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Health-related quality of life and health behaviors by social and emotional support

Their relevance to psychiatry and medicine

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Abstract *Background* Social and emotional support is an important construct, which has been associated with a reduced risk of mental illness, physical illness, and mortality. Despite its apparent relevance to health, there have been no recent state or national population-based U.S. studies regarding social and emotional support. In order to better address this issue, we examined health-related quality of life (HRQOL) and health behaviors by level of social and emotional support in community-dwelling adults in the United States and its territories. *Methods* Data were obtained from the Behavioral Risk Factor Surveillance System, an ongoing, state-based, random digit telephone survey of the noninstitutionalized U.S. population aged ≥ 18 years. In 2005, one social and emotional support question, four HRQOL questions, two disability questions, one life satisfaction question, and four health behavior questions were administered in the 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands. An additional five HRQOL questions were administered in two states. *Results* An estimated 8.6% of adults reported that they rarely/never received social and emotional support; ranging in value from 4.2% in Minnesota to 12.4% in the U.S. Virgin Islands. As the level of social and emotional support decreased, the prevalence of fair/poor general health, dissatisfaction with life, and disability increased, as did the mean number of days of physical distress, mental distress, activity limitation, depressive symptoms, anxiety symptoms, insufficient sleep, and pain. Moreover, the prevalence

of smoking, obesity, physical inactivity, and heavy drinking increased with decreasing level of social and emotional support. Additionally, the mean number of days of vitality slightly decreased with decreasing level of social and emotional support; particularly between those who always/usually received social and emotional support and those who sometimes received support. *Conclusions* These findings indicate that the assessment of social and emotional support is highly congruent with the practice of psychiatry. Assessment of social and emotional support, both in psychiatric and medical settings, may identify risk factors germane to adverse health behaviors, and foster interventions designed to improve the mental and physical health of at risk segments of the population.

Key words social and emotional support – health behaviors – health-related quality of life – disability – surveillance

Introduction

Social and emotional support has been defined as resources and assistance exchanged through social relationships and interpersonal interactions [20, 22, 26], and serves four major functions: emotional (share problems, vent emotions), informational (advice and guidance), instrumental (provide a ride if car breaks down), and appraisal (comparing oneself to others) [20]. Much evidence has accrued that social and emotional support is associated with a reduced risk of mental and physical illness, as well as mortality [1, 4–7, 10, 12, 18, 34, 35, 51, 53, 59, 62, 67], and has suggested that it confers benefits in cardiovascular, endocrine, and immune functioning [52, 65]. It can also affect the way, in which people cope with stress, the progression of illness, decision making for initi-

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ation and maintenance of behavioral change [27, 43, 53], and adherence to medical treatment and screening [14, 24, 50]. More broadly, social and emotional support can increase personal competence, perceived control, sense of stability, and recognition of self-worth [33], and can have a positive effect on quality of life [1, 21, 30]. Research also suggests that social and emotional support can influence health and longevity by bolstering self-esteem [8, 32]. It is important to note, however, that optimal social and emotional support varies highly between individuals [28], and that in order for support to be positive, it must be congruent with the desires of the person in need [48, 70].

Given the positive associations with social and emotional support, as described above, it is evident that further examining and harnessing the influence of social and emotional support is critical for psychiatric and medical care. Indeed, policy makers have recognized the need for social and emotional support, and have enacted legislation such as the 1965 Older Americans Act [63], which assists state and area agencies on aging in providing in-house services, telephone checks, and group meals to foster social interactions among older adults. *Promotores*, community health workers who provide education and support to primarily Latino communities, offer another example of a social support system being used to effectively foster a number of interventions, such as diabetes control [25] and smoking cessation [69]. Similarly, programs such as Sisters in Support Together Against Substances which is designed to raise awareness of factors that can lead African American women to use and/or abuse drugs and alcohol [36], and Big Brothers Big Sisters, composed of volunteer adult mentors for children who often have troubled family lives, have also been shown to be effective [60].

