

## SERIOUS PSYCHOLOGICAL DISTRESS IN AN ADULT POPULATION

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### Abstract

*This paper describes the prevalence of serious psychological distress among Oklahoma's adult population and how serious psychological distress relates with chronic illness, unhealthy behaviors, and performance of usual activities. A random-digit dialed telephone survey was administered to Oklahoma's non-institutionalized adult residents (n=7,463) in 2007. Five percent of Oklahoma adults experienced serious psychological distress (SPD).*

### Introduction

Mental illness is a leading cause of disability and premature death due to suicide around the world.<sup>1</sup> Individuals with mental illness have higher rates of morbidity and are more likely to engage in unhealthy behaviors such as smoking and substance abuse compared to the general population (Anderson, Freedland, Clouse, and Lustman 2001; Dickerson, Brown, Daumit, LiJuan, Goldberg, Wohlheiter and Dixon 2006; Shupe, Tolliver, Hamilton and Menefee 2007; Substance Abuse and Mental Health Services Administration 2007; World Health Organization 2001). Direct costs to treat mental illness and indirect costs related to lost productivity number in the billions of dollars each year, and the majority of these costs are funded by the public (President's New Freedom Commission on Mental Health 2003; WHO 2001). In Oklahoma, more than 35,000 adults received mental health services that were funded by the Department of Mental Health and Substance Abuse Services (DMHSAS) during the 2008

fiscal year. During this single year, adults being treated for mental health conditions accounted for almost 600,000 days and an additional 1.3 million hours of service. It was estimated that the state spent \$1.8 billion yearly in direct costs on issues of mental health, and that mental illness had an economic impact on the Oklahoma economy of more than \$256 million due to reduced productivity (Governor's and Attorney General's Blue Ribbon Task Force on Mental Health, Substance Abuse and Domestic Violence 2005). It is thus important to identify individuals and groups who are at risk for mental illness to inform public policy and programs that will provide targeted education and other preventive measures for those in need of treatment (Governor's and Attorney General's Blue Ribbon Task Force 2005; WHO 2001).

The Behavioral Risk Factor Surveillance System (BRFSS) is a national on-going telephone-administered survey that assesses prevalence of chronic disease and health behaviors among the nation's population. Survey

data are used to describe the health status of the population, inform health interventions and public policy, and evaluate health promotion programs. BRFSS is coordinated by the Centers for Disease Control and Prevention (CDC) and is administered through state health departments. In 2007, Oklahoma's survey included a module that assessed mental illness and its stigma. The module consisted of 6 items (K6) that asked how often an individual experienced non-specific psychological distress within the past 30 days. The K6 is a shorter version of the Kessler Psychological Distress Scale (K10), both of which were found to be good predictors of serious mental illness (SMI) (Kessler, Barker, Colpe et al. 2003). However, upon further analysis, the K6 was determined to be more useful at measuring psychological distress or affective-mood and anxiety-type disorders rather than SMI, and is now used in population studies such as BRFSS to assess serious psychological distress (SPD) (Wright and Sathe 2003-2004). The K6 identifies individuals who have mental health problems that are severe enough to limit functioning and who are in need of interventions and resources.

Previous data from the National Survey on Drug Use and Health (NSDUH) estimated that the prevalence of SPD was higher in Oklahoma than in most other states in the nation, and was generally more common among women, American Indians, and individuals aged 18-25 years (SAMHSA 2007). Researchers also found that those with SPD had higher

rates of illicit drug and tobacco use and binge drinking (SAMHSA 2007). The purpose of this analysis is to describe the prevalence of serious psychological distress among Oklahoma's adult population, to identify groups who experience higher rates of SPD, and to describe how serious psychological distress relates with chronic illness, unhealthy behaviors, and performance of usual activities. Whether an individual with SPD is receiving treatment will also be assessed.

