



Original Contribution

Financial Strain and Suicide Attempts in a Nationally Representative Sample of US Adults

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Initially submitted March 15, 2020; accepted for publication June 13, 2020.

Although research has identified many suicide risk factors, the relationship between financial strain and suicide has received less attention. Using data representative of the US adult population ($n = 34,653$) from wave 1 (2001–2002) and wave 2 (2004–2005) of the National Epidemiologic Survey on Alcohol and Related Conditions, we investigated the association between financial strain—financial debt/crisis, unemployment, past homelessness, and lower income—and subsequent suicide attempts and suicidal ideation. Multivariable logistic regression controlling for demographic and clinical covariates showed that cumulative financial strain was predictive of suicide attempts between waves 1 and 2 (odds ratio (OR) = 1.53, 95% confidence interval (CI): 1.32, 1.77). Wave 1 financial debt/crisis (OR = 1.58, 95% CI: 1.06, 2.34), unemployment (OR = 1.52, 95% CI: 1.10, 2.10), past homelessness (OR = 1.50, 95% CI: 1.03, 2.17), and lower income (OR = 1.51, 95% CI: 1.01, 2.25) were each associated with subsequent suicide attempts. Respondents endorsing these 4 financial-strain variables had 20 times higher predicted probability of attempting suicide compared with respondents endorsing none of these variables. Analyses yielded similar results examining suicidal ideation. Financial strain accumulated from multiple sources (debt, housing instability, unemployment, and low income) should be considered for optimal assessment, management, and prevention of suicide.

financial strain; homelessness; suicidal ideation; suicide attempts; unemployment

Abbreviations: CI, confidence interval; NESARC, National Epidemiologic Survey on Alcohol and Related Conditions; OR, odds ratio.

Editor's note: An invited commentary on this article appears on page 1275, and the authors' response appears on page 1278.

Suicide is a growing problem and leading cause of death throughout the world (1–5). The US Centers for Disease Control and Prevention reported increased rates of suicide across all demographic and age ranges over 1999–2016 (3). Research has identified clinical risk factors for suicide including mental illness, particularly major depression (5, 6), with the goal of identifying dynamic variables to be targeted by health-care providers to prevent suicide (1, 5).

Less research has examined financial strain, defined as lack of economic support and related perceived economic stress (7–9). Studies suggest that financial debt/crises (10–13), unemployment (14–16), homelessness (15, 17, 18),

and lower income (19–21) elevate suicide risk. Multiple studies show that suicides tend to decline during times of economic prosperity and increase during times of economic hardship (22, 23). Higher suicide rates were recorded during widespread unemployment in the Great Depression and home foreclosures in the recent Great Recession (16, 24). Correspondingly, a time-series analysis using data on monthly suicide counts in New York City from 1990 through 2006 revealed that suicide rates were lower when economic conditions were stronger (25).

These studies point to a potential link between financial strain and suicide, suggesting that financial well-being should play a role in the context of suicide prevention. Public policy targeting upstream socioeconomic factors such as financial education, vocational rehabilitation, job retraining, increasing the minimum wage, and improving

homelessness services could reduce suicide rates (4, 19, 22, 26, 27).

Within the literature, empirical studies on the association between financial strain and suicide risk have been largely cross-sectional (11, 28). Research has also been limited by nonrepresentative sampling, focus on single rather than multiple sources of financial strain, and lack of statistical control for clinical variables like major depression, substance abuse, or past suicide attempts or suicidal ideation (14, 15). Including clinical variables is important for distinguishing whether financial strain predicts suicide attempts independent of psychiatric history or whether financial strain instead serves as a proxy for underlying mental health issues related to suicide (5, 6). There is growing recognition of the need to clarify the intricate links between financial strain and mental illness particularly with respect to suicide (22, 25, 29).

The purpose of the present study is to address these gaps in the literature by using a nationally representative longitudinal data set to examine whether financial strain—financial debt/crisis, past homelessness, unemployment, and lower income—predicts subsequent suicide attempts and suicidal ideation, controlling for demographic and clinical covariates.

