

The Association of Psychological Distress, Chronic Disease and Health Risk Factors—North Carolina 2013

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Background

Public health research has shown that psychological distress has a strong correlation with excess risk of chronic disease, poor health and behavioral risks such as smoking.¹ In many of these studies, psychological distress is assessed by the Kessler_6 Scale (K6), which measures non-specific anxiety and depression, ranging from no psychological distress to serious psychological distress.² The K6 has been used extensively in survey research since the early 2000s.

An informative study using K6 data from the 2005 Los Angeles County Health Survey found that respondents with serious psychological distress (SPD) were significantly more likely than those with no or some distress to report having arthritis, current asthma, diabetes, heart disease, chronic respiratory conditions and depression. They were more likely to be young, disabled, smokers, in fair or poor health and have one or more chronic conditions. Further, the results showed that adults with three or more chronic conditions were six times as likely to have SPD as those with no chronic conditions.³

The K6 has generally been used to study serious psychological distress. However, research has also revealed a stepwise or dose-response relationship between increasing levels of psychological distress and increasing prevalence of chronic disease and health risk factors. A study of the 2007 California Health Interview Survey found that respondents with *moderate* psychological distress had rates of mental health care utilization, impairment, substance use and other risks lower than respondents with serious psychological distress and higher than respondents with no distress. The authors conclude that these results support the expanded use and analysis of the K6 scale in quantifying and examining correlates of psychological distress at a moderate level.⁴

This study uses data from the K6 questions, included in the 2013 N.C. Behavioral Risk Factor Surveillance System (BRFSS) Survey, to examine the association of three levels of psychological distress (none, moderate and serious) and chronic disease/health risks among North Carolina adults.

Methods

The BRFSS Survey is a random sample telephone survey of non-institutionalized adults. The survey measures the prevalence of chronic disease, health status, use of preventive care and other public health topics. The survey is sponsored by the Centers for Disease Control and Prevention (CDC).*

Psychological distress was defined from responses to the K6 Scale contained in the CDC Optional Module on Mental Illness and Stigma. The scale is comprised of questions asking how often during the past 30 days a person felt “so sad that nothing could cheer them up,” “nervous,” “restless,” “hopeless,” “worthless” or that “everything was an effort.” Responses are scored from 0 (none of time) to 4 (all the time) and summed to produce a total score (0–24). Three study groups were delineated from respondents’ total scores. K6 scores ranging from 0 to 7 comprised the no distress group (n=3,482); scores ranging from 8 to 12 comprised the moderate stress group (n=321); scores ranging from 13 to 24 comprised the serious distress group (n=199). These cut-points defining no, moderate and serious psychological distress are used by the CDC Disability and Health Data System tool.⁵

For this study, we examined eight chronic disease conditions (dependent variables). These included doctor-diagnosed depression, diabetes, arthritis, chronic obstructive pulmonary disease (COPD), current asthma, disability and history of cardiovascular disease (heart attack or coronary heart disease or stroke). We also constructed an index variable of chronic disease; those with two or more chronic conditions were compared to those with one or no condition.

We examined five health risk factors: current smoking, obesity, no exercise in past 30 days, binge drinking and sub-optimal or poor sleep, which included those who reported sleeping less than seven hours a day on average (short duration), or those reporting sleeping more than eight hours a day on average (long duration). Research has shown that both short- and long-duration sleep are associated with an excess risk of obesity and chronic disease.⁶ The CDC Sleep and Sleep Disorders Program recommends seven to eight hours a day as optimal sleep duration for adults and the elderly.⁷

For the analysis, crude rates were calculated for all study outcomes. A difference in proportions T-test was calculated to determine statistical differences ($p < 0.05$) in rates between the moderate and no distress group and between the moderate and serious distress group. All calculations were performed in SAS-Callable SUDAAN software (SUDAAN Release 11.0.1). All percentages shown in this report are weighted.