Examples of the health benefits of social and emotional support have also been shown in psychiatric research. In one clinical-based study, patients with a higher perceived emotional support from family and friends at baseline were more likely to recover from major depression 3 months after being hospitalized than were patients with a lower level of perceived support [44]. Additionally, low social support is associated with impaired quality of life among those with panic disorder [71] and severe mental illness [19], as well as with increased risk of suicidal ideation among persons with depression, particularly men [72].

One of the most recent articles describing the association between social and emotional support, and HRQOL described Missouri community-dwelling adults aged ≥ 60 using the 2000 Missouri Older Adults Needs Assessment Survey [30]. Briefly, this study indicated that increased level of social support generally corresponded to fewer reported mentally unhealthy days and more days of vitality. Social and emotional support is particularly important in this

population because of social isolation due to the loss of a partner, and loss of personal independence due to disability.

Despite the importance of social support to psychiatry and medicine, we found no recent U.S. population-based estimates of level of social and emotional support at the state or national levels. Moreover, we found no national studies examining the associations between social and emotional support, health-related quality of life (HRQOL), life satisfaction, and health behaviors; particularly after adjusting for sociodemographic characteristics. State estimates provide a framework for policymakers, and public health officials to identify local health requirements and assist in planning, directing, implementing, and monitoring the effectiveness of intervention and prevention strategies. National estimates provide a means for examining at risk populations for social and emotional isolation that may otherwise be overlooked. To examine these relationships, we used data from the Behavioral Risk Factor Surveillance System (BRFSS), a large representative sample of U.S. adults residing in the community.

Methods

The BRFSS is an ongoing, state-based telephone survey conducted by random digit dialing of noninstitutionalized U.S. adults. BRFSS monitors the prevalence of key health- and safety-related behaviors and characteristics [11, 41]. In 2005, trained interviewers in the 50 states, the District of Columbia, the U.S. Virgin Islands, and Puerto Rico administered identical questionnaires about social and emotional support, life satisfaction, HRQOL, disability, and health behaviors over the telephone to an independent probability sample of adults aged 18 years or older. Data from all states and areas were pooled to produce national estimates. BRFSS methods, including the weighting procedure, have been described elsewhere [23].

The survey evaluated social and emotional support by asking the respondent: "How often do you get the social and emotional support that you need?" Possible responses included always, usually, sometimes, rarely, and never. We grouped the responses into three categories: always/usually, sometimes, and rarely/never.

Four HRQOL questions with demonstrated validity and reliability for population health surveillance were examined [2, 40, 42]. Respondents rated their general health on a scale from excellent to poor. We grouped their responses into: excellent/very good/good, or fair/poor. The remaining three questions were about the respondents' assessment of their own health in the previous 30 days: "How many days was your physical health, which includes physical illness or injury, not good?" (recent physical distress); "How many days was your mental health, which includes stress, depression, and problems with emotions, not good?" (recent mental distress); and "How many days did poor physical or mental health keep you from doing your usual activities, such as self-care, work, or recreation?" (recent activity limitations).

Additionally, a Healthy Days Symptoms module was used in two states: Hawaii, and New York. Questions in this module also referred to the previous 30 days: "How many days did you feel sad, blue, or depressed?" (recent depressive symptoms); "How many days did you feel worried, tense, or anxious?" (recent anxiety symptoms); "How many days have you felt you did not get enough rest or sleep?" (recent sleep insufficiency); "How many days did pain make it difficult to do your usual activities?" (recent pain); and "How many days have you felt very healthy and full of energy?" (recent vitality).

In order to examine important correlates of social and emotional support after adjusting for potential confounders (age, sex, race/ethnicity, education, marital status, and employment status), HRQOL responses were dichotomized into 0–13 (infrequent) and 14–30 (frequent) unhealthy days in each domain, or, in the case of vitality, healthy days. This dichotomy has been used in previous research [56–58], with the term “frequent” representing the respondent’s status for a substantial portion of the month.

Life satisfaction was assessed by asking the respondent, “In general, how satisfied are you with your life?” Possible responses were very satisfied, satisfied, dissatisfied, and very dissatisfied. For our analysis, we divided these responses into three categories: very satisfied, satisfied, and dissatisfied/very dissatisfied.