### **Methods.**

This analysis uses data from the 2007 administration of the BRFSS survey in Oklahoma and includes responses from the Mental Illness and Stigma optional module along with demographic, chronic disease, and health behavior data that are part of the survey's core. Trained telephone interviewers use computer-assisted telephone interviewing software (CATI) to administer the BRFSS survey to a stratified random sample of non-institutionalized adults aged 18 years and older responding via land-line telephones.

Data were collected from 7,463 respondents. Respondents were asked how often during the past 30 days they felt nervous, hopeless, restless, worthless, so depressed that nothing could cheer them up, and that everything was an effort. Respondents answered all, most, some, a little, or none of the time. The response "all of the time" was assigned a score of 4 and "none of the time" was assigned a score of

0. Serious psychological distress was determined by summing the scores of the 6 questions, with possible SPD scores ranging from 6 to 24. A summation score of 13 or greater defined serious psychological distress (Kessler et al. 2003). Respondents were also asked how many days during the past 30 days did a mental health condition or emotional problem keep them from doing usual activities, and if they were taking medicine or receiving treatment from a health professional for any type of mental health condition or emotional problem. Number of limited activity days was categorized into 3 groups: 0, 1 to 14, and 15 or more limited days.

A weighting factor was applied for each respondent, which included adjusting for non-coverage, non-response, and the number of adults and telephones in the household. Due to the small sample size with SPD, some demographic categories were collapsed to provide more robust data. For example, race was categorized as white non-Hispanic versus non-white. Age was categorized in a manner similar to what has been used in other population studies of mental illness (SAMHSA2007; Governor's and Attorney General's Blue Ribbon Task Force 2005). Descriptive statistics for respondents were determined, and differences in prevalence of SPD by demographic group, occurrence of chronic disease, and behaviors were assessed using Rao-Scott Chi-Square analyses.

Because some respondents answered "I don't know" or did not respond to some items from the Mental Illness and Stigma module, a composite score for SPD was not computed for 670 respondents. Data from these individuals was removed from the analysis. There were demographic differences between responders and non-responders. Non-responders were comprised of more males, seniors aged 65 years and older, and those with lower education and income. The final sample size for this analysis is 6,793 individuals. All analyses were performed using SAS version 9.1 (Cary, NC).

## Results

### *Characteristics of Respondents*

Estimates of characteristics of Oklahoma's population were calculated after applying the weighting algorithm to the respondents' data. Oklahoma had slightly more female than male residents. While more than half of adults had some post-secondary education or were college graduates, 1 in 9 adults had not received a high school diploma. Fifty-seven percent of Oklahoma adults were employed for wages or self-employed, and almost 40% had an annual household income of \$50,000 or more.

### *Prevalence of Serious Psychological Distress*

Overall, 5.3% (95% CI: 4.6, 6.0) of Oklahoma adults experienced serious psychological distress. Prevalence of

serious psychological distress (SPD) was determined for each demographic group. There were no sex differences in the prevalence of SPD. However, differences by all other demographics were evident. Adults aged 26-64 years had higher rates of SPD than seniors aged 65 years and older. Non-whites, which included non-Hispanic blacks, American Indians, Hispanics, Asians, and multiracial individuals, had an 80% higher rate of SPD than non-Hispanic whites. Individuals with lower levels of education and income had substantially higher rates of SPD, as did those who were out of work or widowed/divorced/separated. Prevalence of SPD along with presence of eight chronic diseases was assessed. Individuals who had chronic illness had higher rates of SPD compared to those without the respective condition (Figure 1). Differences in the rates were lowest for obesity (69%) and diabetes (92%) and highest for stroke (204%), arthritis (169%), and heart disease (158%). In addition, those who had multiple chronic illnesses had an SPD rate more than twice the rate of those with only one chronic condition (Figure 2). The simultaneous prevalence of SPD and unhealthy behaviors was assessed. Those with SPD had higher rates of engaging in unhealthy behaviors, including smoking, not consuming sufficient amounts of fruits and vegetables, not meeting the physical activity recommendation, and being physically inactive, compared to those without SPD (Table 1). There were no differences in alcohol consumption by SPD status.