Results

When comparing differences between the moderate and no distress groups, the moderate group had a statistically significant higher prevalence for seven out of the eight chronic disease conditions

shown in Table 1. Both the rate of doctor-diagnosed depression and having a disability was about 37 percentage points higher for the moderate group. One in two respondents with moderate distress had arthritis compared to about one in five respondents with no distress. Respiratory diseases were also highly prevalent in the moderate distress group: The rate of COPD was close to four times higher and the rate of current asthma was 2.5 times higher. Only the prevalence of diabetes did not vary significantly between groups.

The results in Table 1 also show some significant differences in disease prevalence between the moderate and serious distress groups. The greatest differences between these groups were associated with depression and disability ($p < 0.01$). The results also show that the rates of diabetes and having two or more chronic diseases were statistically higher in the serious distress group ($p < 0.05$). There were no differences between the moderate and serious stress groups with respect to arthritis, COPD, current asthma and history of cardiovascular disease.

When comparing the Table 2 results for the moderate and no distress groups, significant differences occurred. The prevalence of current smoking was two times higher ($p < 0.01$) in moderate distress group. The rates for obesity, no exercise in the past 30 days, and poor sleep were all statistically significantly higher in the moderate group. Binge drinking was the only risk factor that did not vary between groups.

The results in Table 2 show no statistically significant differences in the prevalence of health risk factors between the moderate and serious distress groups, with the exception of poor sleep. Those in the serious distress group were about 20 percent more likely to report poor sleep ($p = 0.03$).

In conclusion, the study findings revealed that moderate psychological distress appears to be a viable construct for enumerating significant excess chronic disease and health risks, compared to those with no psychological distress. There was also some evidence that serious and moderate distress marked significant differences in disease prevalence, particularly with respect to depression and disability.

A limitation of this study is that the sample sizes are relatively small for both the moderate ($n = 321$) and serious ($n = 199$) distress groups. Confounding factors such as age were not controlled. The reader should view these results as preliminary.

Table 1.
Prevalence of Chronic Disease by Psychological Distress:
2013 North Carolina BRFSS Survey

Chronic Disease	Psychological Distress			T-test for Difference in Proportion	
	No Stress	Moderate Stress	Serious Stress	Moderate vs. No Stress P Value	Serious vs. Moderate Stress P Value
Depression	12.9%	50.3%	72.9%	<0.01	<0.01
Diabetes	11.2%	14.3%	24.4%	<0.26	0.03
Arthritis	22.9%	50.2%	54.1%	<0.01	0.53
COPD	5.6%	22.2%	21.9%	<0.01	0.95
Current asthma	7.4%	18.4%	26.5%	<0.01	0.14
Disability	18.5%	55.3%	80.7%	<0.01	<0.01
History of CVD	8.8%	14.5%	22.7%	0.03	0.07
2+ chronic diseases	22.7%	53.2%	68.4%	<0.01	0.01

References

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Table 2.
Prevalence of Health Risk Factors by Psychological Distress:
2013 North Carolina BRFSS Survey

Health Risk	Psychological Distress			T-test for Difference in Proportion	
	No Stress	Moderate Stress	Serious Stress	Moderate vs. No Stress P Value	Serious vs. Moderate Stress P Value
Current smoker	17.3%	35.0%	43.3%	<0.01	0.17
Obese	29.5%	35.0%	46.9%	<0.01	0.05
No recent exercise	24.2%	34.7%	42.9%	<0.01	0.16
Binge drinking	11.4%	12.6%	12.7%	0.58	0.98
Poor sleep	39.9%	65.1%	77.5%	<0.01	0.03

* The Behavioral Risk Factor Surveillance System (BRFSS) is a random telephone health survey of non-institutionalized adults aged 18 and older in households. The survey is sponsored, in part, by the Centers for Disease Control and Prevention (CDC). The North Carolina BRFSS operates through the State Center for Health Statistics' Survey Center, Division of Public Health. Interviews are conducted in both English and Spanish and the sample includes both landline and cell phones. For more detailed information about the survey and links to the questionnaires, please visit the N.C. BRFSS website at: www.schs.state.nc.us/units/stat/brfss.