METHODS

We analyzed data from waves 1 and 2 of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC), face-to-face interviews conducted by the National Institute on Alcohol Abuse and Alcoholism (30). Wave 1, conducted between 2001 and 2002, included 43,093 US adults (age > 18 years) residing in the 50 states and District of Columbia. Of these individuals, 34,653 (86.7%) completed the wave 2 interview between 2004 and 2005.

Outcomes: Suicide attempts and suicidal ideation

The primary outcome was suicide attempts between waves 1 and 2. Data for this outcome were collected at wave 2 and coded “yes” if either: 1) the respondent affirmed “During that time since your last interview when (your mood was at its lowest/you enjoyed or cared the least about things), did you attempt suicide?” or 2) responses to “In your entire life did you ever attempt suicide? How old were you the first time this happened? How old were you the most recent time that happened?” indicated that respondents’ age in years at the time of their first or most recent suicide attempt was greater than their age in years recorded at the wave 1 interview. A total of $n = 323$ respondents endorsed a suicide attempt during waves 1 and 2, the majority ($241/323 = 75\%$) of which were captured by item 1 while some were added with item 2 ($82/323 = 25\%$).

A secondary outcome was suicidal ideation between waves 1 and 2, coded “yes” if respondents affirmed the following during the wave 2 interview: “During that time since your last interview when (your mood was at its lowest/you enjoyed or cared the least about things), did you think about committing suicide?”

Exposure: cumulative financial strain

An ordinal variable was created connoting cumulative financial strain (range, 0–4), the primary exposure of this study, based on the total number of the following 4 financial strain variables measured at wave 1. Financial debt/crisis was indicated by a “yes” response to a question about whether respondents “experienced a major financial crisis, declared bankruptcy, or were unable to pay bills on time in the past 12 months.” Unemployment was coded “yes” if the respondent affirmed any of the following items: 1) “present situation includes unemployed or laid off and looking for work”; 2) “present situation includes unemployed or laid off and not looking for work”; 3) “present situation includes unemployed and permanently disabled”; or 4) “unemployed and looking for work for > 1 month in last 12 months.” Past homelessness was coded “yes” if the respondent affirmed either of the following items: 1) “Did you ever have a time lasting 1 or more months when you had no regular place to live?”; or 2) “Did you ever have a time lasting 1 or more months when you had to live with others because you had no place of your own?” Annual income was measured with the item “total household income in last 12 months (including any income from food stamps)” (0 = at or above sample median of \$35,000; 1 = below sample median of \$35,000). These individual variables were examined at wave 1 as a secondary exposure of this study and were examined at wave 1 and wave 2 to analyze changes in financial strain between the 2 waves.

Additional measures

At wave 1, demographic covariates measured included age, sex (0 = female and 1 = male), race (0 = non-White and 1 = White), educational level (1 = high school or greater; 0 = less than high school), and marital status (1 = married; 0 = other). Clinical covariates measured at wave 1 included presence of major depressive disorder in the past 12 months (0 = no; 1 = yes) or presence of alcohol and/or drug abuse and/or dependence in the past 12 months denoting substance use disorder (0 = no; 1 = yes). These were assessed using the National Institute on Alcohol Abuse and Alcoholism Alcohol Use Disorder and Associated Disabilities Interview Schedule, *Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV* Version, a structured diagnostic interview designed for lay interviewers, shown to have good to excellent reliability (31). History of suicidality before wave 1 was gathered from several sections of the NESARC, coded “yes” if respondents: 1) endorsed at wave 1 having previous thoughts about suicide or having attempted suicide, or 2) endorsed the wave 2 item about most recent suicide attempt such that respondents’ age in years at the time of their most recent suicide attempt confirmed that it occurred before the wave 1 interview.