The average number of days that a mental health condition or emotional problem interfered with work or other usual activities and whether an individual was receiving treatment for a mental health condition or emotional problem were examined. Overall, 9.7% of Oklahomans experienced interference with usual activities on at least 1 of the past 30 days. This percentage increased to 67.5% when considering only adults who had SPD. A larger percentage of individuals with SPD experienced limitations with performing usual activities on 15 or more of the past 30 days compared to those without SPD (Table 2). On average, those with SPD experienced 11.3 days (95% CI: 9.6, 13.0) of limited activity compared to 0.4 days (95% CI: 0.4, 0.5) for those without.

Individuals with SPD were also more likely to have been taking medicine or receiving treatment from a health professional for a mental health or emotional problem, though approximately 10% of those without SPD were also receiving some type of treatment (Table 3).

Of the adults who experienced frequent limited activity days (>15 days), almost 70% were receiving treatment.

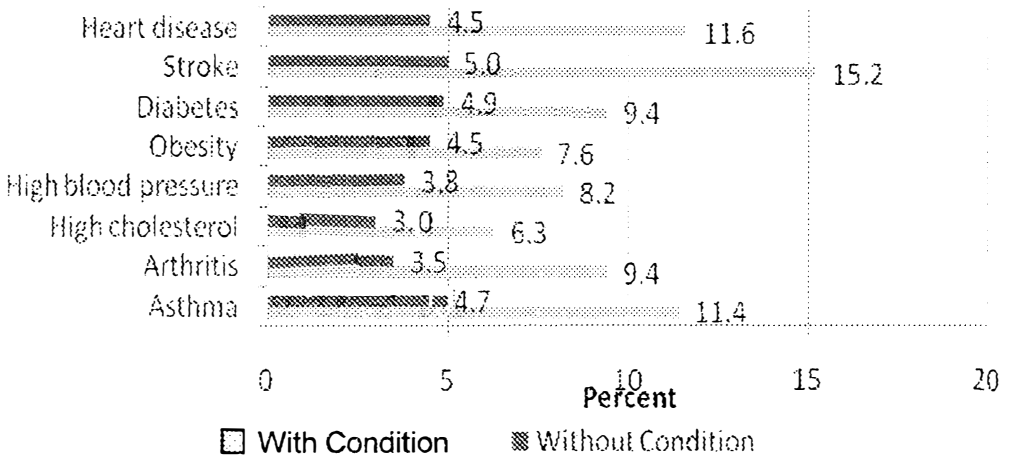
## Discussion

This analysis describes the prevalence of serious psychological distress among Oklahoma's adult population and how serious psychological distress relates with chronic illness, unhealthy behaviors, and performance of usual activities.

Table 1: Prevalence of Serious Psychological Distress Among Oklahoma Adults by Demographic Category (n = 6,793).

	Weighted %	95% CI	p-value
<b>Sex</b>			
Male	4.9	3.7, 6.1	
Female	5.7	4.9, 6.6	0.2655
<b>Age (years)</b>			
18-25	4.2	1.7, 6.7	
26-49	5.7	4.5, 6.9	
50-64	6.6	5.3, 8.0	
≥ 65	<u>3.4</u>	<u>2.6, 4.3</u>	<u>0.0348</u>
<b>Race/Ethnicity</b>			
White	4.3	3.6, 5.1	
Non-white	7.7	5.9, 9.4	< 0.0001
<b>Marital Status</b>			
Married/cohabitating	4.2	3.3, 5.0	
Divorced/separated/widowed	9.9	8.3, 11.5	
Never married	4.7	2.6, 6.9	< 0.0001
<b>Education</b>			
Less than high school	14.8	11.0, 18.6	
High school graduate	6.2	4.9, 7.5	
Some post-secondary school	2.8	2.2, 3.5	< 0.0001
<b>Employment Status</b>			
Employed	3.0	2.2, 3.8	
Out of work/unable to work	22.5	18.6, 26.5	
Homemaker	2.9	1.6, 4.2	
Student	-	-	
Retired	3.4	2.2, 4.7	< 0.0001
<b>Annual Household Income</b>			
< \$25,000	12.5	10.5, 14.5	
\$25,000 - \$49,999	2.5	1.5, 3.4	
≥ \$50,000.00	<u>2.0</u>	<u>1.2, 2.8</u>	<u>&lt; 0.0001</u>

