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Persons With Debt Burden Are More Likely to Report Suicide Attempt Than Those Without: A National Study of US Adults

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ABSTRACT

Objective: To assess the association between debt burden and self-reported suicide attempt among US adults.

Methods: Data from the National Epidemiologic Survey on Alcohol and Related Conditions-III (2012–2013) were used to estimate the association between self-reported past-year debt burden and past-year and lifetime suicide attempt with logistic regression, controlling for sociodemographic characteristics with known associations with debt burden and suicide attempt.

Results: Among 36,278 adults aged ≥ 18 years, 13.03% reported past-year debt burden, 0.37% reported past-year suicide attempt, and 5.16% reported lifetime suicide attempt. Self-reported attempt was more likely for persons reporting debt burden than for those without (eg, for past-year suicide attempt: odds ratio [OR] = 7.96 [95% CI, 5.45–11.64; $P < .001$] when unadjusted; OR = 3.39 [95% CI, 2.15–5.34; $P < .001$] when adjusted for sociodemographic variables and mood disorders). The adjusted prevalence of past-year suicide attempt for those with and without debt burden was 0.75% (95% CI, 0.50%–1.00%) and 0.23% (95% CI, 0.17%–0.29%), respectively.

Conclusions: Debt burden is strongly associated with increased likelihood of suicide attempt. The strength of the identified association is comparable to or greater than that for other major predictors of suicide (eg, sex) and other mortality risk factors (eg, smoking, obesity). Findings highlight debt burden as a strong social determinant of suicide risk and intervention target.

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Suicide, or death caused by injuring oneself with the intent to die, is one of the top ten leading causes of death in the United States.[1,2] The overall rate of suicide increased from 11 to 13 per 100,000 persons between 2004 and 2014.[3–5] Rates are estimated to continue in an upward trend,[1] making suicide among the leading causes of preventable deaths. Suicide—a complex and devastating phenomenon with a long history of stigmatization[6]—is known to be related to biological, psychological, and societal-level factors.[7] Improved understanding of the impact of these factors may support future prevention efforts.

Socioeconomic status (SES) is a well-known determinant of health and longevity such that increasing levels of SES are associated with increasing life expectancy and overall health.[8–10] Markers of SES (eg, income) have been studied in relation to overall health and mortality, specifically that a decreased level of SES is associated with an increased risk of premature mortality, including death by suicide. A minimum-wage increase in the United States, for example, was demonstrated to slow growth in suicide rates.[11] However, the relationship between specific components of SES, such as debt, and health remain understudied in the US context.

Debt burden, or level of consumer debt relative to repayment ability,[12] reflects an aspect of SES worthy of study in the United States. Total financial debt in America is increasing at a fast pace. Credit card debt has reached its highest point in history—about 1 trillion dollars in 2017—and student loans are commonplace among college graduates.[13] The United States also has a high bankruptcy filing rate,[14] partly facilitated by the longstanding prodebt outlook of US culture and high levels of consumerism.[15] Furthermore, 2 of 5 adults in the United States are estimated to have medical debt or difficulty with medical bills.[16] Debt burden may limit (if burden is high) or expand (if burden is low) opportunities over the life course. High debt burden may prevent access to assets and goods that can lead to upward social mobility,[17,18] resulting in greater debt accrual, poorer credit, and perpetuation of a cycle of indebtedness. For example, students of color have higher loan burden due to lower family wealth, an increased likelihood of lower wages, and discrimination based on these factors in the housing market.[19] Debt burden can also influence other key determinants of health, such as an individual's societal integration and social capital.[20] Social integration and capital may interplay with psychological and biological factors to impact health. Of note, individuals' perceptions of their debt burden may have a stronger relationship to mental health than actual debt burden.[21]

Several studies conducted outside of the United States have assessed associations between debt or financial difficulty and suicide. For instance, one study[22] used data on all deaths by suicide for men and women in England and Wales between 2001 and 2011 to assess economic recession–related death and found that having a high burden of debt is a risk factor for suicidal thoughts and fatal suicide acts. Risk of suicide attempt has also been shown to be elevated in adults with economic insecurity across England and the United Kingdom,[23–25] and one study in Japan[26] showed that middle-aged men with unmanageable debt who

