Attitudes Toward Mental Illness in Adults by Mental Illness–Related Factors and Chronic Disease Status: 2007 and 2009 Behavioral Risk Factor Surveillance System

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Objectives. We examined how attitudes toward mental illness treatment and its course differ by serious psychological distress, mental illness treatment, chronic disease, and sociodemographic factors using representative state-based data.

Methods. Using data from jurisdictions supporting the Behavioral Risk Factor Surveillance System's Mental Illness and Stigma Module (35 states, the District of Columbia, and Puerto Rico), we compared adjusted proportions of adults agreeing that "Treatment can help people with mental illness lead normal lives" (treatment effectiveness) and that "People are generally caring and sympathetic to people with mental illness" (supportive environment), by demographic characteristics, serious psychological distress, chronic disease status, and mental illness treatment.

Results. Attitudes regarding treatment effectiveness and a supportive environment for people with mental illness varied within and between groups. Most adults receiving mental illness treatment agreed that treatment is effective. Fewer adults with serious psychological distress than those without such distress agreed that treatment is effective. Fewer of those receiving treatment, those with psychological distress, and those with chronic disease perceived the environment as supportive.

Conclusions. These data can be used to target interventions for population subgroups with less favorable attitudes and for surveillance. (*Am J Public Health.* 2013;103:2078–2089. doi:10.2105/AJPH.2013.301321)

In the past decade, Centers for Disease Control and Prevention (CDC) population surveys and health information systems have expanded content on mental illness in recognition of its growing public health burden.[1] For example, since 2006, the state-based Behavioral Risk Factor Surveillance System (BRFSS) has provided state and local estimates of mental illness with 2 modules developed by the CDC and the Substance Abuse and Mental Health Administration (SAMHSA). The BRFSS Mental Illness and Stigma Module was developed in 2005 to obtain state-level estimates of serious psychological distress and attitudes toward mental illness.[2,3] Its development followed recommendations from the President's New Freedom Commission on Mental Health and the 2005 Federal Action Agenda, Transforming Mental Health, which highlighted the need to "encourage help-seeking behaviors across the age span" and "make clear that recovery is possible" as a way to improve the acceptance and social inclusion of people with mental illness.[4,5(p24)]

These recommendations, in part, also guided the development and release of SAMHSA's campaign, What a Difference a Friend Makes, launched in 2006 to improve support for young adults with mental illness.[6] In support of this campaign, SAMHSA and the CDC identified relevant questions to assess public attitudes toward treatment effectiveness, attitudes about supportive behaviors toward people with mental illness, and experience with mental illness symptoms and mental illness treatment.[2,3] The CDC partnered with states in 2007 and 2009 to examine attitudes toward mental illness on the state-based BRFSS. Previous studies have described general findings.[2,3] Additionally, several state public health and mental health agencies have generated public reports with their data, demonstrating their value for the development and evaluation of mental health programs.[7–9]

We aimed to expand previous studies by using BRFSS Mental Illness and Stigma data from 2 years (1) to examine attitudes toward mental illness among those with serious psychological distress, those with selected chronic diseases, and those reporting receipt of mental illness treatment compared with those without these conditions and those not in treatment, and (2) to identify disparities in these attitudes among different subgroups. Although these limited BRFSS surveillance data may be used to advance research questions to augment the theoretical understanding of stigma, this is beyond the scope of the current study.

METHODS

Established in 1984 by the CDC, the BRFSS is a system of state-based health surveys that collects information by telephone on health risk behaviors, preventive health practices, and health care access primarily related to chronic disease and injury. All 50 states, the District of Columbia, Puerto Rico, the US Virgin Islands, and Guam collect data monthly (http://www.cdc.gov/brfss/BRFSS). The CDC and SAMHSA developed a Mental Illness and Stigma Module for the BRFSS to track the prevalence of serious psychological distress and attitudes toward mental illness by state. In 2007, 35 states, the District of Columbia, and Puerto Rico included this module on their BRFSS surveys; in 2009, 16 states did so.[3] Fourteen states supported this module both years. For participating states and jurisdictions, the 2007 median Council of American Survey Research Organizations (CASRO)[10] response rate and cooperation rate were 51% and 72%, respectively, and the comparable 2009 rates were 55% and 77%, respectively.[3] The study sample included 243 062 adults.

TABLE 1—Adjusted Percentages of Respondents Agreeing With Statements Regarding Mental Illness, by Sociodemographic and Chronic Disease Status: Behavioral Risk Factor Surveillance System, United States, 2007 and 2009

Characteristic	Sample Size, No.	Level of Agreement,[a] % (95% CI)				
		Agree Strongly	Agree Slightly	Neither Agree nor Disagree	Disagree Slightly	Disagree Strongly
"Treatment can help people with mental illness lead normal lives"						
Overall	243 062	67.2 (66.7, 67.7)	25.8 (25.3, 26.3)	1.8 (1.6, 2.0)	3.7 (3.5, 4.0)	1.5 (1.3, 1.6)
Gender						
Male	93 981	62.1 (61.3, 62.8)	29.7 (29.0, 30.4)	2.0 (1.7, 2.3)	4.5 (4.1, 4.8)	1.8 (1.5, 2.0)
Female	149 081	72.2 (71.7, 72.8)	22.0 (21.5, 22.6)	1.5 (1.3, 1.7)	3.0 (2.7, 3.3)	1.2 (1.0, 1.4)
Age group, y						
18–24	7 393	56.4 (54.1, 58.7)	35.2 (32.9, 37.4)	1.7 (0.9, 2.6)	5.3 (4.3, 6.2)	1.4 (0.9, 1.9)
25–34	25 391	63.5 (62.3, 64.8)	28.8 (27.6, 30.0)	1.7 (1.4, 2.0)	4.3 (3.7, 5.0)	1.6 (1.2, 2.0)
35–54	93 287	69.9 (69.2, 70.5)	23.9 (23.3, 24.5)	1.6 (1.4, 1.9)	3.2 (2.9, 3.5)	1.4 (1.2, 1.6)
≥ 55	116 991	69.7 (69.0, 70.4)	23.4 (22.7, 24.0)	2.0 (1.8, 2.3)	3.5 (3.1, 3.8)	1.5 (1.2, 1.7)
Race/ethnicity						
White, non-Hispanic	194, 639	69.5 (69.0, 70.0)	24.6 (24.1, 25.1)	1.6 (1.4, 1.7)	3.2 (3.0, 2.4)	1.1 (0.9, 1.3)
Black, non-Hispanic	19 642	65.3 (63.7, 66.9)	25.1 (23.5, 26.6)	1.9 (1.4, 2.3)	5.7 (4.9, 6.5)	2.1 (1.7, 2.5)
Hispanic	15 853	60.8 (59.0, 62.5)	30.4 (28.7, 32.0)	2.5 (1.8, 3.2)	4.3 (3.6, 5.0)	2.0 (1.5, 2.5)
Other non-Hispanic	12 928	61.6 (59.3, 63.9)	29.7 (27.5, 31.9)	1.8 (1.2, 2.5)	4.6 (3.6, 5.5)	2.3 (1.5, 3.2)
Educational level						
< high school	19 848	63.2 (61.4, 65.1)	28.4 (26.6, 30.1)	1.9 (1.4, 2.4)	4.3 (3.6, 5.0)	2.2 (1.7, 2.7)
High school graduate or GED	68 605	63.2 (62.3, 64.2)	28.6 (27.7, 29.5)	1.9 (1.6, 2.2)	4.6 (4.1, 5.0)	1.7 (1.4, 1.9)
Some college	66 618	66.8 (65.9, 67.7)	26.3 (25.5, 27.2)	1.9 (1.5, 2.4)	3.7 (3.3, 4.1)	1.3 (1.0, 1.5)
College graduate	87 991	72.1 (71.3, 72.9)	22.7 (22.0, 23.5)	1.5 (1.2, 1.8)	2.7 (2.3, 3.0)	1.1 (0.8, 1.3)
Annual household income, $						
< 20 000	43 265	62.2 (60.9, 63.6)	28.5 (27.2, 29.9)	2.3 (1.6, 2.9)	5.0 (4.3, 5.6)	2.0 (1.6, 2.3)
20 000–34 999	51 921	64.6 (63.5, 65.6)	27.3 (26.2, 28.3)	2.0 (1.6, 2.3)	4.4 (3.9, 4.9)	1.8 (1.5, 2.2)
35 000–49 999	39 279	67.8 (66.7, 68.9)	25.7 (24.6, 26.8)	1.8 (1.5, 2.1)	3.4 (3.0, 3.9)	1.3 (1.0, 1.5)
50 000–74 999	42 157	68.8 (67.7, 69.8)	25.5 (24.5, 26.6)	1.6 (1.3, 2.0)	3.1 (2.6, 3.5)	1.0 (0.8, 1.3)
≥ 75 000	66 400	70.8 (69.9, 71.7)	23.9 (23.1, 24.8)	1.4 (1.1, 1.6)	2.8 (2.4, 3.2)	1.1 (0.8, 1.4)
Chronic disease[b]						
Yes	115 688	68.1 (67.4, 68.9)	24.7 (24.0, 25.4)	1.7 (1.4, 1.9)	3.9 (3.5, 4.3)	1.6 (1.3, 1.8)
No	127 374	66.7 (66.1, 67.3)	26.5 (25.9, 27.1)	1.8 (1.6, 2.1)	3.6 (3.3, 3.9)	1.4 (1.2, 1.6)
"People are generally caring and sympathetic to people with mental illness"						
Overall	242 922	22.7 (22.2, 23.1)	37.5 (37.0, 38.0)	2.8 (2.7, 3.0)	26.0 (25.6, 26.5)	11.0 (10.7, 11.3)
Gender						
Male	94 248	24.5 (23.9, 25.2)	40.3 (39.5, 41.1)	3.0 (2.7, 3.2)	23.1 (22.5, 23.8)	9.1 (8.6, 9.5)
Female	148 674	20.9 (20.3, 21.4)	34.7 (34.2, 35.3)	2.7 (2.5, 2.9)	28.9 (28.4, 29.4)	12.8 (12.4, 13.2)
Age group, y						
18–24	7 419	18.8 (17.1, 20.6)	44.2 (41.9, 46.5)	1.9 (1.4, 2.4)	27.0 (24.9, 29.1)	8.1 (7.0, 9.2)
25–34	25 447	19.4 (18.4, 20.4)	37.5 (36.3, 38.7)	2.7 (2.3, 3.1)	29.1 (28.0, 30.2)	11.4 (10.5, 12.2)
35–54	93 378	21.6 (21.0, 22.2)	36.9 (36.2, 37.6)	2.9 (2.6, 3.1)	26.6 (26.0, 27.2)	12.0 (11.6, 12.5)
≥ 55	116 678	27.8 (27.1, 28.4)	35.9 (35.1, 36.6)	3.2 (3.0, 3.5)	23.0 (22.4, 23.5)	10.2 (9.8, 10.7)
Race/ethnicity						
White, non-Hispanic	194 436	20.2 (19.7, 20.6)	38.2 (37.7, 28.7)	2.8 (2.6, 3.0)	27.7 (27.3, 28.2)	11.1 (10.8, 11.5)
Black, non-Hispanic	19 646	26.6 (25.2, 28.1)	33.3 (31.6, 34.9)	2.6 (2.1, 3.2)	22.7 (21.4, 24.1)	14.7 (13.6, 15.9)
Hispanic	15 860	26.9 (25.3, 28.4)	38.3 (36.5, 40.1)	3.5 (2.9, 4.1)	22.8 (21.2, 24.4)	8.5 (7.5, 9.5)
Other non-Hispanic	12 980	33.9 (31.6, 36.2)	35.2 (32.9, 37.6)	2.5 (1.8, 3.2)	18.3 (16.7, 20.0)	10.1 (8.8, 11.3)

