with the most distinct borders was chosen. The compliance measures calculated by the software are based on Tounian et al (Tounian P 2001) and include the following: the diameter compliance (mm/mmHg), and two measures of cross-sectional compliance (in mm^2/mmHg and 1/mmHg). Cross-sectional compliance (mm^2/mmHg) was used for the current analysis.[15]

Exposure - Net Worth

The Net worth exposure variable was assessed by using a single item: "Suppose you and others in your household were to sell all of your major possessions (including your home), turn all of your investments and other assets into cash, and pay off all of your debts. Would you have something left over, break even, or be in debt?," as in prior research.[16,17] A 3-category measure was constructed that included (a) positive net worth ("left over," indicating assets exceed debt); (b) neutral net worth ("break

even," i.e., an equal debt to assets ratio); and (c) negative net worth ("in debt," where debts exceed assets).

Covariates

Covariates were assessed based on prior studies and factors that may be related to stress caused by debt among women with SLE.[16,17,18-22] Age at clinic visit and highest level of education were self-reported at baseline. Medicaid use in the past year was self-reported as well as insurance coverage and the use of any insurance used to pay medical bills. A 3-category variable was created to assess the type of insurance participants had. If participants reported using Medicaid in the past year or both Medicaid and insurance that paid at least some of their medical bills, their insurance type was Medicaid. If participants reported not using Medicaid in the past year but reported using insurance that paid at least some of their medical bills, their insurance type was categorized as other insurance. If the participant reported no to using both Medicaid and insurance their insurance type was categorized as no insurance. Current smoking was self-reported as yes or no. BMI was measured as height in m2 and weight in kg, it was calculated using participants' measured weight and height and categorized as underweight (<18.5 kg/m2), normal weight (18.5 to less than 25 kg/m2), overweight (25 kg/m2 to less than 30 kg/m2) and obese (more than 30 kg/m2). Clinic systolic blood pressure (SBP) and clinic diastolic blood pressure (DBP) were calculated as the average of two seated blood pressure measurements. The 2-category clinic hypertension variable was created based on the clinic sbp and dbp values. If the participants had a sbp ≥ 130 and/or dbp ≥ 80 then they were considered hypertensive, if the participants had any values outside of those above then they were not considered hypertensive. Income and employment were both self-reported by participants. Debt stress was included as part of the administered questionnaire. Participants self-reported responses to the 4-item debt index (e.g. "Overall, how often do you worry about the total amount you (and your spouse/partner) owe in overall debt?" and "How much stress does the total debt you (and your spouse/partner) are carrying cause to you?") and "How concerned are you that you (and your

spouse/partner) will never be able to pay off these debts?").[23] The participants' responses were scored on a 0–4-point scale and summed. While using the index, the possible scores ranged from 0-16 with higher scores indicating more stress/worry due to debt. Using this information, among women with SLE, we could determine the range that they fall into within the debt index. Depressive symptoms were measured using the widely used and previously validated 21-item Beck Depression Inventory (BDI[)24] and modeled continuously.

Statistical analysis

For analysis purposes, we used descriptive statistics to characterize our study participants. Differences by lupus status were determined by using Chi-Squared tests for categorical variables and t-tests for continuous variables. Multivariable linear regression models were conducted to test associations with continuous IMT variables. We performed stratified models where women in the study were stratified by SLE status and each of the 6 models were ran. This allowed us to test the effect that NetWorth has on CSC1_cca. Model 1 adjusted for age only, in order to examine the associations prior to adjusting for other covariates. Model 2 adjusted for model 1, sociodemographic factors such as education, income and family size. Model 3 adjusted for model 2, employment and insurance type; we suspect that employment is likely influenced by current lupus disease status. Model 4 adjusted for Model 3, smoking status, BMI, and hypertension. Model 5 adjusted for model 4 and depressive symptoms. Finally, model 6 adjusted for model 5 and debt stress. We also tested the NetWorth and Mean Compliance CSC1_CCA by SLE interactions in initial, non-stratified full cohort models in each of the above models 1-6.