Statistical analysis

Models were fitted and weighted to be representative of the US population using SAS, version 9.4 (SAS Institute,

Table 1. Associations Between Variables at Wave 1 and Suicide Attempts and Suicidal Ideation Between Waves 1 and 2 in the National Epidemiologic Survey on Alcohol and Related Conditions, United States, 2001–2005

Variable at Wave 1	No.	Suicide Attempts				Suicidal Ideation			
		Between Waves 1 and 2				Between Waves 1 and 2			
		No.	%	χ^2	P Value	No.	%	χ^2	P Value
Financial debt/crisis				33.42	<0.001			104.27	<0.001
Yes	4,092	122	2.88			409	9.96		
No	30,353	200	0.62			870	2.78		
Unemployed				38.35	<0.001			119.66	<0.001
Yes	4,815	129	2.36			419	8.59		
No	29,838	194	0.64			865	2.79		
Past homelessness				25.07	<0.001			85.54	<0.001
Yes	4,095	105	2.48			341	8.56		
No	29,880	210	0.66			916	2.89		
Income ^a				24.02	<0.001			39.02	<0.001
Below median	16,268	219	1.29			751	4.52		
At or above median	18,385	104	0.57			533	2.87		
Age, years				50.08	<0.001			42.41	<0.001
<35	16,352	220	1.34			746	4.36		
≥35	18,301	103	0.41			538	2.75		
Sex				14.32	<0.001			30.34	<0.001
Male	14,564	104	0.62			438	2.86		
Female	20,089	219	1.09			846	4.15		
Race				3.68	0.06			1.86	0.18
White	20,174	162	0.78			779	3.63		
Non-White	14,479	161	1.07			505	3.29		
Education				4.47	0.04			3.38	0.07
Completed high school	28,909	237	0.80			1,036	3.44		
Some high school or less	5,744	86	1.23			248	4.08		
Marital status				21.88	<0.001			63.39	<0.001
Married	17,401	110	0.62			479	2.71		
Not married	17,252	213	1.22			805	4.75		
Major depression in past 12 months				51.62	<0.001			161.99	<0.001
Yes	2,614	118	4.25			424	15.57		
No	32,039	205	0.60			860	2.61		
Substance use disorder in past 12 months				22.62	<0.001			41.85	<0.001
Yes	2,975	80	2.40			220	6.96		
No	31,678	243	0.71			1,064	3.19		
History of suicidality				68.96	<0.001			198.63	<0.001
Yes	3,498	185	4.88			667	18.15		
No	31,155	138	0.43			617	1.97		

^a Median income: \$35,000.

Inc., Cary, North Carolina), in conjunction with SUDAAN (RTI International, Research Triangle Park, North Carolina), a statistical package designed to adjust for population-level variables and methodological sampling bias (e.g., survey

design, nonresponse, and sample attrition). χ^2 analyses were performed for financial strain and covariates at wave 1 and suicide attempts and suicidal ideation between waves 1 and 2. Associations between financial strain at wave 1

Table 2. Multivariable Logistic Regression Model Predicting Suicide Attempts and Suicidal Ideation Between Waves 1 and 2, for Cumulative Financial Strain, in the National Epidemiologic Survey on Alcohol and Related Conditions, United States, 2001–2005

Variable at Wave 1	Suicide Attempts Between Waves 1 and 2 ^a			Suicidal Ideation Between Waves 1 and 2 ^b		
	OR	95% CI	P Value	OR	95% CI	P Value
Cumulative financial strain ^c	1.53	1.32, 1.77	<0.001	1.44	1.33, 1.55	<0.001
Age	0.97	0.96, 0.98	<0.001	0.99	0.98, 0.99	<0.001
Male sex	0.63	0.45, 0.88	0.007	0.82	0.70, 0.95	0.011
White race	0.83	0.58, 1.18	0.288	1.17	0.99, 1.39	0.072
High-school education or more	0.86	0.57, 1.29	0.459	1.01	0.82, 1.24	0.911
Married	1.11	0.82, 1.51	0.498	0.94	0.80, 1.11	0.467
Major depression in past 12 months	1.78	1.23, 2.55	0.002	2.21	1.81, 2.70	<0.001
Substance use disorder in past 12 months	1.78	1.16, 2.73	0.009	1.24	1.00, 1.52	0.047
History of suicidality	6.06	4.23, 8.70	<0.001	6.35	5.30, 7.61	<0.001

Abbreviations: CI, confidence interval; df, degrees of freedom; OR, odds ratio.

^a Final model: $\chi^2 = 590.08$, $df = 10$, $P < 0.001$.

^b Final model: $\chi^2 = 1,748.60$, $df = 10$, $P < 0.001$.