Continued

TABLE 1—*Continued*

Educational level						
< high school	19 834	33.0 (31.2, 34.8)	37.2 (35.2, 39.2)	2.3 (1.8, 2.9)	18.1 (16.6, 19.6)	9.3 (8.2, 10.4)
High school graduate or GED	68 863	27.5 (26.6, 28.4)	36.8 (35.9, 37.8)	2.7 (2.4, 3.0)	22.7 (21.9, 23.5)	10.3 (9.7, 10.8)
Some college	66 579	20.8 (20.1, 21.6)	37.3 (36.4, 38.2)	3.1 (2.8, 3.4)	26.8 (26.0, 27.6)	12.0 (11.4, 12.5)
College graduate	87 646	16.9 (16.3, 17.6)	38.7 (37.9, 39.5)	3.0 (2.7, 3.2)	30.0 (29.2, 30.8)	11.4 (10.9, 11.9)
Annual household income, $						
< 20 000	43 325	25.3 (24.1, 26.4)	34.1 (32.7, 35.5)	3.5 (3.0, 4.0)	24.2 (22.9, 25.4)	13.0 (12.1, 13.8)
20 000–34 999	51 966	24.3 (23.4, 25.3)	35.0 (33.9, 36.0)	3.1 (2.7, 3.5)	25.7 (24.8, 26.7)	11.8 (11.2, 12.5)
35 000–49 999	39 216	23.5 (22.5, 24.6)	36.9 (35.7, 38.1)	2.6 (2.3, 2.9)	26.1 (25.1, 27.1)	10.9 (10.2, 11.5)
50 000–74 999	42 112	21.1 (20.2, 22.1)	38.6 (37.6, 39.7)	2.6 (2.3, 3.0)	27.2 (26.3, 28.1)	10.4 (9.8, 11.1)
≥ 75 000	66 303	20.1 (19.3, 20.9)	40.7 (39.7, 41.6)	2.6 (2.3, 2.9)	26.5 (25.8, 27.3)	10.1 (9.6, 10.6)
Chronic disease[b]						
Yes	115 497	21.4 (20.8, 22.0)	35.1 (34.3, 35.9)	2.7 (2.4, 2.9)	27.7 (27.0, 28.4)	13.2 (12.7, 13.7)
No	127 425	23.5 (22.9, 24.1)	38.8 (38.2, 39.5)	2.9 (2.7, 3.2)	25.1 (24.6, 25.6)	9.6 (9.2, 10.0)

Note. CI = confidence interval; GED = general equivalency diploma.
[a]Percentages were adjusted for the following variables: gender, age, race/ethnicity, education, and annual household income.
[b]Chronic disease status includes respondents who self-reported any one of the following doctor-diagnosed conditions: diabetes mellitus, cardiovascular disease (heart attack or myocardial infarction, stroke, coronary heart disease), asthma, or arthritis.

BRFSS respondents expressed their attitudes toward mental illness by indicating their level of agreement on a 5-point scale with 2 statements: "Treatment can help people with mental illness lead normal lives," and "People are generally caring and sympathetic to people with mental illness."[2,3] Before their inclusion in the BRFSS, the questions were assessed in cognitive testing with a sample of adults from the general population. The sample adults understood the questions the way the survey designers intended them to be understood. For example, respondents understood "normal lives" to mean "being able to do everyday things, like going to the grocery store, paying bills, things that you have to do to live."[3] The first statement, about attitudes toward treatment effectiveness, also demonstrated acceptable construct validity with expectations regarding mental illness recovery.[11]

The BRFSS includes the Kessler 6 Scale, which asks respondents how often in the past 30 days they felt 6 symptoms of mental illness (i.e., feeling nervous, depressed, hopeless, restless, like a failure, like everything was an effort). Each symptom is scored as an item on a 5-point scale, ranging from 0 (none of the time) to 4 (all of the time), and summed (score range = 0–24). We classified respondents scoring 13 or more on this scale as having serious psychological distress.[12] The BRFSS asked respondents the question, "Are you now taking medicine or receiving treatment from a doctor or other health professional for any type of mental health condition or emotional problem?" Response options included yes, no, don't know, and refused; we classified respondents answering yes as currently receiving treatment of a mental health or emotional problem. We classified respondents reporting any of the following doctor-diagnosed conditions as having a chronic disease: diabetes mellitus, cardiovascular disease (heart attack or myocardial infarction, coronary heart disease, or stroke), asthma, or arthritis.

Levels of agreement with each attitude statement served as dependent variables after adjustment for gender, age, racial/ethnic group, education, and household income. We used SUDAAN software release 10.0 (Research Triangle Institute, Research Triangle Park, NC) to account for the complex BRFSS sampling design and respondent sampling weights. We estimated adjusted percentages ("predicted marginals") of responses to each item for select subgroups using logistic regression after adjustment for gender, age, racial/ethnic group, education, and household income. We describe the results in terms of the outcome of interest (e.g., percentage agreement or disagreement) rather than a calculated measure of association (e.g., parameter estimate). This is easier to understand, and there is no loss of data because adjusted percentages present estimates for all levels of an independent variable rather than all but a reference category (e.g., using White as a racial/ethnic group).[13] Adjusted percentages whose 95% confidence intervals did not overlap were considered statistically significantly different. The smaller statistical significance level ($P < .007$) that this method implies also provides partial protection from multiple pairwise comparisons between levels of specific characteristics.[14] With this statistically conservative method, we accept the lower statistical power of calling differences between groups that are truly different as not significantly different. We prefer to avoid calling differences between groups that are not truly different as significantly different. Tables exclude those who did not know how to answer or refused to answer the questions.