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Clinical Points

- Suicide prevention remains critical; rates are increasing, and understanding of its predictors is incomplete, especially as it pertains to self-perceived financial well-being.
- This study is the first to examine the effect of perceived debt burden on suicide attempt in the US context using a nationally representative sample of US civilian adults.
- Findings highlight debt burden as a strong social determinant of suicide risk and as an intervention target.

had completed suicide were more likely to have a history of financial problems. A 2008 study in Hong Kong[27] also found that indebtedness was a risk factor for suicide. Several studies conducted in the United States[28–30] have also evaluated associations between debt and health, and one previous report[1] of suicide rates based on national death certificate records in the United States found that financial difficulties contributed to suicide for persons with and without mental health conditions. However, national-level data on the association between self-perceived debt burden, specifically, and suicide are needed to describe the extent of this problem in the United States.

Therefore, we assessed the association between self-perceived debt burden and both past-year and lifetime suicide attempt in a nationally representative sample of US adults. We also investigated whether any observed associations could be accounted for by sociodemographic characteristics and prior mood disorders that are known to be associated with both greater debt burden and suicide risk.[31–33] We considered mood disorders of major depressive disorder (henceforth *depression*) and bipolar disorder because they are often characterized by increased hopelessness, decreased inhibition, increased impulsivity, and/or other forms of underlying vulnerability, which can lead to both increased debt and increased risk of suicide attempt.[34–39] We posited that there would be a positive association between debt burden and suicide attempt and that the experience of debt burden may be attenuated by sociodemographic characteristics and these prior mood disorders.

METHODS

Data Set and Study Sample

This retrospective cross-sectional study was a secondary analysis of data from the National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III), a limited-access data set containing a nationally representative sample of US civilian adults. NESARC-III surveyed 36,309 adults residing in non-institutionalized settings in 2012 and 2013. Households in high- and moderate-minority segments were oversampled, as were Black, Hispanic, and Asian adults. NESARC-III used the Alcohol Use Disorders and Associated Disabilities Interview Schedule, *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition* version (AUDADIS-5),[40] to provide information on psychiatric disorders, related disabilities, and risk factors. The research protocol for NESARC-III included informed consent procedures that received full ethical review and approval from the US Census Bureau and the US Office of Management and Budget. The overall response rate of NESARC-III was 60.1%.[41] The present study excluded participants who responded "unknown" to the question concerning debt burden (n = 31), leading to a sample of 36,278 adults. We performed complete case analysis, excluding participants who responded "unknown" to past-year (n = 209) or lifetime (n = 138) suicide attempt. Missing responses on other survey variables were imputed in the dataset.[41] Data analysis was performed between January 2018 and March 2019. The University of Washington Internal Review Board reviewed and determined the present study to be exempt from the need for oversight.

Measures

Primary predictor. Debt burden was measured dichotomously based on a "yes" response to a survey item asking respondents to report whether, within the last 12 months, "they had so much debt that they had no idea how they were going to repay it."

Outcomes. Past-year suicide attempt (primary outcome) was based on a response to a survey item asking respondents, "How old were you the most recent time [suicide attempt] happened?" Lifetime suicide attempt (secondary outcome) was measured dichotomously based on a "yes" response to a survey item asking respondents if, in their entire life, they had attempted suicide. If the difference between current age and age at most recent suicide attempt was 1 or less, we considered them to have a past-year suicide attempt.

Other measures. Sociodemographic characteristics with known associations with both debt burden and suicide attempt were measured.[4,26,28,42–47] These characteristics included age in years (18–29, 30–44, 45–64, 65+), sex (male, female), marital status (married, living with someone as if married, widowed, divorced, separated, never married), past-year total household income ($1–$19,999, $20,000–$34,999, $35,000–$69,999, $70,000 or more), education (less than high school, high school, some college, college or more), urbanicity (urban, rural), and US Census Region (Northeast, Midwest, South, West). Lifetime bipolar disorder and major depressive disorder were separate dichotomous variables derived from the AUDADIS-5. The test-retest reliability of *DSM-5* diagnoses of psychiatric disorders was fair in the general population (κ range, 0.41–0.51).[48]

Statistical Analyses

We calculated proportions and standard errors for all sociodemographic characteristics and mood disorders for the overall sample and for participants stratified by debt burden status, and we compared debt burden for all sociodemographic characteristics and mood disorders using survey-adjusted Wald tests. We used 3 logistic regression models to estimate the association between