**Figure 1. Percentage of Individuals With and Without Chronic Illness Who Had Serious Psychological Distress.**



**Figure 2. Prevalence of Serious Psychological Distress by Number of Chronic Illnesses Present.**

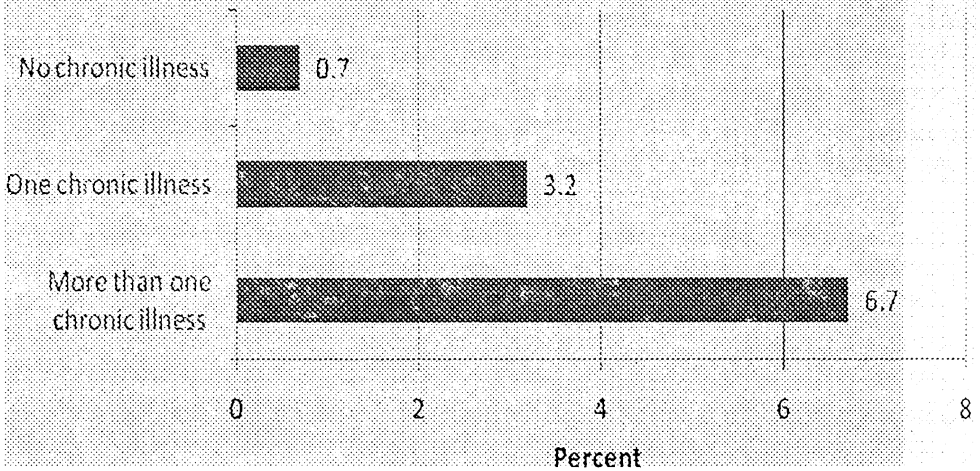


Table 2 Percentage of Individuals Who Engaged in Unhealthy Behaviors by Serious Psychological Distress Status.

	With SPD		Without SPD		p-value
	Weighted%	95%CI	Weighted%	95%CI	
Smoker	55.9	49.0, 62.9	23.7	22.2, 25.1	<.0001
Not meeting fruit/vegetable recom	88.2	84.4, 92.1	83.2	82.0, 84.3	0.0303
Not meeting Physical activity recom	64.8	57.4, 72.2	53.6	52.0, 55.2	0.0057
Physically inactive	22.3	17.0, 27.6	9.0	8.2, 9.7	<.0001
Brge Drinker	16.6	10.0, 22.2	12.0	10.8, 13.2	0.1168
Heavy Drinker	6.6	2.4, 10.8	3.4	2.8, 4.1	0.0529

Table 3. Limited Activity and Receipt of Treatment by Serious Psychological Distress Status

	With SPD		Without SPD		p-value
	Weighted%	95%CI	Weighted%	95%CI	
Limited Activity for > 15 of the Past 30 Days	39.6	32.5, 46.8	0.9	0.7, 1.2	<.0001
Received Treatment for Mental Health or Emotional Problems	43.6	36.5, 50.8	10.2	9.3, 11	<.0001