Disability was assessed by asking two yes/no questions: “Are you limited in any way in any activities because of a physical, mental, or emotional problem?” and “Do you have a health problem that requires you to use special equipment such as a cane, a wheelchair, a special bed, or a special telephone?”

The BRFSS also asked respondents about their smoking status, physical activity level, consumption of alcohol, and height and weight. Respondents were considered to be current smokers if they had smoked at least 100 cigarettes in their lifetime and reported being smokers at the time of the interview. Respondents were considered to be physically inactive if they had not participated in any leisure-time physical activity or exercise during the past 30 days. Consistent with the guidelines of the U.S. Department of Agriculture, and the U.S. Department of Health and Human Services, heavy drinkers were defined as men who reported drinking more than two drinks per day, and women who reported drinking more than one drink per day [64]. Body mass index (BMI; weight [kg] divided by height [m²]) was determined from self-reported height and weight. Persons were considered obese if their BMI was ≥ 30 kg/m².

Data were available for 337,556 participants in the 50 states, and the District of Columbia, Puerto Rico, and the U.S. Virgin Islands who responded to the social and emotional support question (unweighted gender distributions—males 38.0%, females 62.0%; weighted gender distributions—males 48.2%, females 51.8%). Data were available for 6,750 participants who responded to the social and emotional support question in New York and Hawaii. Prevalence estimates, means, adjusted odds ratios (AOR), and 95% confidence intervals (95% CI) were computed using SUDAAN (Research Triangle, release 9.0.1, Research Triangle Park, NC, 2007) to account for the complex survey design.

Results

Approximately 8.6% (95% CI: 8.4–8.8%) of U.S. adults aged 18 years or older reported that they rarely/never received social and emotional support, and 13.5% (95% CI: 13.3–13.8%) reported sometimes receiving support (Table 1). Persons aged 75 years and older were most likely to report rarely/never receiving social and emotional support (11.5%) than were those younger, as were males (9.5%) compared to females (7.7%), and Hispanics (16.6%) compared to all other racial/ethnic groups. There was an inverse relationship between level of education, and rarely/never receiving social and emotional support. Those previously married (13.9%) and never married (10.1%) were significantly more likely than those currently married (6.4%) to report rarely/never receiving social and emotional support, as were those unable to work (19.7%), unemployed (14.5%), and retired (9.7%) compared to those currently employed (7.2%).

Minnesota, North Dakota, Utah, Vermont, and Kansas had the lowest percentage of adults who report rarely/never receiving social and emotional support (4.2–5.6%), while Puerto Rico, New Jersey, California, Nevada, and the U.S. Virgin Islands had the highest percentage (10.8–12.4%) (Table 2, Fig. 1).

Social and emotional support was associated with impaired mental and physical health domains. Decreased level of social and emotional support was inversely related to mean number of days of poor mental health (2.4 days in the past 30 days among those who always/usually received social and emotional support, 6.2 days in the past 30 days among those who sometimes received social and emotional support, and 7.3 days among those who rarely/never received emotional support), depressive symptoms (2.2, 5.5, and 7.3 days, respectively), and anxiety symptoms (4.3, 8.0, and 9.0 days, respectively), as well as with somatic complaints including poor physical health (3.1, 4.9, and 5.9 days, respectively), sleep insufficiency (8.1, 10.3, and 12.1 days, respectively), pain (2.4, 3.9, and 4.4 days respectively), and activity limitations (1.7, 3.4, and 4.3 days, respectively) (Table 3). A similar pattern was found between decreased social and emotional support, and prevalence of fair/poor general health (12.9%, 25.3%, and 33.9%, respectively), dissatisfaction with life (2.1%, 13.9%, and 24.7%, respectively), and disability (limited due to physical, mental, or emotional problems: 16.1%, 25.1%, and 28.2%, respectively; and health problems that require special equipment: 5.6%, 8.2%, and 10.1%, respectively) (Table 4). As social and emotional support decreased, so did the mean number of days of vitality, particularly between those who always/usually receive social and emotional support, and those who sometimes receive social and emotional support (18.7%, 13.2%, and 13.1%, respectively).