RESULTS

About 67% of adults surveyed strongly agreed with the statement that treatment can help people live normal lives (Table 1). Strong agreement with the statement was less prevalent among men than women and among younger adults aged 18 to 24 years (56%) and 25 to 34 years (64%) than among adults aged 55 years and older (70%); strong agreement

TABLE 2—Level of Agreement With Statements Regarding Mental Illness Among Respondents With Serious Psychological Distress: Behavioral Risk Factor Surveillance System, United States, 2007 and 2009

Characteristic	Sample Size, No.	Level of Agreement,[a] % (95% CI)				
		Agree Strongly	Agree Slightly	Neither Agree nor Disagree	Disagree Slightly	Disagree Strongly
"Treatment can help people with mental illness lead normal lives"						
Overall	9405	55.8 (53.5, 58.1)	28.9 (26.8, 31.0)	2.4 (1.7, 3.1)	8.6 (7.2, 10.0)	4.3 (3.3, 5.2)
Gender						
Male	2973	50.6 (46.8, 54.4)	31.4 (27.9, 34.9)	2.4 (1.2, 3.6)	10.0 (7.5, 12.4)	5.6 (3.7, 7.5)
Female	6432	59.6 (56.9, 62.2)	27.1 (24.6, 29.5)	2.4 (1.7, 3.2)	7.6 (6.2, 9.1)	3.3 (2.6, 4.0)
Age group, y						
18–24	318	51.4 (41.5, 61.2)	33.2 (23.5, 42.9)	1.3 (0.1, 2.4)	10.8 (2.3, 18.4)	3.4 (0.4, 6.4)
25–34	972	52.2 (46.4, 58.0)	29.6 (24.3, 35.0)	3.4 (1.0, 5.8)	8.9 (5.3, 12.5)	5.9 (2.0, 9.7)
35–54	4335	55.9 (52.7, 59.0)	29.3 (26.3, 32.4)	2.4 (1.7, 3.1)	8.3 (6.6, 10.1)	4.1 (3.0, 5.2)
≥ 55	3780	59.7 (55.9, 63.5)	26.2 (23.0, 29.4)	2.1 (1.1, 3.0)	8.3 (6.2, 10.4)	3.7 (2.6, 4.8)
Race/ethnicity						
White, non-Hispanic	6650	57.7 (55.2, 60.3)	28.9 (26.5, 31.3)	2.2 (1.5, 2.8)	6.9 (5.6, 8.2)	4.3 (3.1, 5.5)
Black, non-Hispanic	1192	54.9 (49.0, 60.9)	23.7 (19.1, 28.3)	1.3 (0.2, 2.4)	15.8 (10.4, 21.2)	4.3 (2.4, 6.1)
Hispanic	1034	53.7 (47.3, 60.1)	29.6 (23.8, 35.4)	3.4 (1.4, 5.3)	9.0 (5.6, 12.4)	4.3 (1.3, 7.4)
Other non-Hispanic	529	45.2 (35.0, 55.5)	38.5 (28.0, 49.1)	3.1 (0.0, 7.1)	9.3 (3.9, 14.6)	3.9 (1.6, 6.2)
Educational level						
< high school	2155	54.3 (49.4, 59.3)	28.6 (23.9, 33.3)	3.1 (1.1, 5.1)	9.4 (6.7, 12.1)	4.6 (2.5, 6.6)
High school graduate or GED	3365	53.9 (50.2, 57.7)	31.3 (27.8, 34.8)	2.1 (1.3, 2.9)	8.5 (6.3, 10.8)	4.2 (2.8, 5.5)
Some college	2481	58.9 (54.9, 62.9)	26.0 (22.5, 29.5)	1.8 (1.0, 2.6)	8.3 (5.9, 10.8)	4.9 (2.4, 7.5)
College graduate	1404	57.5 (52.0, 62.9)	29.4 (24.3, 34.4)	2.9 (1.4, 4.5)	7.5 (4.1, 11.0)	2.7 (0.7, 4.7)
Annual household income, $						
< 20 000	4878	54.1 (50.8, 57.3)	30.7 (27.7, 33.8)	1.9 (1.3, 2.5)	8.4 (6.7, 10.2)	4.9 (3.5, 6.3)
20 000–34 999	2327	52.6 (48.1, 57.1)	29.0 (25.0, 33.1)	4.0 (2.1, 6.0)	10.6 (7.5, 13.8)	3.7 (1.9, 5.6)
35 000–49 999	940	56.1 (49.5, 62.7)	32.2 (25.6, 38.9)	2.4 (0.8, 4.0)	6.5 (3.7, 9.3)	2.7 (1.1, 4.3)
50 000–74 999	639	61.1 (53.2, 69.0)	25.9 (19.5, 32.4)	0.5 (0.0, 1.2)	8.7 (2.0, 15.4)	3.7 (0.4, 7.1)
≥ 75 000	621	68.6 (61.2, 76.0)	19.5 (14.0, 25.0)	1.6 (0.4, 2.9)	5.2 (1.2, 9.2)	5.1 (1.7, 8.5)
Chronic disease[b]						
Yes	6756	54.8 (51.8, 57.8)	28.2 (25.5, 30.9)	2.6 (1.9, 3.4)	9.6 (7.5, 11.7)	4.8 (3.4, 6.2)
No	2649	57.2 (53.4, 61.1)	30.0 (26.3, 33.6)	2.1 (1.0, 3.2)	7.2 (5.3, 9.1)	3.5 (2.0, 4.9)
"People are generally caring and sympathetic to people with mental illness"						
Overall	9420	19.9 (17.8, 22.0)	24.2 (22.1, 26.3)	2.5 (1.9, 3.1)	27.8 (25.7, 30.0)	25.6 (23.6, 27.5)
Gender						
Male	2985	19.9 (16.3, 23.5)	26.6 (23.0, 30.1)	2.3 (1.4, 3.2)	26.6 (23.2, 30.1)	24.6 (21.4, 27.8)
Female	6435	19.9 (17.7, 22.2)	22.4 (20.1, 24.7)	2.7 (1.9, 3.5)	28.7 (26.1, 31.3)	26.2 (24.0, 28.5)
Age group, y						
18–24	320	11.7 (6.0, 17.4)	27.9 (18.7, 37.2)	1.9 (0.0, 4.1)	33.4 (23.3, 43.5)	25.1 (15.3, 34.9)
25–34	967	15.5 (11.3, 19.6)	24.2 (19.2, 29.1)	3.0 (1.2, 4.8)	32.3 (26.6, 38.0)	25.1 (20.1, 30.2)
35–54	4346	21.3 (18.1, 24.6)	22.1 (19.4, 24.8)	2.2 (1.4, 2.9)	27.1 (24.0, 30.1)	27.3 (24.6, 30.1)
≥ 55	3787	24.4 (20.7, 28.1)	26.5 (22.5, 30.4)	2.9 (1.8, 4.0)	24.0 (20.7, 27.3)	22.3 (19.6, 25.0)
Race/ethnicity						
White, non-Hispanic	6666	17.0 (15.1, 18.9)	24.4 (22.1, 26.6)	2.9 (2.0, 3.8)	28.7 (26.3, 31.0)	27.1 (24.9, 29.3)
Black, non-Hispanic	1193	25.2 (18.0, 32.5)	21.4 (16.4, 26.3)	0.5 (0.0, 1.1)	25.7 (20.0, 31.3)	27.2 (21.2, 33.2)
Hispanic	1034	23.5 (18.1, 28.8)	26.3 (20.1, 32.4)	3.0 (1.6, 4.5)	28.3 (22.1, 34.5)	18.9 (13.5, 24.3)
Other non-Hispanic	527	24.3 (15.0, 33.6)	23.5 (13.5, 33.4)	1.3 (0.0, 2.8)	24.4 (15.3, 33.4)	26.6 (19.4, 33.9)

