Perceived Need for Mental Health Care, Mental Health Service Utilization, and Satisfaction with Care In Elderly People

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Melissa Marie Nelson

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Only half of the estimated 8% of elderly people with a probable diagnosis of depression, anxiety, or psychotic disorder uses mental health care services (Klap, Unroe, & Unützer, 2003). Baby Boomers report higher rates of depression and anxiety than those who are currently elderly (Koenig, George, & Schneider, 1994), so the number of elderly people with mental illness will likely increase as the Baby Boomers age. Elderly people experience symptoms, diagnosis, and treatment of mental illnesses differently than younger people. Nevertheless, most mental health care research has focused on younger people. Learning more about factors that increase or inhibit mental health service utilization or satisfaction with mental health care can improve treatment for elderly people suffering from a mental illness.

Before discussing mental health care, it is necessary to understand the characteristics of mental illness in elderly people. "Mental illness" of elderly people can refer to a wide spectrum of conditions, from dementia to schizophrenia to depression. Within each condition, the severity can range greatly. In the case of cognitive decline, it may range from mild confusion and forgetfulness to full-blown Alzheimer's disease. The severity of depression ranges from a general feeling of being down to major depressive disorder, which affects every day functioning. This study focuses on two common mental illnesses in the elderly: depression and anxiety, from subsyndromal levels to officially diagnosed disorders.

As mentioned above, causes, symptoms, diagnosis, and treatment of mental illness differ between elderly and younger people. For example, depression might be triggered by physical illness or loss of a loved one, events that occur more often in later life. Elderly people often exhibit fewer psychotic symptoms but present more somatic complaints than younger people. When these complaints are combined with presentation of multiple physical comorbidities, many physicians attribute the symptoms of depression or anxiety to a different, physical cause. Elderly people receive the majority of their mental health care from primary care practitioners (PCPs). Many PCPs have little training in geriatric health, so they may not recognize symptoms of a mental illness. If they do recognize the symptoms, they may be unaware of the optimal course of treatment. Additionally, it can take longer to find the appropriate treatment course or to stabilize a condition for an elderly person (Koenig, George, & Schneider, 1994). For all of these reasons, it is difficult to generalize the results of studies on younger people with mental illness to the elderly.

In research on mental health in elderly people, little attention has been paid to determinants of mental health service utilization and satisfaction other than symptomatology and characteristics of the health care system. These factors, however, do not completely explain how utilization or satisfaction varies among patients. For example, of two people with identical depressive symptomatology and physical health profiles, only one might perceive a need for care. Alternatively, even if both perceived a need for care, only one might utilize mental health care. Additionally, people with identical symptomatology who receive care from the same health care provider might not be equally satisfied with the care they receive. Illness behaviors, how people react to symptoms and whether or not they perceive a need for care and seek treatment

(Mechanic, 1978), are important to consider when studying mental health care utilization. People who do not view their symptoms as serious or who do not have positive attitudes about mental health care are unlikely to perceive a need for mental health care. At least among younger people, need for care, whether perceived by an individual or assessed by a professional, is the largest predictor of mental health care utilization (Leaf et al., 1988; Pescosolido & Boyer, 1999).

This study will examine relationships among elderly people's utilization of mental health care, satisfaction with care, perceived need for care, attitudes toward care, social support, and illness characteristics in both primary care and specialty care settings. A better understanding of these factors could help identify barriers to mental health service utilization and correlates of patient satisfaction, and it could aid in the development of treatment plans for elderly people. Mental illnesses are associated with increased mortality and often occur at the same time as physical illnesses in elderly people (Blazer, 2000; Felker, Yazel, & Short, 1996). Removing barriers to utilization will reduce unmet need for mental health care, which often is associated with increased costs of both physical and mental health care (Moak, 2000). Also, improving satisfaction may increase the likelihood someone will continue to seek mental health care when they need it (see Ware & Davies, 1983).