^c Cumulative financial strain was scored as an ordinal variable ranging from 0–4 based on the sum of the following 4 variables, each either absent (scored 0) or present (scored 1) at wave 1: financial debt/crisis, unemployment, past homelessness, and below median income.

and suicide attempts and suicidal ideation between waves 1 and 2, controlling for demographic and clinical covariates, were estimated using multivariable logistic regression procedures, first for cumulative financial strain and then for the individual financial-strain variables. Predicted probabilities of suicide attempts and suicidal ideation between waves 1 and 2 derived from multiple logistic regression controlling for demographic and clinical covariates were calculated as a function of cumulative financial strain assessed at wave 1. Changes in financial strain variables between waves 1 and 2 were calculated and analyzed to examine their bivariable associations with suicide attempts and suicidal ideation between waves 1 and 2.

From $n = 34,653$ respondents in the total sample, we had complete data for the following: income, unemployment, sex, race, age, marital status, educational level, major depression, substance use disorder, history of suicidality, suicide attempts, and suicidal ideation. We had unknown or missing data on financial strain/debt for 208 respondents (<1%) and history of homelessness for 678 respondents (2%), enabling multivariable analyses of $n = 33,917$ respondents with complete data on all variables. Additionally, all multivariable analyses included a variable capturing number of days between respondents' wave 1 and 2 interviews. The average time between interviews was 1,113 days (3 years and 18 days; range, 870–1,470 days).

RESULTS

Baseline characteristics of the participants

Of the present sample, 58% were female, 42% were non-White, and participants had a median age of 46 years,

with 83% reporting having completed high school and 50% reporting being married. At wave 1, 8% met criteria for a major depressive disorder, 9% met criteria for alcohol and/or drug abuse/dependence, and 10% had a history of suicidality. At wave 1, 12% reported recent financial debt/crisis, 14% were unemployed, and 12% endorsed past homelessness. Nearly 1% ($n = 323$) of the sample reported attempting suicide between waves 1 and 2, while 3.7% ($n = 1,284$) reported suicidal ideation between waves 1 and 2.

Bivariable associations of financial strain with suicide attempts and suicidal ideation

Bivariable associations between variables at wave 1 and attempted suicide between waves 1 and 2 were examined using χ^2 procedures (Table 1). Suicide attempts between waves 1 and 2 were significantly associated with risk factors at wave 1, including financial instability, unemployment, lower income, past homelessness, lower age, female sex, lower educational level, unmarried status, major depression, substance use, and history of suicidality. A parallel set of analyses was conducted for suicidal ideation between waves 1 and 2. χ^2 analyses showed a similar pattern, yielding significant associations between suicidal ideation and financial debt/crisis, unemployment, past homelessness, and lower income at wave 1.

Multivariable associations of cumulative financial strain with suicide attempts and suicidal ideation

Table 2 presents multivariable models predicting suicide attempts and suicidal ideation between waves 1 and 2,