After adjusting for sociodemographic characteristics (age, sex, race/ethnicity, education, marital status, and employment status), those who rarely/never receive social and emotional support (as compared to those who always/usually receive social and emotional support) were 1.6 times more likely to report frequent (≥ 14 days of last 30 days) physical distress, 4.1 times more likely to report frequent mental distress, 2.2 times more likely to report frequent activity limitations, 6.8 times more likely to report frequent depressive symptoms, 4.0 times more likely to report frequent anxiety symptoms, 2.7 times more likely to report insufficient sleep, and 1.8 times more likely to report frequent pain. Conversely, those who always/usually received social and emotional support were 2.5 times more likely than those who rarely/never received social and emotional support to report frequent vitality. Moreover, those who rarely/never received social and emotional support (as compared to those who always/usually received social and emotional support) were 2.1 times more likely to report

Table 1 Level of social and emotional support among adults aged 18 years or older, by selected sociodemographic characteristics, 2005

Characteristics	Social and emotional support		
	Always/usually % (95% CI)	Sometimes % (95% CI)	Rarely/never % (95% CI)
Overall	77.9 (77.6–78.2)	13.5 (13.3–13.8)	8.6 (8.4–8.8)
<i>Age</i>			
18–24 years	77.5 (76.2–78.6)	14.6 (13.6–15.7)	7.9 (7.1–8.8)
25–34 years	78.9 (78.1–79.6)	13.6 (13.0–14.2)	7.6 (7.1–8.1)
35–44 years	77.7 (77.0–78.4)	13.9 (13.4–14.5)	8.4 (7.9–8.9)
45–54 years	77.6 (77.0–78.2)	13.9 (13.4–14.4)	8.6 (8.1–9.0)
55–64 years	78.8 (78.2–79.5)	12.7 (12.2–13.2)	8.5 (8.0–9.0)
65–74 years	78.9 (78.1–79.6)	11.8 (11.2–12.4)	9.3 (8.8–9.9)
75+ years	75.3 (74.4–76.1)	13.2 (12.5–14.0)	11.5 (10.9–12.2)
<i>Sex</i>			
Male	76.7 (76.2–77.2)	13.8 (13.4–14.2)	9.5 (9.2–9.9)
Female	79.1 (78.7–79.4)	13.3 (13.0–13.6)	7.7 (7.4–7.9)
<i>Race/ethnicity</i>			
White non-Hispanic	82.1 (81.8–82.4)	11.8 (11.6–12.0)	6.1 (6.0–6.3)
Black non-Hispanic	67.7 (66.6–68.8)	21.0 (20.1–22.0)	11.3 (10.6–12.0)
Hispanic	67.3 (66.0–68.6)	16.0 (15.0–17.1)	16.6 (15.6–17.7)
Other non-Hispanic ^a	70.4 (68.9–72.0)	16.3 (15.1–17.7)	13.2 (12.2–14.4)
<i>Education</i>			
<High school	60.5 (59.2–61.7)	20.4 (19.4–21.4)	19.2 (18.1–20.2)
High school graduate	74.3 (73.7–74.9)	15.5 (15.0–16.0)	10.2 (9.8–10.6)
>High school	83.4 (83.0–83.7)	11.1 (10.8–11.4)	5.6 (5.4–5.8)
<i>Marital status</i>			
Married	82.8 (82.4–83.1)	10.8 (10.6–11.1)	6.4 (6.2–6.7)
Previously married ^b	67.8 (67.2–68.4)	18.3 (17.8–18.8)	13.9 (13.4–14.5)
Never married ^b	73.0 (72.1–73.8)	17.0 (16.3–17.7)	10.1 (9.5–10.7)
<i>Employment status</i>			
Employed	80.0 (79.6–80.4)	12.8 (12.5–13.2)	7.2 (6.9–7.4)
Unemployed	65.8 (64.1–67.4)	19.8 (18.4–21.2)	14.5 (13.2–15.8)
Retired	78.4 (77.8–79.0)	11.9 (11.4–12.4)	9.7 (9.3–10.1)
Unable to work	57.7 (56.2–59.1)	22.6 (21.4–23.9)	19.7 (18.5–20.9)
Homemaker/student	80.0 (79.1–80.8)	12.8 (12.1–13.6)	7.2 (6.7–7.8)