Receipt of treatment was also assessed. Five percent of Oklahoma's adults were classified as having serious psychological distress, and fewer than half of them were receiving treatment. SPD was more common among middle-aged and non-white adults, those with the lowest education and income, those who were unemployed, and those with chronic ill-

ness. Individuals with SPD had higher rates of engaging in unhealthy behaviors and experienced more limited activity days. Estimates produced from the BRFSS survey demonstrated a much smaller prevalence of SPD among Oklahomans compared to national and Oklahoma rates estimated from the National Survey on Drug Use and Health (NSDUH), a population

study that used similar items to assess SPD. NSDUH data from 2005-2006 produced SPD prevalence estimates of 19.3% and 12.2% for Oklahoma adults 18 to 25 years and aged 26 years and older, respectively (SAMHSA 2006). The prevalence of SPD for all American adults was 11.3% in 2006. These rates are more than twice the prevalence rate of SPD produced by Oklahoma's 2007 BRFSS data. The primary reason for this difference may relate to the time frame to which the K6 questions refer in each study. BRFSS asked about mental health in the previous 30 days, whereas the NSDUH asked about mental health during the most emotionally difficult month in the past year. The BRFSS survey may be better able to quantify the occurrence of long-term mental health problems because of the shorter time frame utilized; long-term problems would be present from month to month. Conversely, individuals may experience stressful situations during the year (i.e., loss of a job, death of a loved one) which they are able to resolve or accept and which may not influence responses to a previous-month survey, but will impact responses on a survey inquiring about mental health during the past year. There are also some differences in the patterns of SPD prevalence by demographics when comparing the Oklahoma BRFSS results with NSDUH results.

For example, NSDUH results demonstrated that women and the youngest adults had higher prevalence of

SPD(SAMHSA 2007), whereas BRFSS results demonstrated no difference in SPD prevalence by sex and a higher rate among those in the middle ages (26-64 years). NSDUH results also showed high prevalence of SPD among American Indians (25.9%) (SAMHSA 2007), whereas the BRFSS sample consisted of too few observations for American Indians and other minorities to enable meaningful analyses for the individual groups. BRFSS results demonstrated relevant patterns of disparity among most demographics, with the exception of sex. Though the extent of the differences among the racial/ethnic groups is unknown, it was evident that non-whites had a 79% higher rate of SPD than whites. The literature suggests that some non-white groups, such as blacks, American Indians, and multi-racial individuals, are more likely to experience SPD than whites (Shupe A, Tolliver R, Hamilton J, Menefee D, 2007). Socioeconomic factors impacted SPD prevalence considerably, as occurred in other studies (Pratt LA, Day AN, and Cohen AJ, and Li C, Ford ES, Zhao G, et al. 2007). Individuals in the lowest education and income groups had significantly higher rates of SPD than others, and those who were out of work or unable to work had rates of SPD that were 650% higher than individuals who were employed, retired, or homemakers. Factors related to poverty and low socioeconomic status are commonly associated with mental disorders, and this may



relate in some instances to difficulty in accessing care (Kessler RC, Chiu WT, Colpe L, et al 2004). Those who were previously married or were separated had more than double the rate of SPD than those who were married/cohabitating and those who had remained single. Why mental illness is more common among those with disadvantaged social status remains unclear, though combinations of biological, environmental, and social factors most likely contribute. Overall, that SPD occurs more commonly among certain demographic groups suggests that certain groups should be targeted for screening and treatment of mental disorders.

Oklahomans with specific chronic illnesses had higher rates of SPD compared to those without a chronic illness, and prevalence of SPD increased with the presence of multiple chronic conditions compared to having a single condition or no chronic illness. Rates of SPD among adults without a physical ailment ranged from 3-5%, whereas rates of SPD among those with a physical ailment ranged from 6-15%. Rates of SPD were typically twice as high for the physically ill population compared to those without illness, and were 3 times as high for stroke victims. When assessing SPD prevalence by total number of chronic physical conditions, SPD occurred in fewer than 1% of those without a physical ailment, and SPD prevalence increased to 3% for those with a single physical ailment and to almost 7% among those with two or more physical conditions. This

implies that multiple physical illnesses may increase risk of poor mental health. These results are consistent with the literature, which has shown that mental illnesses, especially depressive disorders, are associated with chronic diseases.