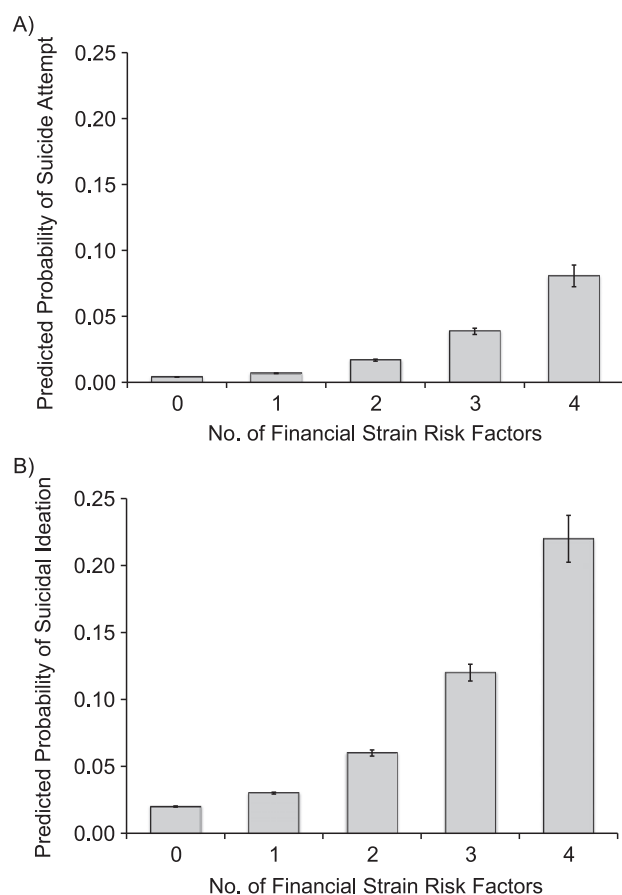


Figure 1. Predicted probability of suicide attempts and suicidal ideation between waves 1 and 2 as a function of the total number of financial strain risk factors at wave 1 ($n = 33,917$), National Epidemiologic Survey on Alcohol and Related Conditions, United States, 2001–2005. A) Suicide attempts between waves 1 and 2; predicted probability calculated as a function of the total number of financial strain risk factors at wave 1 (financial debt/crisis, unemployment, past homelessness, and below-median income). B) Suicidal ideation between waves 1 and 2; predicted probability calculated as a function of the total number of financial strain risk factors at wave 1 (financial debt/crisis, unemployment, past homelessness, and below median income). These models were derived from multiple logistic regression analyses controlling for demographic and clinical covariates. For this analysis: $n = 14,214$ respondents had 0 financial strain risk factors; $n = 13,196$ respondents had 1 financial strain risk factor, $n = 4,466$ respondents had 2 financial strain risk factors; $n = 1,632$ respondents had 3 financial strain risk factors; and $n = 409$ respondents had 4 financial strain risk factors.

specifically with respect to cumulative financial strain at wave 1. Multivariable logistic regression analyses showed that cumulative financial strain (odds ratio (OR) = 1.53, 95% confidence interval (CI): 1.32, 1.77) predicted increased odds of subsequent suicide attempts, as did younger age, female sex, major depression, substance use disorder, and history of suicidality. Correspondingly, multivariable logistic regression analyses showed that cumulative financial strain (OR = 1.44, 95% CI: 1.33, 1.55) predicted increased odds of suicidal ideation, as did younger age, female sex,

major depression, substance use disorder, and history of suicidality.

Figure 1 illustrates cumulative financial strain as predicted probabilities of a respondent's likelihood of suicide attempts and suicidal ideation between waves 1 and 2 as a function of number of financial strain risk factors at wave 1. Participants with zero risk factors at wave 1 had an estimated 0.4% (95% CI: 0.39, 0.41) probability of suicide attempts between waves 1 and 2. For participants who reported a total of 4 financial risk factors at wave 1, the estimated probability of suicide attempts between waves 1 and 2 was 8% (95% CI: 7.2, 8.8), 20 times higher ($0.08/0.004 = 20$).

Predicted probability of suicidal ideation at wave 2 was also estimated. Suicidal ideation increased with the number of financial risk factors reported at wave 1. Individuals with zero financial risk factors had a probability of 2.1% (95% CI: 2.06, 2.14) compared with a 22.2% (95% CI: 20.5, 23.9) probability of suicidal ideation among individuals with 4 financial risk factors, over 10 times higher.

Multivariable associations of individual financial strain variables and suicide attempts and suicidal ideation

Table 3 presents multivariable models predicting suicide attempt and suicidal ideation between waves 1 and 2, specifically with respect to individual financial strain variables at wave 1. Financial debt/crisis (OR = 1.58, 95% CI: 1.06, 2.34), unemployment (OR = 1.52, 95% CI: 1.10, 2.10), past homelessness (OR = 1.50, 95% CI: 1.03, 2.17), and lower income (OR = 1.51, 95% CI: 1.01, 2.25) at wave 1 each predicted subsequent suicide attempts between waves 1 and 2, as did younger age, female sex, major depression, substance use disorder, and history of suicidality. Financial debt/crisis (OR = 1.61, 95% CI: 1.31, 1.96), unemployment (OR = 1.72, 95% CI: 1.44, 2.04), and past homelessness (OR = 1.36, 95% CI: 1.12, 1.65) at wave 1 each predicted subsequent suicidal ideation between waves 1 and 2, as did younger age, female sex, major depression, and history of suicidality.