^a Asian, nonHispanic; Native Hawaiian/Pacific Islander, nonHispanic; American Indian/Alaska Native, nonHispanic; other race, nonHispanic; multirace, non-Hispanic

^b Previously married includes those divorced, widowed, or separated; never married includes those never married, or member of unmarried couple

fair/poor general health, 12.2 times more likely to report being dissatisfied/very dissatisfied with life, and 1.6 times more likely to report limitations due to physical, mental, or emotional problems. Notably, people who reported rarely/never receiving social and emotional support were no more likely than those who always/usually received social and emotional support, to have a health problem that required special equipment.

As the level of social and emotional support decreased, the prevalence of impaired health behaviors (smoking, physical inactivity, and alcohol consumption) and obesity increased (Table 5). Approximately 18.5% of persons who always/usually received social or emotional support smoked, whereas 26.4% of persons who sometimes received support smoked, and 28.8% of those who rarely/never received support smoked. A similar pattern was found for physical inactivity (21.7%, 32.4%, and 41.8%, respectively), heavy drinking (4.9%, 5.7%, and 6.4%, respectively), and obesity (22.9%, 26.9%, and 28.1%, respectively).

After adjusting for sociodemographic characteristics, those who rarely/never received social and emotional support (compared to those who always/

usually received social and emotional support) were 50% more likely to smoke, 80% more likely to be physically inactive, 40% more likely to drink heavily, and 10% more likely to be obese.

Discussion

Over 18 million adults in the United States reported that they rarely/never received social and emotional support; the states/territories with the highest rates being California, Nevada, and the U.S. Virgin Islands. Our results suggest that inadequate social and emotional support is a major barrier to health relevant to the practice of psychiatry and medicine, because it is associated with adverse health behaviors, impaired HRQOL, dissatisfaction with life, and disability. Previous research has examined the relationship between social and emotional support, and HRQOL primarily in persons with particular chronic illnesses, especially HIV [3, 9, 17, 29, 31, 46, 54] and cancer [13, 38, 49], and in subpopulations of the U.S., such as the elderly [30]. However, we found no studies examining the relationship between low levels of social and emo-

Table 2 Prevalence of rarely/never receiving social and emotional support among adults aged 18 years or older, by state, 2005

State	Rarely/never receives social and emotional support % (95% CI)
Alabama	7.4 (6.4–8.5)
Alaska	7.9 (6.5–9.6)
Arizona	9.9 (8.2–12.0)
Arkansas	8.5 (7.5–9.5)
California	11.3 (10.2–12.5)
Colorado	6.0 (5.3–6.8)
Connecticut	8.0 (7.1–8.9)
Delaware	7.3 (6.3–8.5)
District of Columbia	10.3 (8.9–11.9)
Florida	9.2 (8.2–10.3)
Georgia	7.7 (6.7–8.9)
Hawaii	10.1 (9.1–11.3)
Idaho	6.4 (5.4–7.6)
Illinois	9.2 (8.3–10.3)
Indiana	6.6 (5.9–7.5)
Iowa	6.0 (5.2–6.8)
Kansas	5.6 (5.0–6.3)
Kentucky	7.8 (6.9–8.9)
Louisiana	10.3 (9.1–11.7)
Maine	8.1 (7.1–9.3)
Maryland	7.9 (7.1–8.7)
Massachusetts	8.7 (7.9–9.6)
Michigan	7.3 (6.7–7.9)
Minnesota	4.2 (3.4–5.3)
Mississippi	8.5 (7.4–9.7)
Missouri	8.1 (6.6–10.0)
Montana	7.0 (6.2–7.9)
Nebraska	6.8 (6.1–7.6)
Nevada	11.7 (9.9–13.8)
New Hampshire	7.6 (6.7–8.5)
New Jersey	10.9 (10.1–11.7)
New Mexico	8.4 (7.5–9.5)
New York	9.6 (8.6–10.6)
North Carolina	7.4 (6.9–8.0)
North Dakota	5.0 (4.3–5.8)
Ohio	6.8 (5.9–7.8)
Oklahoma	8.4 (7.6–9.4)
Oregon	7.0 (6.5–7.7)
Pennsylvania	7.8 (7.1–8.6)
Puerto Rico	10.8 (9.6–12.1)
Rhode Island	8.9 (7.9–10.1)
South Carolina	7.5 (6.7–8.3)
South Dakota	5.9 (5.1–6.8)
Tennessee	7.8 (6.8–9.0)
Texas	10.6 (9.6–11.8)
Utah	5.2 (4.5–6.0)
Vermont	5.4 (4.7–6.1)
Virgin Islands	12.4 (10.9–14.1)
Virginia	5.9 (5.0–6.9)
Washington	6.4 (6.0–6.9)
West Virginia	7.6 (6.7–8.7)
Wisconsin	7.0 (6.1–8.0)
Wyoming	5.8 (5.1–6.6)