Continued

TABLE 2—*Continued*

Educational level						
< high school	2157	26.6 (22.4, 30.7)	23.5 (18.8, 28.1)	2.6 (1.1, 4.1)	29.8 (24.4, 35.1)	17.6 (14.2, 21.1)
High school graduate or GED	3389	21.0 (18.0, 24.0)	26.5 (23.0, 30.0)	2.3 (1.4, 3.3)	25.3 (22.1, 28.5)	24.9 (21.7, 28.1)
Some college	2481	13.5 (10.2, 16.8)	23.1 (19.6, 26.6)	2.4 (1.4, 3.4)	29.0 (25.4, 32.7)	32.0 (28.1, 35.8)
College graduate	1393	15.7 (8.0, 23.4)	23.0 (18.0, 28.0)	3.1 (1.1, 5.1)	29.2 (23.8, 34.6)	29.0 (23.3, 34.8)
Annual household income, $						
< 20 000	4881	21.8 (18.3, 25.3)	24.3 (21.4, 27.3)	2.5 (1.6, 3.3)	24.5 (21.6, 27.4)	26.9 (24.1, 29.8)
20 000–34 999	2328	19.9 (16.2, 23.6)	23.2 (19.3, 27.0)	2.7 (1.5, 4.0)	31.1 (26.6, 35.5)	23.1 (19.5, 26.7)
35 000–49 999	950	18.9 (13.9, 23.8)	22.3 (17.0, 27.6)	1.9 (0.7, 3.1)	33.2 (26.9, 39.6)	23.8 (18.2, 29.4)
50 000–74 999	642	17.1 (10.2, 24.0)	23.9 (16.5, 31.4)	4.0 (0.8, 7.2)	27.1 (20.9, 33.4)	27.8 (20.4, 35.2)
≥ 75 000	619	12.4 (7.8, 16.9)	29.6 (21.9, 37.2)	1.7 (0.1, 3.3)	30.0 (21.6, 38.5)	26.3 (18.8, 33.8)
Chronic disease[b]						
Yes	6763	16.7 (14.7, 18.6)	23.1 (20.3, 25.8)	2.3 (1.6, 2.9)	29.7 (26.9, 32.5)	28.3 (25.8, 30.9)
No	2657	25.4 (21.1, 29.7)	25.6 (22.1, 29.0)	2.9 (1.8, 4.0)	25.0 (21.5, 28.5)	21.1 (18.0, 24.3)

Note. CI = confidence interval; GED = general equivalency diploma.
[a]Percentages were adjusted for the following variables: gender, age, race/ethnicity, education, and annual household income.
[b]Chronic disease status includes respondents who self-reported any one of the following doctor-diagnosed conditions: diabetes mellitus, cardiovascular disease (heart attack or myocardial infarction, stroke, coronary heart disease), asthma, or arthritis.

was more prevalent among non-Hispanic Whites (69.5%) than among other racial/ethnic groups (range = 60.8%–65.3%). Slight agreement with the statement was more prevalent among Hispanic (30.4%) and "other non-Hispanic" adults (29.7%) than among other racial/ethnic groups. Compared with adults with some college or more and adults with household incomes of $35 000 or more, adults with less education and lower levels of household income were less likely to strongly agree that treatment is effective, with more in these groups tending to disagree with the statement. About the same percentages of agreement for this statement were seen among those with and without chronic disease.

Only about 23% of adults strongly agreed with the statement that people are caring and sympathetic to people with mental illness (Table 1). Significantly more women strongly disagreed with the statement (12.8%) than did men (9.1%), but more in both groups slightly disagreed (28.9% and 23.1%, respectively). Fewer young adults (18–34 years) strongly agreed than did older adults (≥ 35 years). More non-Hispanic Whites (11.1%) and non-Hispanic Blacks (14.7%) strongly disagreed than did Hispanics. Those with higher educational levels but lower income more often disagreed. For example, among college graduates, 30% slightly disagreed and 11% strongly disagreed, compared with 18.1% and 9.3% of adults with less than a high school degree who slightly or strongly disagreed, respectively. However, 13% of adults in households with income levels less than $20 000 strongly disagreed with the statement compared with 10.1% of those in households with income levels greater than $75 000. Slight and strong agreement with the statement was more prevalent among adults with chronic disease (27.7% and 13.2%, respectively) than among those without chronic disease (25.1% and 9.6%).

Attitudes by Serious Psychological Distress

Overall, fewer adults with serious psychological distress strongly agreed (56%), and more disagreed (13%), with the statement that treatment is effective than those without such distress (68% and 5%, respectively; Tables 2 and 3). Among adults with distress, more non-Hispanic Blacks slightly disagreed than non-Hispanic Whites (15.8% vs 6.9%). Fewer men (50.6%) than women (59.6%), and fewer adults living in households earning less than $35 000 a year (~50%) than adults in households earning $75 000 a year or more (68.6%), strongly agreed that treatment is effective. Those with serious psychological distress were less likely to agree that treatment is effective than those without serious psychological distress; this held true for both men and women, those aged 25 years or older, all racial/ethnic groups except Hispanics, all educational levels, those with annual household income levels less than $50 000, and adults with or without chronic disease.

Fewer adults with serious psychological distress strongly agreed (19.9%), and at least 1 in 4 strongly disagreed, with the statement that people are caring and sympathetic to people with mental illness (Table 2). Strong agreement was less prevalent among younger adults aged 18 to 24 years (11.7%) than among adults aged 35 years and older (> 21%). More non-Hispanic Whites disagreed strongly (27.1%) with the statement than did Hispanics (18.9%). Among adults with distress, those with at least a high school degree or GED were more likely to strongly disagree (> 24.9%) than those with less than a high school education (17.6%). Among adults with distress, fewer at the highest income levels (12.4%) strongly agreed with the statement than those at the lowest income levels (21.8%). Adults with both chronic disease and distress were more likely to strongly disagree (28.3%) than those with distress but without chronic disease (21.1%).

Compared with adults without serious psychological distress, adults with such distress were less likely to agree and more likely to strongly disagree with the statement that

TABLE 3—Level of Agreement With Statements Regarding Mental Illness Among Respondents Without Serious Psychological Distress: Behavioral Risk Factor Surveillance System, United States, 2007 and 2009

Characteristic	Sample Size	Level of Agreement,[a] % (95% CI)				
		Agree Strongly	Agree Slightly	Neither Agree nor Disagree	Disagree Slightly	Disagree Strongly
"Treatment can help people with mental illness lead normal lives"						
Overall	230 131	67.9 (67.3, 68.4)	25.7 (25.2, 26.1)	1.7 (1.5, 1.8)	3.5 (3.3, 3.8)	1.3 (1.1, 1.5)
Gender						
Male	89 446	62.7 (61.9, 63.5)	29.6 (28.9, 30.3)	1.9 (1.7, 2.1)	4.2 (3.9, 4.6)	1.6 (1.3, 1.8)
Female	140 685	72.8 (72.3, 73.4)	21.8 (21.2, 22.4)	1.5 (1.3, 1.7)	2.8 (2.5, 3.1)	1.1 (09.-1.3)
Age group, y						
18–24	6 989	56.8 (54.4, 59.1)	35.4 (33.2, 37.7)	1.4 (0.9, 1.8)	5.1 (4.1, 6.1)	1.3 (0.8, 1.8)
25–34	24 120	64.2 (62.9, 65.4)	28.7 (27.5, 29.9)	1.6 (1.3, 2.0)	4.1 (3.5, 4.7)	1.4 (1.0, 1.8)
35–54	88 013	70.8 (70.1, 71.5)	23.5 (22.9, 24.2)	1.6 (1.3, 1.8)	2.9 (2.6, 3.2)	1.2 (1.0, 1.4)
≥ 55	111 009	70.0 (69.3, 70.7)	23.3 (22.6, 23.9)	2.0 (1.7, 2.2)	3.3 (3.0, 3.7)	1.4 (1.2, 1.7)
Race/ethnicity						
White, non-Hispanic	185 574	70.1 (69.6, 70.6)	24.4 (23.9, 24.9)	1.5 (1.4, 1.7)	3.0 (2.8, 3.3)	1.0 (0.8, 1.1)
Black, non-Hispanic	17 868	65.9 (64.2, 67.5)	25.0 (23.4, 26.6)	1.9 (1.5, 2.3)	5.2 (4.4, 6.0)	2.0 (1.6, 2.4)
Hispanic	14 531	61.1 (59.3, 62.9)	30.6 (28.9, 32.4)	2.2 (1.8, 2.6)	4.2 (3.4, 4.9)	1.9 (1.4, 2.4)
Other non-Hispanic	12 158	62.1 (59.8, 64.5)	29.5 (27.2, 31.8)	1.8 (1.1, 2.4)	4.3 (3.4, 5.3)	2.2 (1.3, 3.1)
Educational level						
< high school	16 987	64.0 (62.0, 65.9)	28.2 (26.3, 30.1)	1.9 (1.5, 2.4)	3.9 (3.2, 4.7)	2.0 (1.4, 2.5)
High school graduate or GED	64 052	63.7 (62.7, 64.6)	28.5 (27.5, 29.4)	1.9 (1.6, 2.2)	4.4 (4.0, 4.9)	1.5 (1.2, 1.8)
Some college	63 386	67.3 (66.4, 68.2)	26.3 (25.5, 27.2)	1.7 (1.5, 2.0)	3.5 (3.1, 3.9)	1.1 (0.9, 1.4)
College graduate	85 806	72.6 (71.8, 73.4)	22.6 (21.8, 23.3)	1.4 (1.1, 1.6)	2.5 (2.2, 2.9)	1.0 (0.7, 1.2)
Annual household income, $						
< 20 000	37 131	63.4 (61.9, 64.8)	28.3 (26.9, 29.7)	2.0 (1.6, 2.3)	4.6 (4.0, 5.3)	1.7 (1.3, 2.1)
20 000–34 999	48 650	65.4 (64.3, 66.5)	27.0 (26.0, 28.0)	1.8 (1.5, 2.1)	4.1 (3.6, 4.6)	1.7 (1.3, 2.0)
35 000–49 999	37 868	68.3 (67.2, 69.5)	25.4 (24.3, 26.5)	1.8 (1.5, 2.1)	3.3 (2.8, 3.8)	1.2 (0.9, 1.4)
50 000–74 999	41 123	68.9 (67.9, 70.0)	25.5 (24.5, 26.5)	1.6 (1.3, 2.0)	3.0 (2.5, 3.4)	1.0 (0.7, 1.2)
≥ 75 000	65 359	70.9 (70.0, 71.8)	24.0 (23.1, 24.8)	1.3 (1.1, 1.6)	2.8 (2.4, 3.2)	1.0 (0.7, 1.3)
Chronic disease[b]						
Yes	106 844	69.1 (68.3, 69.9)	24.5 (23.7, 25.2)	1.6 (1.3, 1.8)	3.5 (3.2, 3.9)	1.3 (1.1, 1.6)
No	123 287	67.2 (66.5, 67.8)	26.3 (25.7, 26.9)	1.7 (1.5, 1.9)	3.5 (3.2, 3.8)	1.3 (1.1, 1.5)
"People are generally caring and sympathetic to people with mental illness"						
Overall	230 009	22.7 (22.2, 23.1)	38.1 (37.6, 38.6)	2.8 (2.6, 3.0)	26.1 (25.6, 26.5)	10.4 (10.1, 10.7)
Gender						
Male	89 704	24.6 (23.9, 25.3)	40.9 (40.2, 41.7)	3.0 (2.7, 3.3)	23.1 (22.5, 23.8)	8.4 (7.9, 8.8)
Female	140 305	20.8 (20.3, 21.4)	35.3 (34.7, 35.9)	2.7 (2.5, 2.9)	29.0 (28.4, 29.5)	12.2 (11.8, 12.6)
Age group, y						
18–24	7 013	19.1 (17.3, 20.8)	44.4 (42.1, 46.8)	1.9 (1.4, 2.5)	27.0 (24.9, 29.2)	7.6 (6.4, 8.7)
25–34	24 181	19.4 (18.4, 20.5)	38.4 (37.1, 39.6)	2.7 (2.3, 3.1)	29.0 (27.9, 30.1)	10.5 (9.7, 11.3)
35–54	88 104	21.7 (21.0, 22.3)	37.7 (37.0, 38.4)	2.9 (2.6, 3.1)	26.6 (26.0, 27.2)	11.1 (10.7, 11.6)
≥ 55	110 711	27.6 (26.9, 28.3)	36.1 (35.4, 36.9)	3.2 (2.9, 3.4)	23.1 (22.5, 23.7)	10.0 (9.6, 10.5)
Race/ethnicity						
White, non-Hispanic	185 378	20.2 (19.8, 20.7)	38.8 (38.3, 39.4)	2.7 (2.5, 2.9)	27.8 (27.3, 28.2)	10.4 (10.1, 10.7)
Black, non-Hispanic	17 894	26.5 (25.0, 27.9)	33.8 (32.1, 35.6)	2.7 (2.2, 3.2)	22.7 (21.3, 24.1)	14.3 (13.1, 15.5)
Hispanic	14 537	26.9 (25.3, 28.5)	38.5 (36.7, 40.4)	3.6 (3.0, 4.2)	22.7 (21.0, 24.4)	8.3 (7.3, 9.3)
Other non-Hispanic	12 200	34.3 (31.9, 36.6)	35.9 (33.5, 38.3)	2.5 (1.8, 3.2)	18.2 (16.5, 19.9)	9.2 (7.9, 10.5)