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debt burden and both past-year and lifetime suicide attempt and evaluate whether accounting for other factors attenuated associations. The first model was unadjusted, and the second was adjusted for sociodemographic characteristics (sex, race/ethnicity, age, marital status, urbanicity, and census region) expected to potentially account the association[47]; a third model additionally included mood disorders of interest—depression and bipolar disorder—characterized by increased hopelessness, decreased inhibition, increased impulsivity, or other forms of underlying vulnerability. For all models, we computed adjusted predictive margins and 95% confidence intervals to estimate the magnitude of effect by comparing the prevalence of lifetime or past-year suicide attempt for respondents with and without debt burden. Strata, cluster, and sampling weight variables were used in all analyses to account for the complex survey design of NESARC-III to generate population-representative estimates with accurate standard errors. All analyses were conducted using STATA 15 (2015; StataCorp LLC).

RESULTS

Among the 36,278 eligible individuals, 13.03% reported debt burden (in the past 12 months), 5.16% reported lifetime suicide attempt, and 0.57% reported past-year suicide attempt. Debt burden was overrepresented among women; Black persons; American Indian/Alaska Natives; persons aged 30–44 or 45–64 years; those with less than high school or some college education; those with the lowest incomes; those who are divorced, separated, or living with someone as if married; those with depression or bipolar disorder; and those living in the South (Table 1).

Debt burden was associated with increased risk for past-year and lifetime suicide attempt in all models. Estimates of associations, as well as predicted prevalence of suicide attempt across debt burden status, are presented in Table 2 for all models.

Regarding past-year suicide attempt, persons with debt burden (1.52%) were 7.96 times more likely (95% CI, 5.45–11.64; $P<.001$) than those without (0.19%) to report having attempted suicide in the past year in unadjusted models. Adjustment for sociodemographic variables (OR = 5.80; 95% CI, 3.78–8.89; $P<.001$) and further adjustment for depression and bipolar disorder (OR = 3.39; 95% CI, 2.15–5.34; $P<.001$) attenuated the association. After full adjustment, the estimated adjusted prevalence of past-year suicide attempt for those with and without debt was 0.75% (95% CI, 0.50%–1.00%) and 0.23% (95% CI, 0.17%–0.29%), respectively.

Regarding lifetime suicide attempt, persons with debt burden (13.38%) were 3.77 times more likely (95% CI, 3.38–4.21; $P<.001$) to report lifetime suicide attempt than those without (3.93%). After adjustment for sociodemographic characteristics, the association was attenuated (OR = 2.68; 95% CI, 2.38–3.00; $P<.001$). After further adjustment for depression and bipolar disorder, the association was slightly more attenuated (OR = 1.98; 95% CI 1.74–2.24; $P<.001$). Based on estimates from the fully adjusted model (Model 3), the estimated prevalence of lifetime suicide attempt for those with and without debt was 7.97% (95% CI, 7.20%–8.74%) and 4.44% (95% CI, 4.12%–4.75%), respectively.

Table 1. Sociodemographic Characteristics and Mood Disorders of NESARC-III Participants Across Debt Burden Status, Weighted to Represent the US General Population