tional support, and poor HRQOL among the general adult U.S. population, particularly after adjusting for sociodemographic characteristics.

Our analysis indicates that decreased social and emotional support is inversely related to mean number of days of poor mental health, depressive symptoms, and anxiety symptoms, as well as with somatic complaints including poor physical health, sleep

Rarely/Never Receive Social and Emotional Support

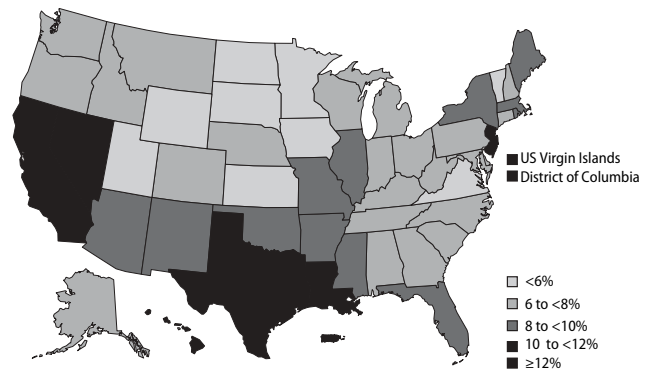


Fig. 1 Rarely/never receive social and emotional support

insufficiency, pain, and activity limitations. Conversely, as social and emotional support decreased, so did the mean number of days of vitality, particularly between those who always/usually receive social and emotional support, and those who sometimes receive social and emotional support. More importantly, these associations were maintained after adjusting for sociodemographic characteristics, and were particularly strong in the mental health domains; persons who rarely/never received social and emotional support were 4.1 times more likely than those who always/usually received support, to have frequent mental distress, 6.8 times more likely to have frequent depressive symptoms, and 4.0 times more likely to have frequent anxiety symptoms. Moreover, while there was a significant association between level of social and emotional support, fair/poor general health, and limitations due to physical, mental, and emotional problems, the association between dissatisfaction with life, and social and emotional support was very striking (persons who rarely/never received social and emotional support were over 12 times more likely than those who always/usually receive social and emotional support, to be dissatisfied/very dissatisfied with their lives).

Similar to the findings of previous research, our results show that, as the level of social and emotional support decreases, the prevalence of adverse health behaviors such as smoking, physical inactivity, heavy drinking, and obesity increases. Other studies have shown that social support is important in achieving beneficial changes in risk factors for disease such as overweight or obesity [66, 68]. Additionally, evidence shows that social support can facilitate physical activity [15, 16, 37] and smoking cessation, and maintenance [39, 45, 47, 55], and social and emotional support is associated with decreased alcohol consumption [55, 61]. Extending these findings, we found that, after adjusting for sociodemographic characteristics, persons who rarely/never received social and emotional support were 80% more likely than those who always/usually received support to be physically

Table 3 Mean number of impaired health-related quality of life days in the past 30 days, and prevalence and adjusted odds of ≥ 14 impaired days in the past 30 days