The direction of the relationship between mental illness and physical chronic conditions, or whether one causes the other, is unknown. Individuals with a chronic condition such as cardiovascular disease (Freedland KE, Rich MW, et al., and Fan AZ, Strine TW, et al 2007). or diabetes (Anderson RJ, Freedland KE, Clouse RE, and Lustman PJ, 2003), or who underwent a debilitating injury such as a fall (Scaf-Klomp W, Sanderman R, Ormel J, and Kempen GJIM, 2003). may be more likely to experience SPD or depression. Alternatively, individuals with mental illness have higher rates of chronic physical ailments such as diabetes, obesity, and hypertension. For example, diabetes was more common among a VA population with bipolar disorder than the national VA cohort to which the population was compared; rates of other co-morbidities were comparable to or slightly less than the national cohort. In the current study, SPD was 92% more common among adults with than without diabetes and 69% more common among the obese than non-obese. Results of a separate study demonstrated that obesity occurred in a larger percentage of those with severe and persistent mental illness compared to the general population.

Obesity and other co-morbid conditions were more common among outpatients of psychiatric care facilities who had serious mental illness compared to their matched counterparts (Dickerson FB, Brown CH, et al. 2006). The connection between mental illness and chronic disease suggests that neither a mental nor a physical illness should be treated in isolation. Individuals with either a mental or physical ailment should be screened for other related conditions, and appropriate courses of action should be taken to treat simultaneous ailments when they occur (Lichtman JH, Bigger Jr. JT, Blumenthal JA, et al., and Morden NE, Mistler LA, et al. 2009).

Of special interest to the connection between mental and physical health is that mentally ill adults may develop physical ailments earlier than their non-mentally ill counterparts. In addition, they are less likely to receive treatment for these conditions and thus are more likely to die prematurely (Manderscheid RW, 2009).

In one study, mental health clients died at much younger ages than their cohorts nationwide (Colton CW and Manderscheid RW. 3;A42). Another study demonstrated that the onset of co-morbid physical conditions occurred at younger ages. Thus, it is important to identify individuals with mental illness as early as possible. Oklahomans with SPD more commonly engaged in unhealthy behaviors compared to those without SPD. These results are generally consistent with results from other studies examining the health behaviors of individuals with mental

illness. For example, studies have shown that individuals with SPD or mental illness have twice the current smoking rate of individuals without SPD or mental illness. The current study demonstrated that Oklahoma adults with SPD had a 136% higher rate of smoking than the rest of Oklahoma's adult population. High rates of tobacco use could relate in part to the mood-altering effects of nicotine, but has serious consequences with respect to other health outcomes such as premature mortality and quality of life. Studies have demonstrated higher prevalence of physical inactivity and lower levels of activity among individuals with SPD or severe mental illness, with the primary barriers to engaging in physical activity being fatigue and illness. In the current study, the rate of physical inactivity participation was 2.5 times greater than the corresponding rate for adults without SPD. While some studies have demonstrated that adults with SPD or mental illness were more likely to engage in heavy drinking and binge drinking (Kilbourne AM, Cornelius JR, Han X, Pincus HA, Shad M, Salloum I, et al. 2004). There were no differences between the SPD and non-SPD groups with respect to alcohol consumption in Oklahoma adults. This could be due in part to the small percentage of Oklahoma adults that were estimated to be heavy or binge drinkers, thus not providing a sufficient sample size to enable meaningful analysis. Because individuals suffering mental illness tend to engage in unhealthy behaviors, health promotion programs should be

developed to provide specialized guidance addressing behavior change issues that may arise for mentally ill adults.