Continued

TABLE 3—*Continued*

Educational level						
< high school	17 002	33.6 (31.7, 35.5)	38.7 (36.6, 40.8)	2.2 (1.7, 2.8)	16.6 (15.1, 18.0)	8.9 (7.7, 10.1)
High school graduate or GED	64 283	27.6 (26.7, 28.5)	37.4 (36.5, 38.4)	2.7 (2.4, 3.0)	22.7 (21.9, 23.5)	9.5 (9.0, 10.1)
Some college	63 245	21.1 (20.3, 21.9)	37.7 (36.8, 38.7)	3.1 (2.7, 3.4)	26.9 (26.1, 27.8)	11.2 (10.6, 11.7)
College graduate	85 479	16.9 (16.3, 17.6)	39.2 (38.4, 40.0)	3.0 (2.7, 3.3)	30.0 (29.3, 30.8)	10.9 (10.4, 11.4)
Annual household income, $						
< 20 000	37 205	25.6 (24.4, 26.9)	35.1 (33.6, 36.6)	3.6 (3.1, 4.1)	24.5 (23.1, 25.8)	11.2 (10.4, 12.1)
20 000–34 999	48 701	24.6 (23.6, 25.6)	35.6 (34.5, 36.7)	3.1 (2.7, 3.5)	25.6 (24.6, 26.5)	11.1 (10.4, 11.8)
35 000–49 999	37 804	23.5 (22.5, 24.6)	37.5 (36.2, 38.7)	2.6 (2.3, 2.9)	26.0 (25.0, 27.0)	10.4 (9.7, 11.0)
50 000–74 999	41 081	21.0 (20.0, 21.9)	39.1 (38.0, 40.2)	2.6 (2.2, 3.0)	27.3 (26.4, 28.2)	10.1 (9.4, 10.7)
≥ 75 000	65 218	20.1 (19.3, 20.9)	40.9 (40.0, 41.9)	2.6 (2.3, 2.9)	26.5 (25.7, 27.3)	9.9 (9.4, 10.4)
Chronic disease[b]						
Yes	106 665	21.7 (21.1, 22.4)	35.9 (35.1, 36.7)	2.7 (2.4, 3.0)	27.5 (26.8, 28.3)	12.1 (11.6, 12.6)
No	123 344	23.3 (22.7, 23.9)	39.3 (38.6, 39.9)	2.9 (2.7, 3.1)	25.2 (24.7, 25.8)	9.3 (8.9, 9.7)

Note. CI = confidence interval; GED = general equivalency diploma.
[a]Percentages were adjusted for the following variables: gender, age, race/ethnicity, education, and annual household income.
[b]Chronic disease status includes respondents who self-reported any one of the following doctor-diagnosed conditions: diabetes mellitus, cardiovascular disease (heart attack or myocardial infarction, stroke, coronary heart disease), asthma, or arthritis.

people are caring and sympathetic to people with mental illness (Table 2). This pattern of less agreement among those with such distress occurred especially among men, non-Hispanic Whites, those who had not graduated from college, those with an annual household income of $75 000 or more, and those with a chronic disease.

Attitudes by Receipt of Mental Health Treatment Status

Seventy-seven percent of those who reported currently receiving treatment for a mental health or emotional problem strongly agreed that treatment is effective (Table 4), with significantly more women (80%) than men (72.2%) strongly agreeing. Among those receiving treatment, strong agreement was more likely among adults aged 35 years and older (> 78%) than among younger adults (< 74%), Whites (79.2%) than all other racial/ethnic groups (range = 68.5%–73%), college graduates than those with less education, and those living in households earning more than $75 000 (85.4%) than those living in households earning less than $50 000 (79.1%). The occurrence of a chronic disease did not change the level of agreement that treatment is effective.

More of those receiving treatment strongly agreed (77%; Table 4) that treatment is effective than did those not receiving treatment (66%; Table 5). This pattern of more strong agreement about treatment effectiveness among those receiving treatment held true among men and women, all age groups, all racial and ethnic groups, all educational levels, all annual household income levels, and both those with and without a chronic disease.

Among adults receiving mental illness treatment, only about 17% strongly and 31% slightly agreed that people are caring and sympathetic to people with mental illness (Table 4). Among the treated, those aged 55 years or older and those who were high school graduates or less agreed more strongly with the statement than younger or more educated persons. However, adults receiving treatment agreed with the statement less often than those not receiving treatment, a pattern that held true for both men and women, those aged 25 years or older, all racial and ethnic groups except "other non-Hispanics," all educational levels, all annual household income levels, and those with and without a chronic disease.

DISCUSSION

We found that attitudes regarding the effectiveness of mental health treatment, and how supportive others are to people with mental illness, varied by study subgroup. Notably, attitudes regarding treatment effectiveness varied by serious psychological distress status, suggesting possible unmet needs in those with untreated, or ineffectively treated, mental illness symptoms. The perception of an unsupportive environment was particularly common for women, those aged 18 to 34 years, White non-Hispanics, college graduates, those with annual household incomes of $50 000 or more, adults with serious psychological distress, those receiving treatment for a mental health or emotional problem, those with chronic disease, and those with chronic disease and serious psychological distress.