Results

Our analysis included 201 African American women with SLE and 201 African American Women without SLE. Participants with and without SLE had a similar average age (36.0 and 37.0). A significantly larger proportion of women with SLE had a high school education or less (45.3%, compared to 30.9% among women without SLE), had an income of less than $35,000 (47.0%, compared to 18.5% among women without SLE) and were unemployed (40.3%, compared to 12.4% among women without SLE). When looking at women with SLE, 41% have a significantly larger proportion of the insurance type Medicaid compared to 19.5% of women without SLE. Women with SLE were significantly more likely to have a higher clinic diastolic blood pressure (81.5%, compared to 79.1% among women without SLE) and have hypertension (53.7%, compared to 42.7% among women without SLE). African American women with SLE also have a significantly larger proportion of women who have depressive symptoms (9.9, compared to 7.4 among women without SLE).

Meanwhile, women without SLE had a significantly larger proportion of women with a college degree or higher (44.8%, compared to 31.3% among women with SLE) and were more likely to be part time (18.4%, compared to 13.4% among women with SLE) and full time employed (67.2%, compared to 45.8% among women with SLE). Women without SLE were 30.5% and 32.5% more likely to make $50,000-$74,999 and greater than $75,000 in income compared to 16.0% and 15.0% among women with SLE. There is a significantly greater chance that women without SLE are not hypertensive, 57.3% compared to 46.3%.

There were many cases where women with SLE and women without SLE were similar. Majority of women in both groups had insurance that covers part of their medical bills, were insured and had an insurance coverage amount of "most". Women with SLE and women without SLE were about equal in family size. Smoking status was similar among women with SLE and women without SLE (7.0% and 5.0%) as well as clinic systolic blood pressure (119.8 and 118.3). The mean of average CCA IMT for 3 angles was the same among women with SLE (0.6) and without SLE (06). The mean of average adventitial diameter is similar among women with SLE (6.6) and without SLE (6.7). The mean CCA

cross-sectional compliance in mm^2/mmHg was similar among women with SLE (0.1) and without SLE (0.2). The last IMT variable, mean CCA cross-sectional distensibility, was similar in women with SLE (0.0044) compared to women without SLE (0.0045). Financial stress, total debt owed, and Net Worth were also similar among women with SLE and women without SLE.

After excluding for participants who answered "Don't Know" or "Refuse" for our NetWorth exposure variable, our analysis of the relationship between NetWorth and CSC1_cca included 181 African American women with SLE and 193 African American women without SLE. These women were used for the analysis shows in Table 2. In linear regression models among women with SLE, after adjustment for age, education, income and family size (Model 2), reporting a negative ("in debt") NetWorth vs positive ("left over") was associated with greater CSC1_cca (β = 0.016, 95% Confidence Interval (CI): 0.00083, 0.032; P = 0.039) with no association observed when having a neutral ("break even") NetWorth (vs. a positive "left over" NetWorth) and CSC1_cca (β = 0.0058, 95% CI: -0.010, 0.022; P = 0.47). In Model 3, after adjusting for age, education, income and family size among women with SLE, reporting a negative ("in debt") NetWorth was not associated with a greater CSC1_cca (β = 0.014, 95% CI: -0.0023, 0.029; P = 0.093). The lack of association between negative ("in debt") NetWorth and CSC1_cca persisted in Models 4 through 6, including in the fully adjusted Model 6 (β = 0.013, 95% CI: -0.0048, 0.030; P = 0.15) as seen in Table 2.

In linear regression models among women without SLE, after adjustment for age, a negative ("in debt") NetWorth (vs. a positive "left over" NetWorth) was associated with less CSC1_cca (β = -0.015, 95% CI: -0.030, -0.00052; P = 0.042), no association observed when having a neutral ("break even") NetWorth (vs. a positive "left over" NetWorth) and CSC1_cca (β = 0.010, 95% CI: -0.0067, 0.028; P = 0.23). This association between negative ("in debt") NetWorth and a better (more negative) CSC1_cca only persisted in Model 4 after controlling for age, education, income, family size, employment, type of insurance, current smoking status, BMI, and hypertension status among women without SLE (β = -0.017, 95% CI: -0.033, -0.0013; P = 0.034). As seen in Table 2, African-American women without SLE who had negative ("in debt") NetWorth had lesser CSC1_cca than those without neutral ("break even") NetWorth

and less than those women without SLE who had negative ("in debt") NetWorth. There was no association between negative ("in debt") NetWorth and CSC1_cca among women without SLE in Models 2, 3, 5 and the fully adjusted Model 6 which adjusted for age, education, income, family size, employment, type of insurance, current smoking status, BMI, hypertension status, depressive symptoms and average debt stress ($\beta = -0.014$, 95% CI: -0.031, -0.0016; $P = 0.078$).