Characteristic[a]	Debt Burden (Unweighted n = 5,377)		No Debt Burden (Unweighted n = 30,901)		Total (Unweighted n = 36,278)	
	%	SE	%	SE	%	SE
Sex						
Male	44.33	0.77	48.66	0.33	48.09	0.31
Female	55.67	0.77	51.34	0.33	51.91	0.31
Race						
White, non-Hispanic	62.09	1.17	66.80	0.78	66.18	0.77
Black, non-Hispanic	17.74	1.10	10.90	0.62	11.79	0.65
American Indian/Alaska Native, non-Hispanic	2.64	0.34	1.41	0.12	1.56	0.12
Asian/Native Hawaiian/Other Pacific Islander, non-Hispanic	2.77	0.43	6.17	0.49	5.73	0.47
Hispanic, any race	14.76	0.88	14.74	0.68	14.74	0.67
Age, y						
18–29	19.01	0.71	22.08	0.39	21.68	0.36
30–44	34.18	0.81	24.47	0.36	25.73	0.33
45–64	40.49	0.81	34.21	0.35	35.03	0.32
65+	6.32	0.39	19.23	0.42	17.55	0.37
Education						
Less than high school	38.10	1.17	34.26	0.72	34.76	0.72
High school	6.46	0.40	3.66	0.13	4.02	0.14
Some college	38.68	0.94	32.23	0.45	33.07	0.45
College or more	16.76	0.96	29.85	0.80	28.15	0.78
Total household income, $						
1–19,999	31.56	1.03	18.99	0.45	20.63	0.48
20,000–34,999	24.82	0.68	17.73	0.38	18.65	0.36
35,000–69,999	27.60	0.78	28.03	0.37	27.97	0.32
70,000 or more	16.02	0.77	35.26	0.67	32.75	0.65
Marital status						
Married	39.69	1.03	52.92	0.53	51.19	0.53
Living with someone as if married	9.83	0.54	6.16	0.19	6.64	0.18
Widowed	3.80	0.36	6.11	0.18	5.81	0.17
Divorced	17.84	0.61	9.88	0.20	10.92	0.20
Separated	6.11	0.41	2.46	0.11	2.93	0.12
Never married	22.73	0.79	22.49	0.44	22.52	0.45
Lifetime major depressive disorder						
Absent	77.47	0.75	91.43	0.24	89.61	0.25
Present	22.53	0.75	8.57	0.24	10.39	0.25
Lifetime bipolar disorder						
Absent	95.33	0.28	98.93	0.09	98.46	0.09
Present	4.67	0.28	1.07	0.09	1.54	0.09
Urbanicity						
Urban	78.71	2.26	78.75	1.48	78.74	1.54
Rural	21.29	2.26	21.25	1.48	21.26	1.54
Census region						
Northeast	16.35	0.67	18.53	0.53	18.24	0.51
Midwest	20.59	0.95	21.61	0.47	21.48	0.44
South	40.14	1.47	36.60	0.91	37.06	0.89
West	22.92	1.37	23.26	0.89	23.22	0.91

[a]Tests for differences for all characteristic categories had P values < .01 based on the survey-adjusted Wald test.
Abbreviation: NESARC = National Epidemiologic Survey on Alcohol and Related Conditions-III.

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Table 2. Unadjusted and Adjusted Associations Between Debt Burden and Past-Year and Lifetime Suicide Attempt in a Nationally Representative Sample of US Adults (n = 36,146)[a]

Outcome	OR	95% CI	Debt Burden %	Debt Burden 95% CI	No Debt Burden %	No Debt Burden 95% CI
Past-year suicide attempt						
1a. Unadjusted	7.96	5.45–11.64	1.52	1.10–1.95	0.19	0.14–0.25
2a. Adjusted for sociodemographic characteristics[b]	5.80	3.78–8.89	1.16	0.76–1.54	0.20	0.15–0.26
3a. Adjusted for lifetime major depressive and bipolar disorders[c]	3.39	2.15–5.34	0.75	0.50–1.00	0.23	0.17–0.29
Lifetime suicide attempt						
1b. Unadjusted	3.77	3.38–4.21	13.38	12.22–14.54	3.93	3.62–4.25
2b. Adjusted for sociodemographic characteristics[b]	2.68	2.38–3.00	10.10	9.13–11.06	4.16	3.84–4.47
3b. Adjusted for past-year depression and bipolar disorders[c]	1.98	1.74–2.24	7.97	7.20–8.74	4.44	4.12–4.75

[a]All odds ratios (ORs) had *P* values < .001. Sample adjusted for survey weights.
[b]Model was adjusted for sex, race/ethnicity, age, income, marital status, urbanicity, and census region.
[c]Model was adjusted for the mood disorders noted as well as for the sociodemographic characteristics noted for Model 2 (specified in the previous footnote).

DISCUSSION

Main Findings

In this large nationally representative sample of US residents, we found that nearly one-sixth of the surveyed population reported experiencing debt burden, which was associated with a substantially elevated risk of suicide attempt (up to a nearly 8-fold risk). The strength of the identified associations is comparable to or greater than that for other major risk factors for suicide (eg, sex)[49,50] and other major risk factors for mortality (eg, smoking and obesity)[51] and highlights debt burden as a strong social determinant of suicide risk.[52] Given that rates of both consumer and education debt are at an all-time high[46] and rapidly increasing in the United States,[53] findings from the present study are alarming.