Studies of the relationships between mental health utilization and attitudes rarely focus on or even include elderly people, and when they do, they often focus on a small geographic area, small selection of insurance plans, or one disorder at a time. This study will use data from the National Institute of Mental Health Collaborative Psychiatric

Epidemiology Surveys (NIMH CPES). The sample includes people from ages 65 to 99 with depression, anxiety, and alcoholism (as well as people without mental illness), and it includes people enrolled in Medicare, Medicaid, and private insurance plans. In the next sections, the literature on mental health in the elderly will be reviewed (excluding literature on dementia), the hypotheses drawn from the literature will be presented, and a conceptual model to explain the hypotheses will be described.

LITERATURE REVIEW

In this section, literature pertaining to attitudes toward care and social support, as well as literature on alcohol abuse, severity and concurrence of depression and anxiety, physical comorbidities, and insurance and how all of these concepts relate to perceived need for care, mental health service utilization, and satisfaction with care will be reviewed. While some of these areas have been studied in detail in younger populations, there are far fewer studies of elderly people and mental health.

Before looking at these relationships, it is necessary to understand how depression and anxiety are manifested in older populations. The symptoms, diagnosis, and treatment of depression and anxiety are different for older people than they are for younger people.

Depression

Because of its prevalence and impact on physical health, depression is an important topic in gerontology. The prevalence of major depressive disorder is about 4% in people 65 years and older, but depressive symptoms may be found in up to 20% of elderly people (Dickey & Azeni, 1992; Mecocci, Cherubini, Mariani, Ruggiero, & Senin, 2004).

Depression can range in severity from depressive symptomatology to major depressive disorder. According to the Diagnostic and Statistical Manual (DSM-IV), major depressive disorder includes episodes that consist of five or more of the following symptoms in a two week period (with at least one symptom being depressed mood or anhedonia): depressed mood, anhedonia, weight loss or gain, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue, feelings of worthlessness or inappropriate guilt, poor concentration, or recurrent thoughts of death or suicide (American Psychiatric Association, 1994). Minor depression is not an official DSM-IV diagnosis (it currently is diagnosed as "depressive disorder not otherwise specified"), but criteria put forth for future research on minor depression specify that its diagnosis might include depressed mood or anhedonia and between two and four other symptoms of major depression in a two week period. Minor depression cannot be diagnosed if there is a history of another mood disorder (American Psychiatric Association, 1994). Situational factors, such as bereavement, are responsible for triggering depression in elderly people in many cases (Onrust & Cuijpers, 2006).

In addition to major and minor depression, depressive symptoms can occur on a more chronic basis in dysthymia and may be as severe as major depression. The DSM-IV defines dysthymia as (1) a chronically depressed mood that occurs most of the time for at least two years, and (2) at least two of the following symptoms: abnormal appetite, abnormal sleep pattern, low energy, low self-esteem, poor concentration, and feelings of hopelessness (American Psychiatric Association, 1994). Dysthymia can occur on its own, but it often occurs concurrently with major depression, minor depression, and anxiety (Weissman, Leaf, Bruce, & Florio, 1988). Roughly 2% of women and 1% of men over the age of 65 experience dysthymia, and about 3% of all adults experience it some time during their lives (Weissman, Leaf, Bruce, & Florio, 1988).

Regardless of how depression is defined, prevalence estimates are probably low because depression is under-diagnosed in the elderly. Many elderly people have been brought up to deal with emotional problems on their own and keep symptoms of depression to themselves; some also believe that depression is a normal part of aging (Martin, Fleming, & Evans, 1995; Montano, 1999). If they do seek help for their condition, it is more likely to be from a primary care practitioner than a mental health specialist (Bartels, Horn, Sharkey, & Levine, 1997; Ettner, Hermann, & Tang, 1999). Many who are depressed may complain to their physician of somatic complaints such as fatigue, headaches or stomach problems, but not say they are feeling down or depressed. Even when primary care physicians note that symptoms are of an affective, rather than physical, nature, they might think a patient is distressed about growing old or about emotional losses he/she has suffered (Montano, 1999).