Discussion

Our study sought to examine the association between debt and a measure of CVD risk, common carotid artery (CCA) cross sectional compliance (CSC1_cca), in African American women with and without SLE. Counter to our hypotheses, women with SLE did not report greater amounts of debt compared to women without SLE. Also counter to our hypothesis, the association between debt and CCA compliance was not stronger for African-American women with SLE compared to African-American women without SLE. Among women with SLE there was only a significant relationship between negative ("in debt") NetWorth and CSC1_cca in the age-adjusted model 1 and among women without SLE. The estimate in the age-adjusted model 1 for women with SLE is close in value to the estimate in the age-adjusted model 1 for women without SLE, therefore; one association is not greater than the other, they are just in opposite directions. Among women without SLE the estimates from the linear regression analysis were negative, compared to the estimates among women with SLE. The negative relationship between debt and CSC1_cca that we see among women without SLE can possibly be explained by the benefits to having "good" debt and being able to afford the investments can have. Examples of "good" investments and debt could be homes, businesses and degrees.[25] This negative relationship could be due to a small effect size because women without SLE did not have significantly more debt than women with SLE, both groups had about the same amount. Our results are not consistent with prior research on net worth and women without SLE. Prior research has shown that women without Lupus do not have a negative relationship with debt, unlike our results that suggest debt is beneficial in women without SLE.[11]

As reported earlier, counter to our hypotheses, women with SLE did not report greater amounts of debt, despite their more adverse profile on education, income and employment where women with SLE are worse off than those without SLE. These demographic results that we found are interesting considering that even though these two groups of African-American women have significant differences, once we analyze their debt and financial strain, they are not so different. Even though African-American women with SLE have a debilitating disease, their financial strain and debt is similar to being an African-America women without SLE. These results speak to the experience of African-American women and how other covariates outside of finances, such as education, income, and employment have on their risk of CVD. Overall, our results suggest that African-American with and without SLE do not differ in debt status and the CVD risk factor, CSC1_cca, is not exceptionally higher in women with SLE than women without SLE. This is an area of SLE research that requires further exploration so we can better assess and contribute to the needs of African-American women in the United States who are suffering from debilitating illnesses such as SLE.

Limitations in our study are related to the effect size in our analysis being small because between our two cohorts of African-American women, one cohort did not have a larger debt than the other. If we had a larger sample size that possibly expanded beyond the metropolitan Atlanta area, we may have a larger effect size and thus seen a difference in debt stress between our two samples. Confining our study to the metropolitan Atlanta area also limits our ability to generalize our findings to different race-gender groups or people from other geographic regions. The age range that we focused on may be a potential limitation. We focused on young to middle aged African-American women in order to include a wider range of participants, including those who have an earlier onset of SLE. However, by doing so we miss including participants who may be experiencing CVD events later on in life, which are particularly pronounced prior to 52 years old.[26] The results may have been different if we had studied older African-American women with and without SLE. It is possible that we were unable to see significance in debt between groups because we did not analyze the type of debt and how it is related to CSC1_cca. The type of debt, whether that be related to their education, home or medical expenses could have different effects

on the financial strain that African-American women with and without SLE experience. Another limitation is that our NetWorth exposure variable, used to measure debt, was self-reported and could have been subject to social desirability or recall bias by the participants.

The strengths of our study are found in the case-control study design and the cohorts of women we were able to analyze. Our study population included a uniquely large sample of African-American women with and without SLE, with exactly 201 participants in each cohort. When looking at the results we see that our diseased and comparison groups are similar in age, family size, and smoking status, which help make these two cohorts as comparable as possible. Our case-control study design allows us to assess sociodemographic and social factors in a historically underrepresented group of African-American women with SLE and without SLE and asses their risk factors for CVD.