Bivariable associations between change in individual financial strain variables and suicide attempts and suicidal ideation

While the models above show that financial strain at wave 1 predicted subsequent suicide attempts and suicidal ideation between waves 1 and 2, we conducted additional analyses to ascertain whether changes between wave 1 and wave 2 on financial strain variables were associated with suicide attempts and suicidal ideation between waves 1 and 2. Table 4 demonstrates that changes in financial strain from wave 1 to wave 2 were found to be significantly associated with suicide attempts and suicidal ideation between waves 1 and 2 in expected directions. Of note, participants who were financially stable at wave 1 but reported greater financial strain at wave 2 had more endorsements of suicide attempts and suicidal ideation than those who were financially stable at both time points. Suicide attempts were reported by 2.38% participants who had a financial crisis at wave 2 but not

Table 3. Multivariable Logistic Regression Model Predicting Suicide Attempts and Suicidal Ideation Between Waves 1 and 2, for Individual Financial Strain, in the National Epidemiologic Survey on Alcohol and Related Conditions, United States, 2001–2005

Variable at Wave 1	Suicide Attempts Between Waves 1 and 2 ^a			Suicidal Ideation Between Waves 1 and 2 ^b		
	OR	95% CI	P Value	OR	95% CI	P Value
Financial debt/crisis	1.58	1.06, 2.34	0.024	1.61	1.31, 1.96	<0.001
Unemployed	1.52	1.10, 2.10	0.013	1.72	1.44, 2.04	<0.001
Past homelessness	1.50	1.03, 2.17	0.033	1.36	1.12, 1.65	0.002
Income below median	1.51	1.01, 2.25	0.044	1.15	0.97, 1.37	0.102
Age	0.97	0.96, 0.98	<0.001	0.99	0.98, 0.99	<0.001
Male sex	0.63	0.45, 0.89	0.009	0.81	0.69, 0.95	0.009
White race	0.83	0.59, 1.17	0.283	1.17	0.98, 1.40	0.075
High-school education or more	0.86	0.57, 1.30	0.463	0.98	0.80, 1.20	0.83
Married	1.11	0.81, 1.51	0.519	0.91	0.77, 1.08	0.266
Major depression in past 12 months	1.77	1.22, 2.57	0.003	2.16	1.77, 2.64	<0.001
Substance use disorder in past 12 months	1.78	1.17, 2.71	0.008	1.22	0.99, 1.50	0.065
History of suicidality	6.06	4.19, 8.78	<0.001	6.30	5.24, 7.58	<0.001

Abbreviation: CI, confidence interval; df, degrees of freedom; OR, odds ratio.

^a Final model: $\chi^2 = 590.15$, $df = 13$, $P < 0.001$.

^b Final model: $\chi^2 = 1,764.92$, $df = 13$, $P < 0.001$.

at wave 1, while suicide attempts were reported by 0.28% of participants who never had a financial crisis at either wave. The relative odds between the 2 groups of attempting suicide were thus $2.38/0.28 = 8.5$. Similarly, the relative odds of attempting suicide between participants who lost a job (2.45%) versus participants working at both waves (0.24%) were $2.45/0.24 = 10.21$.

DISCUSSION

Findings

Analyses from a national longitudinal data set representative of the US population demonstrated that financial strain prospectively predicted suicide attempts, controlling for covariates including previous history of suicide attempts and suicidal ideation. Financial debt and crises, unemployment, lower income, and past homelessness were each significantly and positively associated with subsequent suicide attempts, consistent with past research (10–13, 15–21, 32). To our knowledge, this study is the first to demonstrate that associations between financial strain and suicide risk are cumulative: Predicted probabilities of suicide attempts (and suicidal ideation) increased substantially with each increment in financial strain. Respondents endorsing all 4 financial strain variables had a 20 times higher predicted probability of future suicide attempts compared with respondents endorsing none of the financial strain variables.