The more favorable attitudes regarding treatment effectiveness (compared with perceptions of a supportive environment) among all adults may result from successful efforts of past public education campaigns, direct-to-consumer advertising, or changing social norms about the use and benefits of psychiatric medications.[2,11,15] These generally favorable attitudes toward treatment effectiveness extend other findings suggesting that treatment-based stigma may be lower for most adults than other forms of stigma.[16,17]

These data also serve as one possible indicator of adults' mental health literacy in the states surveyed to track changes over time.[18] That adults with serious psychological distress had more negative views about treatment

TABLE 4—Level of Agreement With Statements Regarding Mental Illness Among Respondents Receiving Mental Health Treatment: Behavioral Risk Factor Surveillance System, United States, 2007 and 2009

Characteristic	Sample Size, No.	Level of Agreement,[a] % (95% CI)				
		Agree Strongly	Agree Slightly	Neither Agree nor Disagree	Disagree Slightly	Disagree Strongly
"Treatment can help people with mental illness lead normal lives"						
Overall	32 489	77.3 (76.3, 78.4)	16.8 (15.9, 17.8)	1.0 (0.8, 1.2)	3.6 (3.0, 4.2)	1.3 (1.0, 1.6)
Gender						
Male	8 621	72.2 (70.3, 74.2)	20.1 (18.4, 21.9)	1.2 (0.8, 1.7)	4.7 (3.5, 5.9)	1.7 (1.1, 2.3)
Female	23 868	80.0 (78.9, 81.1)	15.1 (14.1, 16.2)	0.9 (0.6, 1.1)	3.0 (2.4, 3.6)	1.0 (0.7, 1.3)
Age group, y						
18–24	588	69.9 (63.6, 76.1)	24.3 (18.3, 30.4)	0.8 (0.0, 1.9)	4.4 (1.2, 7.6)	0.6 (0.0, 1.5)
25–34	2 718	73.7 (70.6, 76.9)	18.5 (15.7, 21.3)	1.2 (0.3, 2.0)	5.0 (2.8, 7.2)	1.6 (0.2, 3.0)
35–54	13 673	78.4 (77.0, 79.8)	16.0 (14.7, 17.2)	1.1 (0.7, 1.4)	3.3 (2.6, 4.0)	1.3 (0.9, 1.6)
≥ 55	15 510	78.7 (77.2, 80.2)	16.0 (14.7, 17.4)	0.9 (0.6, 1.2)	3.2 (2.6, 3.9)	1.2 (0.8, 1.5)
Race/ethnicity						
White, non-Hispanic	27 666	79.2 (78.1, 80.2)	16.0 (15.0, 16.9)	0.9 (0.7, 1.2)	2.8 (2.3, 3.2)	1.2 (0.8, 1.6)
Black, non-Hispanic	1 982	73.0 (69.2, 76.8)	18.4 (15.1, 21.7)	0.5 (0.2, 0.9)	6.4 (3.9, 8.9)	1.7 (0.9, 2.4)
Hispanic	1 671	68.5 (64.0, 72.9)	21.8 (17.7, 25.9)	2.2 (1.2, 3.2)	6.4 (3.5, 9.2)	1.2 (0.5, 1.9)
Other non-Hispanic	1 170	71.8 (65.7, 77.8)	20.6 (15.3, 25.9)	0.8 (0.0, 1.7)	4.9 (1.5, 8.4)	1.9 (0.8, 3.0)
Educational level						
< high school	3 208	70.2 (66.6, 73.8)	21.4 (18.1, 24.8)	1.1 (0.4, 1.7)	5.1 (3.2, 6.9)	2.3 (1.2, 3.4)
High school graduate or GED	9 219	74.4 (72.5, 76.4)	18.3 (16.6, 19.9)	1.2 (0.8, 1.6)	4.9 (3.6, 6.2)	1.2 (0.8, 1.5)
Some college	9 491	78.1 (76.4, 79.9)	17.0 (15.4, 18.7)	0.8 (0.4, 1.1)	2.9 (2.2, 3.7)	1.1 (0.7, 1.6)
College graduate	10 571	82.7 (81.0, 84.4)	13.8 (12.2, 15.3)	1.0 (0.5, 1.5)	1.8 (0.9, 2.6)	0.8 (0.4, 1.2)
Annual household income, $						
< 20 000	8 962	69.2 (66.9, 71.5)	22.0 (19.9, 24.0)	1.4 (1.0, 1.9)	5.1 (3.7, 6.4)	2.3 (1.6, 2.9)
20 000–34 999	7 194	74.5 (72.4, 76.6)	18.7 (16.8, 20.6)	1.3 (0.8, 1.9)	4.3 (3.1, 5.4)	1.3 (0.8, 1.8)
35 000–49 999	4 838	79.1 (76.6, 81.6)	16.1 (13.8, 18.4)	0.9 (0.4, 1.5)	3.2 (1.8, 4.5)	0.7 (0.4, 1.1)
50 000–74 999	4 882	81.5 (78.9, 84.0)	14.9 (12.5, 17.2)	0.4 (0.1, 0.8)	2.5 (1.0, 4.1)	0.7 (0.0, 1.3)
≥ 75 000	6 613	85.4 (83.5, 87.4)	12.1 (10.4, 13.9)	0.6 (0.2, 1.0)	1.4 (0.6, 2.1)	0.5 (0.0, 0.9)
Chronic disease[b]						
Yes	21 083	76.4 (75.0, 77.7)	17.1 (15.9, 18.3)	1.2 (0.9, 1.6)	3.8 (3.0, 4.5)	1.5 (1.0, 2.0)
No	11 406	78.7 (77.1, 80.4)	16.5 (15.0, 18.0)	0.6 (0.3, 0.9)	3.3 (2.4, 4.3)	0.8 (0.4, 1.1)
"People are generally caring and sympathetic to people with mental illness"						
Overall	32 290	16.9 (16.0, 17.8)	30.9 (29.8, 32.0)	2.9 (2.5, 3.3)	30.4 (29.3, 31.4)	18.9 (18.0, 19.9)
Gender						
Male	8559	17.8 (16.3, 19.4)	32.8 (30.8, 34.8)	2.9 (2.2, 3.6)	29.0 (27.0, 30.9)	17.4 (15.7, 19.2)
Female	23 731	16.4 (15.4, 17.5)	29.9 (28.6, 31.2)	2.8 (2.4, 3.3)	31.1 (29.9, 32.3)	19.7 (18.7, 20.8)
Age group, y						
18–24	585	14.8 (9.8, 19.8)	38.6 (31.3, 46.0)	3.0 (0.1, 5.8)	27.9 (21.7, 34.1)	15.7 (10.3, 21.2)
25–34	2716	10.8 (8.8, 12.9)	31.6 (28.3, 34.9)	2.3 (1.3, 3.2)	34.3 (31.0, 37.6)	21.0 (17.9, 24.1)
35–54	13 641	16.1 (14.8, 17.4)	30.2 (28.7, 31.8)	2.8 (2.2, 3.4)	30.7 (29.2, 32.2)	20.1 (18.8, 21.4)
≥ 55	15 348	21.5 (20.0, 23.0)	30.2 (28.6, 31.8)	3.2 (2.6, 3.8)	28.2 (26.6, 29.8)	16.9 (15.6, 18.2)
Race/ethnicity						
White, non-Hispanic	27 496	16.0 (15.1, 16.9)	31.5 (30.3, 32.6)	2.9 (2.4, 3.3)	31.2 (30.1, 32.4)	18.4 (17.5, 19.3)
Black, non-Hispanic	1966	19.5 (16.2, 22.7)	28.1 (23.7, 32.4)	2.3 (1.0, 3.5)	25.2 (21.1, 29.3)	25.0 (20.8, 29.1)
Hispanic	1665	19.0 (15.1, 22.9)	32.2 (27.0, 37.5)	3.0 (1.9, 4.1)	27.0 (22.4, 31.6)	18.8 (14.0, 23.6)
Other non-Hispanic	1163	27.0 (20.2, 33.9)	20.3 (15.2, 25.3)	3.5 (1.1, 5.9)	28.0 (21.8, 34.2)	21.2 (16.7, 25.6)