Mental illness is a leading cause of disability (WHO 2001) and was estimated to cost the Oklahoma economy more than \$250 million in lost productivity in 2005 (Governor's and Attorney General's Blue Ribbon Task Force, 2005). Almost 68% of adults with SPD experienced limitations to performing work or other usual activities on at least 1 day and 40% of adults with SPD experienced limitations frequently (>15 days). Fewer than 1% of adults without SPD had such frequent interference with performing their usual activities. The large differences in activity limitations that occur between those with and without SPD suggest that individuals with SPD need to receive appropriate treatment to optimize their daily functioning. However, fewer than half of Oklahomans with SPD were receiving some type of treatment for an emotional or mental problem. This number increased significantly when coupled with frequent limited activity days. This still left 30% of those who frequently had mental difficulties that interfered with usual activities who were not being treated. In a 2006 national sample, 44% of adults with SPD received treatment for a mental health problem,<sup>5</sup> which was consistent with results of the current study. Of the national sample, most adults who were receiving treatment were taking medication.<sup>5</sup> Reasons that adults in the national sample gave for not receiving

mental health treatment were mainly due to cost (41.5% of sample), followed by the perception that the individual could handle the problem without treatment (34% of sample). Poverty and lack of health insurance are extensive in Oklahoma (Oklahoma State Department of Health, 2008), and may reflect reasons why a larger proportion of adults with SPD did not seek treatment.

A small percentage of adults without SPD were receiving treatment for a mental or emotional problem. This could reflect individuals who were suffering from a situational event that occurred in the past month, or individuals who were not currently experiencing symptoms though they have had problems in the past. Perhaps the medication was alleviating symptoms for some individuals. In a national study, approximately 21% of adults using mental health services did not have current mental health diagnoses but had been diagnosed at some point in their life (Druss BG, Wang PS, Sampson NA, et al., 2007).

Perhaps they were utilizing "maintenance" treatment or had other problems arise. Another 8% of the national sample who were using mental health services had never been diagnosed with a mental illness (Druss BG, Wang PS, Sampson NA, et al., 2007). In these instances, treatment for emotional and mental problems prior to the onset of severe mental illness may prevent or prolong the development of a diagnosable mental illness. There are several

strengths to this study. The sample was a stratified random sample of Oklahoma's non-institutionalized adult population. Data were weighted to reduce non-response and other biases and to provide a more accurate representation of the population from which the sample was drawn. Items used to identify individuals with SPD have been shown to be good measures of psychological distress and are used in other national studies. There are also some limitations to this study. Households without landline telephones were not included in the 2007 survey, and individuals living in cell-phone only households may have different health risks and behaviors than those living in households with landline service. Because respondents were non-institutionalized, rates of SPD may be lower than the actual rate for all Oklahoma adults.

There were differences between those who responded to all survey questions and those who did not, thus affecting the generalizability of results to all non-institutionalized Oklahoma adults.

Though the BRFSS dataset encompassed a broad spectrum of the Oklahoma adult population, the percentage of individuals with SPD was small, making more detailed analysis of SPD among the demographic groups impractical. Respondents may have provided answers to questions that they thought would be more appropriate, potentially introducing social desirability bias to the data, or may not have remembered their feelings across the past month.

In summary, while rates of SPD were generally low in Oklahoma (~5%), SPD more commonly occurred among non-Whites, middle-aged adults, those with low income and educational attainment, and the unemployed. Individuals with a chronic physical ailment had higher occurrence of SPD, and adults with multiple physical illnesses had SPD at twice the rate of those with a single physical illness. Adults with SPD engaged in unhealthy behaviors that worsen health outcomes and may contribute to decreased quality and years of life, and suffered more days whereby mental problems interfere with daily activities. While having SPD does not equate to having a diagnosed mental disorder, SPD does impact quality of life and daily functioning. It is a potentially costly health condition that should be addressed. Improving the health status of the population involves more than reducing morbidity and mortality; quality of life should be enhanced as well. Because SPD occurred in higher rates among individuals with poor physical health and among those who engaged in unhealthy behaviors, mental health should be promoted as one component of a comprehensive preventive healthcare program for all individuals.

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