Even though our findings did not suggest that having a negative net worth (debt) was an important determining factor of common carotid artery (CCA) cross sectional compliance (CSC1_cca) in young to middle aged African-American women with SLE compared to women without SLE, our analysis still found substantial differences between the two groups. The significant differences that we have seen regarding their social factors such as education, income, and employment can contribute to a better understanding of what is causing their increased risk for CVD and CVD related deaths. Further analysis is needed to determine the associations between African-American women with SLE and their disproportionate risk for CVD. In the future, policies that are geared towards allocating resources to African-American women with SLE and reducing the wealth gap these women experience in comparison to African-American women without SLE, may help reduce the socioeconomic burdens that make their battle with SLE more susceptible to CVD.

Table 1. Participant Characteristics by Lupus Status

	Overall	LUPUS N=201 (50%)	NO LUPUS N=201 (50%)	P-value
Age, M (SD)	36.5 (6.9)	36.0(7.7)	37.0 (5.9)	0.15
Education, % (*N*)				
HS or less	38.1% (153)	45.3% (91)	30.9% (62)	0.0058
Some College	23.9% (96)	23.4% (47)	24.4% (49)	
College or higher	38.1% (153)	31.3% (63)	44.8% (90)	
Income, % (*N*)				
$<35K USD	32.8% (131)	47.0% (94)	18.5% (37)	<.0001
$35K-$49,999K	16.8% (67)	16.5% (33)	17.0% (34)	
$50K-$74,999K	23.3% (93)	16.0% (32)	30.5% (61)	
≥$75K	23.8% (95)	15.0% (30)	32.5% (65)	
Don't Know or Refused	3.50% (14)	5.5% (11)	1.5% (3)	
Employment, %(*N*)				
Unemployed	26.4% (106)	40.3% (81)	12.4% (25)	<0.0001
Part Time	15.9% (64)	13.4% (27)	18.4% (37)	
Full Time	56.5% (227)	45.8% (92)	67.2% (135)	
Other	1.2% (5)	0.50% (1)	2.00% (4)	
Insurance Type, %(*N*)				
Medicaid	30.3% (121)	41% (82)	19.5% (39)	<0.0001
Other	60.0% (240)	50.5% (101)	69.5% (139)	
No Insurance	9.8% (39)	8.5% (17)	11.0% (22)	
Family Size (SD)	3.5 (1.8)	3.5 (1.9)	3.5 (1.7)	0.96
Current Smoker, % (*N*)	6.0% (24)	7.0% (14)	5.0% (10)	0.40
BMI, kg/m^2 M, (SD)	32.20 (9.84)	30.7 (8.4)	33.8 (11.0)	0.0015
Blood Pressure, M (SD)				
Clinic_SBP	119.0 (16.1)	119.8 (16.0)	118.3 (16.2)	0.36
Clinic_DBP	80.3 (12.4)	81.5 (12.1)	79.1 (12.6)	0.05
Hypertension, % (*N*)				
Yes if sbp>= 130 and/or dbp>=80	48.3% (193)	53.7% (108)	42.7% (85)	0.028
CCA IMT (SD)	0.6 (0.1)	0.6 (0.1)	0.6 (0.08)	0.12
Adventitial diameter (SD)	6.6 (0.6)	6.6 (0.6)	6.7 (0.5)	0.092
CCA in mm^2/mmg (SD)	0.2 (0.1)	0.1 (0.1)	0.2 (0.1)	0.17
CCA in 1/mmHg (SD)	0.0044 (0.0014)	0.0044 (0.0014)	0.0045 (0.0014)	0.76