Continued

TABLE 4—*Continued*

Educational level						
< high school	3173	24.5 (21.3, 27.8)	28.9 (24.8, 33.1)	3.9 (1.9, 5.9)	25.9 (21.8, 29.9)	16.8 (13.6, 19.9)
High school graduate or GED	9188	21.2 (19.3, 23.0)	28.4 (26.3, 30.4)	2.1 (1.6, 2.6)	29.8 (27.7, 31.9)	18.6 (16.8, 20.4)
Some college	9436	15.0 (13.4, 16.6)	31.4 (29.3, 33.4)	2.8 (2.2, 3.4)	30.6 (28.7, 32.4)	20.3 (18.7, 21.9)
College graduate	10 493	12.5 (11.1, 13.9)	33.1 (31.2, 35.0)	3.3 (2.5, 4.1)	32.1 (30.2, 33.9)	19.0 (17.4 20.7)
Annual household income, $						
< 20 000	8904	18.2 (16.3, 20.2)	26.7 (24.5, 29.0)	2.8 (2.1, 3.5)	27.6 (25.3, 29.8)	24.7 (22.4, 26.9)
20 000–34 999	7132	19.0 (17.1, 20.9)	27.1 (24.9, 29.4)	3.5 (2.5, 4.4)	29.7 (27.6, 31.9)	20.6 (18.6, 22.7)
35 000–49 999	4811	17.5 (15.4, 19.6)	31.6 (28.9, 34.4)	3.2 (1.9, 4.4)	31.6 (28.8, 34.4)	16.1 (14.3, 18.0)
50 000–74 999	4860	14.8 (12.9, 16.8)	33.8 (31.2, 36.5)	3.0 (1.8, 4.1)	33.1 (30.5, 35.6)	15.3 (13.3, 17.2)
≥ 75 000	6583	14.7 (12.8, 16.7)	35.1 (32.6, 37.6)	2.3 (1.7, 3.0)	31.3 (28.9, 33.6)	16.6 (14.7, 18.5)
Chronic disease[b]						
Yes	20 961	16.1 (15.0, 17.2)	29.2 (27.7, 30.7)	2.8 (2.3, 3.4)	30.7 (29.2, 32.1)	21.1 (19.9, 22.4)
No	11 329	18.3 (16.7, 20.0)	32.9 (31.2, 34.7)	2.9 (2.3, 3.5)	30.0 (28.3, 31.6)	15.9 (14.4, 17.4)

Note. CI = confidence interval; GED = general equivalency diploma.
[a]Percentages were adjusted for the following variables: gender, age, race/ethnicity, education, and annual household income.
[b]Chronic disease status includes respondents who self-reported any one of the following doctor-diagnosed conditions: diabetes mellitus, cardiovascular disease (heart attack or myocardial infarction, stroke, coronary heart disease), asthma, or arthritis.

effectiveness suggests a potential information or treatment gap in this group. Perhaps these adults were less sure about the possible benefits of mental health treatment, were less satisfied with care they received for a mental health problem, or knew of unsuccessful treatment in family or friends. In a posthoc analysis (using the same methodology controlling for covariates), designed to further examine how attitudes varied by serious psychological distress and treatment effectiveness, we found that 81.5% (95% confidence interval [CI] = 80.4%, 82.6%) of adults without serious psychological distress, and who were receiving treatment, strongly agreed that treatment is effective, compared with only 57.5% (95% CI = 54.6%, 60.5%) of those with serious psychological distress who were receiving treatment. This suggests that because treatment may be working for those without symptoms but in treatment, they are more likely to consider the statement to be true. However, it is possible that for adults receiving treatment who continue to have serious psychological distress, their treatment may not (yet) be working for them, so they hold less favorable views for this statement. This has important implications, because if such attitudes motivate behavior, individuals with more unfavorable attitudes might cease treatment, increasing their risk of negative outcomes. It also suggests the need for close monitoring of patients' perceptions of treatment efficacy, relative to their needs, values, and preferences.[19]

Social support confers a number of advantages on health, including preventing felt stigma up to a year after onset of mental illness.[20] The public's perception of an unsupportive environment suggests the need for more studies examining felt stigma versus enacted stigma, and overt instances of discrimination. Such studies may determine whether people have experienced unsupportive behaviors or social exclusion themselves, or witnessed this for others, or whether they simply perceive that others are more unsupportive on the basis of social comparison effects, interviewer effects, or other factors. This perception of an unsupportive environment also reinforces the need for continued vigilance in the use of supportive language and behaviors modeled in the campaign What a Difference a Friend Makes, and in SAMHSA's Campaign for Social Inclusion.[21]

Many adults with chronic conditions such as arthritis, cancer, heart disease, and epilepsy experience concurrent depression and anxiety, further complicating self-management of these disorders and adversely affecting quality of life.[22] The approximately 15% of adults with chronic disease, serious psychological distress, and negative attitudes toward treatment effectiveness might be at greater risk of poorer health outcomes associated with lack of mental illness treatment or ineffective treatment. Because this is a cross-sectional study, more research is required to examine reasons for the large proportion of adults with chronic disease and serious psychological distress who disagreed with the statement that people are caring and sympathetic to people with mental illness. These adults might have faced additional obstacles and frustrations in navigating disconnected health care delivery systems.[19] They might have experienced more unequal or negative social exchange because of limitations associated with their chronic disorder. Other factors not accounted for in this study (e.g., quantity and quality of social ties) might explain these findings. Finally, it is also possible that untreated or ineffectively treated mental illness contributes to these negative attitudes in adults with chronic disease.

The ability to adjust for confounding factors and the large sample size allowing for an examination of the distribution of agreement in subgroups were strengths of this study. After adjustment, attitudes varied significantly by sociodemographic characteristics, although not always in expected patterns. For example, adults at higher educational and income levels tended to perceive a more unsupportive environment. An assessment of the full distribution of responses highlights additional opportunities to focus intervention efforts; differences between slight and strong agreement,

TABLE 5—Level of Agreement With Statements Regarding Mental Illness Among Respondents Not Receiving Mental Health Treatment: Behavioral Risk Factor Surveillance System, United States, 2007 and 2009