Characteristics	Social and emotional support		
	Always/usually Mean (95% CI)	Sometimes Mean (95% CI)	Rarely/never Mean (95% CI)
Questions asked in 50 states and DC, the U.S. Virgin Islands, and Puerto Rico			
<i>Physical distress</i>			
Mean (95% CI)	3.1 (3.1–3.2)	4.9 (4.8–5.1)	5.9 (5.6–6.1)
% (95% CI) ≥ 14 days	9.1 (8.9–9.3)	15.4 (14.7–16.1)	19.4 (18.5–20.4)
AOR (95% CI) ^a	Referent	1.5 (1.4–1.6)	1.6 (1.5–1.8)
<i>Mental distress</i>			
Mean (95% CI)	2.4 (2.4–2.5)	6.2 (6.0–6.4)	7.3 (7.0–7.5)
% (95% CI) ≥ 14 days	6.8 (6.6–7.0)	19.9 (19.1–20.6)	25.0 (23.8–26.1)
AOR (95% CI) ^a	Referent	3.0 (2.9–3.2)	4.1 (3.8–4.4)
<i>Activity limitations</i>			
Mean (95% CI)	1.7 (1.6–1.7)	3.4 (3.2–3.5)	4.3 (4.1–4.5)
% (95% CI) ≥ 14 days	5.0 (4.8–5.1)	10.8 (10.2–11.4)	14.5 (13.7–15.3)
AOR (95% CI) ^a	Referent	1.8 (1.7–2.0)	2.2 (2.0–2.4)
Questions asked in New York and Hawaii			
<i>Depressive symptoms</i>			
Mean (95% CI)	2.2 (2.0–2.4)	5.5 (4.7–6.4)	7.3 (5.8–8.7)
% (95% CI) ≥ 14 days	4.6 (3.7–5.5)	15.3 (11.8–19.6)	25.6 (19.9–32.2)
AOR (95% CI) ^a	Referent	3.3 (2.2–4.9)	6.8 (4.4–10.6)
<i>Anxiety symptoms</i>			
Mean (95% CI)	4.3 (4.0–4.6)	8.0 (7.0–9.1)	9.0 (7.3–10.6)
% (95% CI) ≥ 14 days	10.5 (9.2–11.9)	24.0 (19.9–28.8)	30.3 (24.1–37.3)
AOR (95% CI) ^a	Referent	2.7 (2.0–3.6)	4.0 (2.8–5.9)
<i>Insufficient sleep</i>			
Mean (95% CI)	8.1 (7.7–8.6)	10.3 (9.1–11.4)	12.1 (10.3–13.9)
% (95% CI) ≥ 14 days	24.8 (23.0–26.7)	34.2 (29.2–39.5)	43.0 (35.9–50.3)
AOR (95% CI) ^a	Referent	1.7 (1.3–2.2)	2.7 (1.9–3.7)
<i>Pain</i>			
Mean (95% CI)	2.4 (2.2–2.7)	3.9 (3.2–4.7)	4.4 (3.2–5.6)
% (95% CI) ≥ 14 days	7.5 (6.5–8.5)	11.1 (8.6–14.3)	14.6 (10.5–19.9)
AOR (95% CI) ^a	Referent	1.3 (0.9–1.8)	1.8 (1.1–2.9)
<i>Vitality</i>			
Mean (95% CI)	18.7 (18.2–19.1)	13.2 (12.0–14.3)	13.1 (11.5–14.7)
% (95% CI) ≥ 14 days	71.4 (69.4–73.3)	49.0 (43.5–54.4)	49.2 (42.0–56.4)
AOR (95% CI) ^a	2.5 (1.8–3.5)	1.0 (0.7–1.4)	Referent

^a Adjusted by age, sex, race/ethnicity, education, marital status, and employment status

inactive, 50% more likely to smoke, 40% more likely to drink heavily, and 10% more likely to be obese.