Study results indicate that policy makers addressing suicide prevention efforts should evaluate financial strain on a continuum, with each additional component contributing to rising stress, which might play a role in subsequent

etiology and/or exacerbation of suicide risk. These findings are consistent with the stress-diathesis model of suicide (33), which posits that the greater the financial strain from multiple sources in the social environment, the greater the vulnerability to stress, leading to increased risk of suicide. Post hoc analysis showed that the unadjusted odds ratios between individual financial strain variables and suicide attempts were stronger before inclusion of covariates controlling for depression, suggesting the association between financial stress and suicide might be mediated partially by mental health conditions.

It is likely that financial strain and mental illness mutually reinforce each other. People with underlying psychiatric conditions are more likely to experience job loss or other financial hardship (25), and psychiatric disorders can impede recovery from economic stress (34). Conversely, lower socioeconomic status might impede access to preventive mental health care and affect the ability to make decisions to optimize health, leading commentators to conclude “financial strain can be both a cause and a consequence of poor health” (8).

The present findings reveal that financial strain independently contributed to suicide risk in the general population. While future research is warranted to examine the associations between financial strain and mental health issues in more detail (22, 25, 29), the present findings are, to our knowledge, the first to show that cumulative financial strain longitudinally predicts suicide risk when controlling for covariates such as depression. The present study highlights a need for clinicians to consider not only individual-level factors (e.g., psychiatric disorders) but also environmental-level factors (e.g., financial strain) when developing policies

Table 4. Associations Between Change in Financial Strain From Wave 1 to Wave 2 and Suicide Attempts and Suicidal Ideation Between Waves 1 and 2 in the National Epidemiologic Survey on Alcohol and Related Conditions, United States, 2001–2005

Change in Variable From W1 to W2	No.	Suicide Attempts Between Waves 1 and 2				Suicidal Ideation Between Waves 1 and 2			
		No.	%	χ^2	P Value	No.	%	χ^2	P Value
Financial debt/crisis				19.17	<0.001			60.12	<0.001
Debt/crisis both waves	1,706	55	3.08			244	14.56		
No debt/crisis W1 and debt/crisis W2	2,972	64	2.38			306	10.66		
Debt/crisis W1 and no debt/crisis W2	2,381	38	1.46			164	6.82		
No debt/crisis at both waves	27,317	83	0.28			562	2.03		
Unemployed				21.57	<0.001			63.17	<0.001
Unemployed both waves	2,140	73	3.44			262	12.54		
Employed W1 and unemployed W2	3,113	69	2.45			274	9.05		
Unemployed W1 and employed W2	2,675	26	0.68			157	5.59		
Employed both waves	26,725	73	0.24			591	2.13		
Homelessness ^a				9.96	<0.001			41.44	<0.001
Homeless both waves	501	32	5.16			108	21.23		
Not homeless W1 and homeless W2	1,184	35	2.68			144	11.73		
Homeless W1 and not homeless W2	3,575	44	1.20			230	6.60		
Never homeless	28,471	126	0.40			767	2.50		
Income				11.70	<0.001			26.02	<0.001
Below median both waves	11,625	127	1.05			592	5.17		
≥Median W1 and <median W2	3,288	29	0.92			165	5.22		
<Median W1 and ≥median W2	4,643	38	0.82			159	3.23		
At or above median both waves	15,097	47	0.30			368	2.38		

Abbreviations: W1, wave 1; W2, wave 2.

^a “Homeless W1” denotes respondent endorsed past homelessness at wave 1. “Homeless W2” denotes respondent endorsed, at wave 2, homelessness since wave 1. “Homeless both waves” denotes respondent both endorsed past homelessness at wave 1 and endorsed, at wave 2, homelessness since wave 1.

and procedures for suicide risk assessment and developing safety plans with patients for suicide risk management (33).

Consistent with research findings that suicide rates rise with higher unemployment (14, 16, 19–23, 32), we found unemployment and low income to be associated with subsequent suicide attempts, supporting recent research indicating that increasing the minimum wage would potentially reduce suicide in the general population (19). The results suggest a potential benefit of suicide prevention health policies that aim to help individuals increase income and wages (4). However, multivariable models showed a statistically significant link between lower income and suicide attempts and a marginal association between lower income and suicidal ideation. This nuanced finding underscores that the relationship between income and suicide risk is complicated: Although research shows income and happiness are correlated, research also shows increasing income does not necessarily lead to increased subjective well-being or happiness (35). However, this relationship is apparently asymmetric in that decreasing income decreases happiness (36). Taken together, it follows that income could have a threshold effect;

income might be less relevant to suicide risk until it drops below a certain level.