Characteristic	Sample Size, No.	Level of Agreement,[a] % (95% CI)				
		Agree Strongly	Agree Slightly	Neither Agree nor Disagree	Disagree Slightly	Disagree Strongly
"Treatment can help people with mental illness lead normal lives"						
Overall	210 155	66.0 (65.4, 66.5)	26.9 (26.4, 27.4)	1.9 (1.7, 2.1)	3.7 (3.5, 4.0)	1.5 (1.3, 1.7)
Gender						
Male	85 227	61.2 (60.4, 62.0)	30.6 (29.8, 31.3)	2.1 (1.8, 2.4)	4.4 (4.0, 4.8)	1.7 (1.5, 2.0)
Female	124 928	71.0 (70.4, 71.6)	23.1 (22.5, 23.7)	1.6 (1.4, 1.8)	3.0 (2.7, 3.3)	1.2 (1.0, 1.4)
Age group, y						
18–24	6801	55.1 (52.7, 57.5)	36.3 (33.9, 38.6)	1.8 (0.9, 2.7)	5.4 (4.4, 6.4)	1.5 (0.9, 2.0)
25–34	22 650	62.3 (61.0, 63.6)	30.1 (28.8, 31.3)	1.8 (1.4, 2.1)	4.3 (3.6, 4.9)	1.6 (1.2, 2.1)
35–54	79 470	68.7 (67.9, 69.4)	25.1 (24.4, 25.8)	1.7 (1.5, 2.0)	3.1 (2.8, 3.5)	1.4 (1.2, 1.6)
≥ 55	101 234	68.7 (68.0, 69.5)	24.1 (23.4, 24.8)	2.2 (1.9, 2.4)	3.5 (3.1, 3.9)	1.5 (1.3, 1.8)
Race/ethnicity						
White, non-Hispanic	166 617	68.1 (67.6, 68.7)	25.9 (25.3, 26.4)	1.7 (1.5, 1.9)	3.3 (3.0, 3.5)	1.1 (0.9, 1.3)
Black, non-Hispanic	17 622	64.8 (63.1, 66.5)	25.5 (23.9, 27.1)	2.0 (1.5, 2.4)	5.6 (4.7, 6.4)	2.2 (1.7, 2.6)
Hispanic	14 174	60.0 (58.2, 61.9)	31.1 (29.4, 32.9)	2.5 (1.8, 3.3)	4.2 (3.4, 5.0)	2.1 (1.6, 2.7)
Other non-Hispanic	11 742	60.8 (58.4, 63.2)	30.5 (28.1, 32.8)	1.9 (1.3, 2.6)	4.5 (3.5, 5.5)	2.4 (1.4, 3.3)
Educational level						
< high school	16 580	62.5 (60.5, 64.5)	29.1 (27.2, 31.1)	2.0 (1.4, 2.6)	4.2 (3.4, 5.0)	2.2 (1.6, 2.7)
High school graduate or GED	59 268	61.9 (60.9, 63.0)	29.8 (28.8, 30.8)	2.0 (1.7, 2.3)	4.5 (4.1, 5.0)	1.7 (1.4, 2.0)
Some college	57 013	65.3 (64.3, 66.2)	27.6 (26.6, 28.5)	2.1 (1.6, 2.6)	3.8 (3.3, 4.2)	1.3 (1.0, 1.6)
College graduate	77 294	70.8 (69.9, 71.6)	23.8 (23.0, 24.6)	1.5 (1.2, 1.8)	2.8 (2.4, 3.2)	1.1 (0.8, 1.4)
Annual household income, $						
< 20 000	34 178	61.2 (59.7, 62.8)	29.6 (28.1, 31.1)	2.4 (1.7, 3.2)	4.8 (4.2, 5.5)	1.9 (1.5, 2.3)
20 000–34 999	44 636	63.2 (62.1, 64.4)	28.4 (27.3, 29.5)	2.1 (1.7, 2.4)	4.4 (3.9, 4.9)	1.9 (1.5, 2.3)
35 000–49 999	34 387	66.4 (65.2, 67.6)	26.8 (25.7, 28.0)	1.9 (1.6, 2.3)	3.5 (3.0, 4.0)	1.3 (1.0, 1.6)
50 000–74 999	37 209	67.3 (66.2, 68.5)	26.7 (25.6, 27.8)	1.8 (1.4, 2.1)	3.1 (2.6, 3.6)	1.1 (0.8, 1.3)
≥ 75 000	59 745	69.3 (68.4, 70.3)	25.1 (24.2, 26.0)	1.4 (1.2, 1.7)	3.0 (2.5, 3.4)	1.2 (0.8, 1.6)
Chronic disease[b]						
Yes	94 340	66.7 (65.9, 67.6)	26.0 (25.2, 26.9)	1.8 (1.5, 2.0)	3.9 (3.5, 4.3)	1.6 (1.3, 1.8)
No	115 815	65.6 (64.9, 66.3)	27.4 (26.8, 28.0)	1.9 (1.7, 2.2)	3.6 (3.3, 4.0)	1.4 (1.2, 1.6)
"People are generally caring and sympathetic to people with mental illness"						
Overall	210 225	23.4 (22.9, 23.9)	38.3 (37.8, 38.9)	2.8 (2.6, 3.0)	25.5 (25.0, 25.9)	10.0 (9.7, 10.3)
Gender						
Male	85 559	25.2 (24.4, 25.9)	41.0 (40.2, 41.8)	3.0 (2.7, 3.3)	22.6 (21.9, 23.3)	8.2 (7.8, 8.7)
Female	124 666	21.5 (21.0, 22.1)	35.5 (34.8, 36.1)	2.7 (2.5, 2.9)	28.6 (28.0, 29.1)	11.8 (11.4, 12.2)
Age group, y						
18–24	6830	19.2 (17.4, 21.1)	44.6 (42.1, 47.0)	1.8 (1.3, 2.3)	26.9 (24.7, 29.0)	7.5 (6.4, 8.6)
25–34	22 708	20.4 (19.3, 21.5)	38.3 (37.0, 39.6)	2.7 (2.3, 3.2)	28.5 (27.3, 29.6)	10.1 (9.3, 10.9)
35–54	79 596	22.5 (21.8, 23.1)	37.9 (37.2, 38.7)	2.9 (2.6, 3.1)	26.0 (25.3, 26.6)	10.8 (10.3, 11.2)
≥ 55	101 091	28.4 (27.6, 29.1)	36.5 (35.7, 37.2)	3.2 (3.0, 3.5)	22.4 (21.8, 23.0)	9.6 (9.1, 10.1)
Race/ethnicity						
White, non-Hispanic	166 591	20.8 (20.3, 21.3)	39.2 (38.6, 39.7)	2.7 (2.5, 3.0)	27.2 (26.7, 27.7)	10.1 (9.7, 10.4)
Black, non-Hispanic	17 644	27.2 (25.7, 28.7)	33.7 (32.0, 35.5)	2.7 (2.1, 3.2)	22.5 (21.0, 23.9)	13.9 (12.7, 15.1)
Hispanic	14 187	27.4 (25.7, 29.0)	38.7 (36.7, 40.6)	3.6 (3.0, 4.2)	22.6 (20.9, 24.3)	7.8 (6.8, 8.8)
Other non-Hispanic	11 803	34.4 (32.0, 36.8)	36.5 (34.0, 38.9)	2.5 (1.8, 3.2)	17.6 (15.9, 19.3)	9.0 (7.7, 10.3)

Continued

TABLE 5—*Continued*

Educational level						
< high school	16 610	34.0 (32.0, 36.0)	38.2 (36.0, 40.3)	2.2 (1.7, 2.7)	17.2 (15.6, 18.7)	8.5 (7.3, 9.7)
High school graduate or GED	59 552	28.3 (27.3, 29.2)	37.9 (36.8, 38.9)	2.8 (2.4, 3.1)	21.9 (21.0, 22.7)	9.2 (8.7, 9.8)
Some college	57 031	21.6 (20.8, 22.5)	38.1 (37.1, 39.1)	3.1 (2.8, 3.5)	26.3 (25.4, 27.2)	10.8 (10.3, 11.4)
College graduate	77 032	17.5 (16.8, 18.2)	39.4 (38.6, 40.3)	2.9 (2.6, 3.2)	29.7 (28.9, 30.5)	10.5 (9.9, 11.0)
Annual household income, $						
< 20 000	34 304	26.6 (25.2, 27.9)	35.6 (34.0, 37.2)	3.7 (3.1, 4.2)	23.6 (22.2, 25.0)	10.6 (9.7, 11.4)
20 000–34 999	44 742	25.1 (24.0, 26.1)	36.1 (34.9, 37.2)	3.1 (2.7, 3.5)	25.2 (24.2, 26.2)	10.6 (9.9, 11.3)
35 000–49 999	34 352	24.2 (23.0, 25.3)	37.6 (26.3, 38.8)	2.5 (2.2, 2.9)	25.5 (24.5, 26.5)	10.3 (9.5, 11.0)
50 000–74 999	37 186	21.8 (20.8, 22.9)	39.2 (38.0, 40.3)	2.6 (2.2, 3.0)	26.5 (25.5, 27.5)	9.9 (9.2, 10.6)
≥ 75 000	59 641	20.7 (19.8, 21.5)	41.2 (40.2, 42.2)	2.6 (2.3, 2.9)	26.0 (25.2, 26.9)	9.5 (8.9, 10.0)
Chronic disease[b]						
Yes	94 278	22.4 (21.7, 23.1)	36.2 (35.4, 37.1)	2.7 (2.4, 2.9)	27.1 (26.3, 27.9)	11.6 (11.1, 12.1)
No	115 947	24.0 (23.4, 24.6)	39.4 (38.7, 40.1)	2.9 (2.7, 3.2)	24.6 (24.1, 25.2)	9.1 (8.7, 9.5)

Note. CI = confidence interval; GED = general equivalency diploma.
[a]Percentages were adjusted for the following variables: gender, age, race/ethnicity, education, and annual household income.
[b]Chronic disease status includes respondents who self-reported any one of the following doctor-diagnosed conditions: diabetes mellitus, cardiovascular disease (heart attack or myocardial infarction, stroke, coronary heart disease), asthma, or arthritis.

and between slight and strong disagreement, might inform the development of more targeted messages to nudge the attitudes of persons more unengaged, ambivalent, or unsure in their beliefs, contrasted with messages that more aggressively sway those with more strongly held beliefs.[2,3] Some state-level factors have also influenced these attitudes.[3] For example, adults who lived in states with higher per capita expenditures on mental health services were more likely to agree that treatment is effective, and were more likely to report receiving treatment.[3] Such state-level factors remain amenable to intervention to improve mental health literacy and access to care. Ensuring that individuals with mental illness symptoms, and those with co-occurring chronic disease and mental illness symptoms, obtain high-quality care is crucial to overall population health.[19]

These data can be used by public health and mental health stakeholders to target interventions for population subgroups with less favorable attitudes, particularly those with serious psychological distress, and to track changes in these attitudes over time.[1,3]

The findings in this report are subject to several limitations. First, BRFSS surveys include only noninstitutionalized adults with telephones. Persons in institutions and in households without telephones are excluded, groups that might include a higher proportion of persons with mental health symptoms. Second, because states commonly use only English- or Spanish-language surveys, persons who speak other primary languages are excluded, which could affect race- and ethnicity-specific results. Third, because not all states asked these questions about attitudes toward mental illness, these data are not nationally representative, so no conclusions can be drawn about the entire US population. The question on caring and sympathy requires further examination regarding its interpretation and association with other beliefs.[24] Fourth, it is unknown whether individuals who agree that treatment is effective would actually seek professional treatment of themselves or whether they would encourage others to seek care. It is also unclear what type of treatment respondents had in mind when answering this question. Finally, a comprehensive assessment of stigma and stigmatizing behaviors may not be possible in a necessarily brief BRFSS module, because of the multifaceted complexity and variability of the concept across a wide range of mental illnesses and population perspectives.[25] ■

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***Note**. The findings and conclusions of this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.*

Contributors

R. Kobau designed the study, wrote the first draft, and finalized the article. M. M. Zack conducted data analysis and provided comments on the article.

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