Our study has several limitations. Since BRFSS is a telephone survey, it potentially excludes people of low socioeconomic status who would likely report lower levels of social and emotional support. Second, in this investigation, the level of social and emotional support was necessarily determined from one question. Thus, we were unable to distinguish between the “social” and “emotional” components of this construct. Third, five of the HRQOL measures were limited to data from two states; therefore, our results for these measures may not be representative of the entire country. Fourth, people with severely impaired physical or mental health might not have been able to complete the survey, which might alter our estimates, as would the inability of institutionalized or hospitalized persons to participate. Fifth, all data were self-reported, thus, reporting bias (e.g., social desirability, self-serving biases) may also have led us to underestimate the prevalence of inadequate social and emotional support in the population. Finally, although our cross-sectional data support the conclusion that low levels of social and emotional support are associated with impairments in all HRQOL domains

Table 4 Prevalence and adjusted odds ratios of impaired general health, dissatisfaction with life, and disability by level of social and emotional support, 2005

Characteristics	Social and emotional support		
	Always/usually % (95% CI)	Sometimes % (95% CI)	Rarely/never % (95% CI)
Questions asked in 50 states and DC, the U.S. Virgin Islands, and Puerto Rico			
<i>General health (fair/poor)</i>			
% (95% CI)	12.9 (12.7–13.2)	25.3 (24.5–26.2)	33.9 (32.6–35.2)
AOR (95% CI) ^a	Referent	1.8 (1.7–2.0)	2.1 (1.9–2.2)
<i>Dissatisfaction with life (Dissatisfied/ very dissatisfied)</i>			
% (95% CI)	2.1 (2.0–2.2)	13.9 (13.3–14.6)	24.7 (23.6–25.8)
AOR (95% CI) ^a	Referent	6.0 (5.5–6.4)	12.2 (11.2–13.2)
Disability			
<i>Limited due to physical, mental, or emotional problem?</i>			
% (95% CI)	16.1 (15.9–16.4)	25.1 (24.3–25.9)	28.2 (27.1–29.4)
AOR (95% CI) ^a	Referent	1.6 (1.5–1.7)	1.6 (1.5–1.7)
<i>Health problem that requires special equipment?</i>			
% (95% CI)	5.6 (5.4–5.7)	8.2 (7.8–8.7)	10.1 (9.5–10.7)
AOR (95% CI) ^a	Referent	1.2 (1.1–1.3)	1.1 (1.0–1.2)

^a Adjusted by age, sex, race/ethnicity, education, marital status, and employment status

Table 5 Prevalence and adjusted odds ratios of adverse health behavior and obesity by level of social and emotional support, 2005

Characteristics	Always/usually % (95% CI)	Sometimes % (95% CI)	Rarely/never % (95% CI)
<i>Smoking</i>			
% (95% CI)	18.5 (18.2–18.8)	26.4 (25.6–27.3)	28.8 (27.5–30.0)
AOR (95% CI) ^a	Referent	1.3 (1.2–1.4)	1.5 (1.4–1.6)
<i>Physical inactivity</i>			
% (95% CI)	21.7 (21.4–22.0)	32.4 (31.4–33.3)	41.8 (40.5–43.1)
AOR (95% CI) ^a	Referent	1.4 (1.3–1.5)	1.8 (1.7–1.9)
<i>Heavy drinking</i>			
% (95% CI)	4.9 (4.7–5.1)	5.7 (5.1–6.2)	6.4 (5.7–7.2)
AOR (95% CI) ^a	Referent	1.2 (1.0–1.3)	1.4 (1.2–1.6)
<i>Obesity</i>			
% (95% CI)	22.9 (22.6–23.3)	26.9 (26.0–27.8)	28.1 (26.9–29.3)
AOR (95% CI) ^a	Referent	1.1 (1.1–1.2)	1.1 (1.1–1.2)

^a Adjusted by age, sex, race/ethnicity, education, marital status, and employment status

investigated and with adverse health behaviors, we cannot infer causality.

Conclusion

Our research suggests that inadequate social and emotional support is associated with impairments in all domains of HRQOL, and with adverse health behaviors. Thus, assessment of social and emotional support appears to be an important component of psychiatric and medical care. Public health surveillance systems should include questions assessing social support in order to facilitate further examination of the existing associations between social support, HRQOL, and health behaviors. Such research will better identify populations and individuals warranting further assessment and intervention. Moreover, given the numerous, health-related correlates of this construct, psychiatric assessment might benefit from including level of social support available in an individual's life, which likely encompasses a broader domain than household demographics, frequently elicited in initial psychiatric evaluation.

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