	Overall	Lupus N= 201(50%)	No Lupus N= 201(50%)	P-value
Net Worth, % (*N*)				
Have something left over	38.8% (145)	34.8% (63)	42.5% (82)	0.22
Break even	25.4% (95)	28.7% (52)	22.3% (43)	
Be in debt	35.8% (134)	36.5% (66)	35.2% (68)	
Debt Stress, M (SD)	1.5 (1.1)	1.4 (1.1)	1.5 (1.0)	0.57
Depressive Symptoms, M (SD)	8.6 (8.4)	9.9 (8.5)	7.4 (8.1)	0.0028
Total Debt Owed, %(*N*)				
Less than $1,000	7.2% (29)	8.5% (17)	6.0% (12)	0.14
$1,000 to $4,999	12.9% (52)	16.4% (33)	9.5% (19)	
$5,000 to $9,999	9.2% (37)	10.5% (21)	8.0% (16)	
$10,000 to $24,999	20.4% (82)	20.9% (42)	19.9% (40)	
$25,000 to $49,999	15.2% (61)	11.0% (22)	19.4% (39)	
$50,000 to $99,999	15.2% (61)	14.4% (29)	15.9% (32)	
$100,000 to $249,999	10.7% (43)	9.5% (19)	11.9% (24)	
$250,000 or more	1.7% (7)	1.0% (2)	2.5% (5)	
Don't Know or Refused	7.5% (30)	8.0% (16)	7.0% (14)	

Abbreviations: SBP=Systolic Blood pressure; DBP=Diastolic blood pressure.

The 2-category clinic hypertension variable was created based on the clinic sbp and dbp values. If the participants had a sbp ≥ 130 and/or dbp ≥ 80 then they were considered hypertensive, if the participants had any values outside of those above then they were not considered hypertensive

Table 2. Linear Regression Models Used to Examine the Association Between NetWorth and Mean Compliance by SLE status (stratified by SLE status), Excluding Participants Who Answered "Don't know" or "Refused" (*n* = 28) for NetWorth.

	NetWorth	SLE N=181 Estimate (SE)	p-value	No SLE (*β* [95% confidence interval]) N= 193 Estimate (SE)	p-value
Model 1	Negative ("In Debt") Neutral ("Break Even) Positive ("Left Over") (ref)	0.016 (0.0018,0.030) 0.0057 (-0.0095,0.021) -	0.028 0.46	-0.015 (-0.030, -0.00052) 0.010 (-0.0067,0.028) -	0.042 0.23
Model 2	Negative ("In Debt") Neutral ("Break Even) Positive ("Left Over") (ref)	0.016 (0.00083,0.032) 0.0058 (-0.010,0.022) -	0.039 0.47	-0.013 (-0.030,0.0031) 0.012 (-0.0064,0.030) -	0.11 0.21
Model 3	Negative ("In Debt") Neutral ("Break Even) Positive ("Left Over") (ref)	0.014(-0.0023,0.029) 0.0046(-0.011,0.021) -	0.093 0.57	-0.014(-0.031, -0.0026) 0.0099(-0.0086,0.028) -	0.097 0.29
Model 4	Negative ("In Debt") Neutral ("Break Even) Positive ("Left Over") (ref)	0.013(-0.0023,0.024) 0.0049(-0.011,0.021) -	0.095 0.54	-0.017(-0.033, -0.0013) 0.0076(-0.010,0.025) -	0.034 0.40
Model 5	Negative ("In Debt") Neutral ("Break Even) Positive ("Left Over") (ref)	0.010(-0.0057,0.026) 0.0049(-0.0011,0.021) -	0.21 0.54	-0.015(-0.031, -0.00033) -0.0077(-0.0097,0.025) -	0.055 0.38
Model 6	Negative ("In Debt") Neutral ("Break Even) Positive ("Left Over") (ref)	0.013(-0.0048,0.030) 0.0058(-0.0010,0.022) -	0.15 0.48	-0.014(-0.031, -0.0016) 0.0082(-0.0094,0.026) -	0.078 0.36

Model 1: Adjusted for age
Model 2: Adjusted for age, education, income, family size

Model 3: Adjusted for age, education, income, family size, employment, type of insurance
Model 4: Adjusted for age, education, income, family size, employment, type of insurance, current smoking status, BMI, hypertension status
Model 5: Adjusted for age, education, income, family size, employment, type of insurance, current smoking status, BMI, hypertension status, depressive symptoms
Model 6: Adjusted for age, education, income, family size, employment, type of insurance, current smoking status, BMI, clinic systolic blood pressure (SBP), hypertension status, depressive symptoms, average debt stress

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