Findings from this study add to a larger literature on the risks associated with being disadvantaged in the United States and suggest that debt burden—an experience overrepresented in already disadvantaged populations—may contribute to suicide risk. Our findings corroborate those of prior studies from Japan, China, India, England, and the United Kingdom that have demonstrated economic hardship, including debt, to be an important risk factor for poor overall health, premature mortality, suicidal ideation, and suicide.[25,47,54,55,56]

We took an iterative approach to regression models to assess whether findings may be accounted for by sociodemographic characteristics and mental health diagnoses known to be associated with increased risk of suicide and found that adjustment for these characteristics did, indeed, attenuate associations to some extent. However, associations between debt burden and suicide attempt remained statistically significant despite adjustment, and the mechanisms underlying this association need further exploration. There is growing evidence to suggest that debt may operate via biological and psychosocial mechanisms of stress that may lead to premature mortality or suicide.[30,52] Indeed, our findings are consistent with those of other studies[23] identifying a 6-fold increase in mental health disorders for persons experiencing debt. A recent qualitative study[57] about the lived experience of consumer debt described people's perceptions of debt as an embodied sense of suffering and hopelessness. Prior research[58] has also suggested that subjective worry about debt is more important than the amount of debt per se in terms of risk for depression. Other studies on this topic suggest that debt burden should be considered when studying "deaths of despair," which have been studied in persons feeling left behind due to job displacement[43] and those not well integrated into society due to discrimination based on financial debt and socioeconomic status.[6]

In the present study, the experience of debt burden was overrepresented among population groups known to be vulnerable to adverse health outcomes and risks, including those with low income, women, Black persons, American Indian/Alaska Natives, and those with no more than a high school education.[59] The experience of debt burden was also overrepresented among persons with bipolar disorder, which adds some evidence to a previously identified gap in the literature concerning debt among members of this vulnerable population.[25] Adjustment for these characteristics attenuated associations observed in the present study. Some, but not all, of these characteristics have been studied previously in relation to suicide risk.[5] Thus, findings are supported by theory[10] and prior evidence[60] that those with the least access to resources are at greatest risk for adverse events. Given that high-interest credit establishments (eg, payday loans) target disadvantaged populations,[61–63] populations with the greatest debt burden should be prioritized for further studies of debt burden.[64]

Because of the nature of the data available, we were unable to explore the extent that suicide risk is attributable to specific types of debt. However, given the strong independent association between debt and suicide attempt, findings may suggest that linkages should be made between suicide-prevention programs and educational or community settings, such as loan and tax offices, debt-management and counseling centers, and colleges/universities. Specifically, interventions in these settings may be warranted given that many people experiencing debt burden may not be connected to mental health treatment systems prepared to prevent suicide. Moreover, given that social service programs providing debt-related education and support

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are limited, there are many opportunities for future policies and interventions that may help mitigate debt burden and its sequelae.

Limitations

The NESARC-III consists of retrospective, self-reported data. Self-reported data are subject to bias, such as the potential underreporting of suicide attempt due to stigma associated with suicide in society. The reliability of the AUDADIS-5 used in NESARC-III is fair to good for psychiatric disorders,[65] not excellent. The 60.1% response rate for NESARC-III, though not ideal, is comparable to that of other national probability samples, and analyses were weighted to account for survey sampling. However, those not responding to the survey may have been those who were more distressed or struggling financially, which could have biased results in either direction. Additionally, both predictor and outcome variables were dependent on self-report, which could introduce recall or social desirability bias. In particular, the measure of debt is somewhat subjective and may result in varying responses across individuals, depending on their perceptions. However, prior research has suggested that subjective worry about debt is more important that the amount of debt per se in terms of risk for depression, and thus use of self-perceived debt as our primary predictor reflects a strength of the study.[58] Further, the cross-sectional nature of the survey does not permit assessment of temporal sequence of events, even for analyses of past-year suicide attempts.

CONCLUSION

There was a strong and consistent association between debt burden and suicide attempt among US adults at a magnitude equal to or greater than that for other major risk factors for suicide (eg, sex)[66] and that of other major risk factors (eg, tobacco use) for mortality. Findings identify debt burden as a strong social determinant of suicide risk and potentially a call for strategies to reduce financial debt among US adults to improve population health. Future research is needed to better understand the experience of debt burden and suicide in US adults, who are increasingly experiencing this burden.

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Editor's Note: We encourage authors to submit papers for consideration as a part of our Focus on Suicide section. Please contact Philippe Courtet, MD, PhD, at pcourtet@psychiatrist.com.

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