In the context of suicide prevention, considering income and/or employment is necessary but not sufficient. Policy makers and clinicians should address how people manage their income. In the present study, financial debt and crises predicted suicide attempts, controlling for income and work. Income and employment do not guarantee financial security; financial skills, knowledge, and decision-making are also critical components (37)—that an individual has a job and income does not mean that the money earned will be used wisely. Researchers have found links between suicide risk and delayed monthly bill payments (12); not having money to cover basic needs such as food, shelter, and clothes (26); major financial loss (13); and financial debt (10, 11). These studies, along with results in the present study, attest to the potential benefit of money management and financial education (37) in reducing the likelihood that individuals experience financial hardships linked to elevated suicide risk. Upstream financial literacy interventions could be implemented in the context of rehabilitative interventions

aimed at improving income and work outcomes and improving financial decision-making (26).

In the present analysis, past homelessness was related to later suicide attempts, a finding reported by others (17, 18). Too often, homelessness services and suicide prevention services are not integrated. Our findings attest to the importance of coordinating programs and services directed at both risks. This does not mean intervening only when an individual becomes homeless but possibly beforehand: Recent data demonstrated that the peak risk of suicide occurred just prior to eviction (17). Moreover, housing stability undoubtedly affects other risk and protective factors, including social support, resilience, and self-determination, and it is vital that these social determinants be included in suicide prevention efforts (26). The present findings indicate homelessness services should regularly assess for risk of self-harm while suicide assessments should assess housing stability and related financial strain.

Limitations

Although the NESARC was administered by highly trained interviewers, structured interview data were based on self-report; respondents might have been reticent in endorsing suicidal ideation, attempts, or mental health issues due to social undesirability and stigma. There are many dimensions of financial strain (29) that were not measured in the present study. Does bankruptcy reflect lack of financial discipline or economic factors? Was job loss permanent or temporary? Did employment provide retirement benefits? Was past homelessness chronic or episodic? Was the respondent at risk of becoming homeless? Further, given the strength of history of suicidality, exposure to financial risk, which increases suicidal ideation, could further compound the risks of suicide. The results underscore the need for further research examining relationships between financial strain, mental health, and empowerment: What role does hopelessness/helplessness and shame stemming from adverse social financial conditions play when determining suicide risk (38, 39)? In other words, suicide risk might not be linked only to the amount of financial strain but also to its immutability within a person's social environment.

Conclusions

The present findings demonstrate a significant association between cumulative financial strain and increased suicide risk, indicating that socioeconomic factors shape a large part of mental health's connection with suicide (1, 12, 22, 25, 29). Suicide has become a global crisis, and the present study takes a preliminary step toward addressing how multiple domains of financial strain affect suicide risk by analyzing data from a nationally representative longitudinal study in the United States. Of current relevance, the results indicate that financial strain triggered by the COVID-19 pandemic—including financial crises, job loss, and lower income—has potential to contribute to higher rates of suicide (27). The finding that the relative odds of attempting suicide was 10 times higher when comparing respondents who lost a job with those stably employed is especially germane given that

the US unemployment rate recently reached its highest level in decades.

The findings from this study suggest that vocational rehabilitation, job creation and retraining, increasing the minimum wage, financial education, housing relief, and bolstering homelessness services could be promising approaches for reducing rates of suicide. Future research is needed to examine how financial strain interacts with mental health issues and to investigate whether public policy targeting financial strain is effective for suicide prevention. Although more study is warranted, the present results indicate that financial strain might be a component in suicide and should therefore be considered in the assessment, management, and prevention of suicide.

ACKNOWLEDGMENTS

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We thank Dr. Bridget Grant and her colleagues at the National Institute on Alcohol Abuse and Alcoholism for conducting the National Epidemiologic Survey on Alcohol and Related Conditions, the source of the data analyzed in the current work.

The opinions expressed in this article are the authors' own and do not reflect the views of the Department of Veterans Affairs.

Conflict of interest: none declared.

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