In order to properly diagnose depression in elderly people, health care providers need to use different criteria than they do when diagnosing younger patients. Physiological indicators are not as useful because the same symptoms (such as fatigue or constipation) are also present in elderly people who are not depressed (see Agrell & Dehlin, 1989). Successful screening for depression in the elderly involves the other two categories of depressive symptoms: affective (e.g. anhedonia) and cognitive (e.g. negative thoughts) (Milisen, Braes, Fick, & Foreman, 2006). This can be complicated by the fact that elderly people might present with complaints of somatic and cognitive symptoms more often than affective symptoms because somatic and cognitive symptoms more closely match other conditions with which they are familiar (Zisook, 1996).

Once diagnosed, most elderly people with depression seek treatment from a primary care practitioner who also can care for their comorbid physical conditions. For both younger and older populations, a combination of drugs and psychotherapy can be more beneficial than either treatment on its own in achieving remission or preventing recurrence (Reynolds et al., 1999). Additionally, the American Psychiatric Association (APA) recommends combination therapy in certain cases, especially for patients with personality issues or poor adherence or response to medication or psychotherapy alone (American Psychiatric Association, 2000). Despite this, studies have shown that physicians are more likely to focus on only pharmaceutical treatments for the elderly than they are for younger patients diagnosed with depression (Bartels, Horn, Sharkey, & Levine, 1997).

The selection of appropriate antidepressant medication is especially important for elderly patients. Because many older people take medications for physical health problems, physicians must monitor patients for drug interactions with antidepressants. Antidepressants interact differently with body chemistry as a person ages, causing higher than normal blood levels of drugs and possibly affecting the number of side effects one experiences or sensitivity to a drug (Kairuz, Zolezzi, & Fernando, 2005; Lotrich & Pollock, 2005). Generally, selective serotonin reuptake inhibitors (SSRIs) are safer and better tolerated in elderly people than tricyclic antidepressants or monoamine oxidase inhibitors (Nelson, 2001; Roose & Schatzberg, 2005). Some elderly people, however, are still incorrectly being prescribed benzodiazepines for their depression rather than any type of antidepressant (Bartels, Horn, Sharkey, & Levine, 1997). Benzodiazepines are anxiolytic agents with serious adverse side effects including motor impairment, memory loss, and aggression (Doraiswamy, 2001; Gray, Lai, & Larson, 1999; Wagner et al., 2004).

Even though medication therapy is easier to administer and get reimbursed for in a primary care setting, psychotherapy should be considered for elderly people with depression (see Rost, Smith, Matthews, & Guise, 1994). Speaking to someone about loneliness or stressors such as declines in functioning, or receiving education in coping skills may provide benefits not available through antidepressant medications (Klausner & Alexopoulos, 1999; Stanley, Beck, & Glassco, 1996). Additionally, psychotherapy will not interfere with medications taken for other health conditions as antidepressants will. Cognitive behavioral therapy, problem-solving therapy, and brief psychodynamic therapy all have been found to alleviate symptoms in elderly people with major depression (Arean et al., 1993; Pinquart, Duberstein, & Lyness, 2006; Thompson, Gallagher, & Breckenridge, 1987). It also appears that various psychotherapies (either administered alone or in combination with a medication) may be effective in alleviating symptoms of minor depression and dysthymia in elderly people (Pinquart, Duberstein, & Lyness, 2006; Scogin & McElreath, 1994), but their effectiveness has not been evaluated sufficiently (Ackermann & Williams, 2002) and they are not always better than control therapies (Schulberg, Raue, & Rollman, 2002).

Diagnosing and treating depression properly in elderly people can greatly affect the outcome of a comorbid physical disorder. Comorbid depression leads to longer hospital stays, greater recovery times, increased mortality for patients hospitalized for physical conditions, as well as increased costs from greater medical service utilization (Charlson & Peterson, 2002; Kales & Valenstein, 2002; Katon, Lin, Russo, & Unutzer, 2003; Koenig, Shelp, Goli, Cohen, & Blazer, 1989; Parikh et al., 1990; Tannock & Katona, 1995). It also can lead to greater rates of disability (Krishnan, 2005), and it is a risk factor for suicide attempts. Depression is a common after-effect of serious physical illnesses, such as stroke, as well. In some cases, minor depression is associated with the same amount of physical disability as major depression (Beekman, Deeg, Braam, Smit, & Tilburg, 1997; Wagner et al., 2000), and even depressive symptoms not meeting the criteria for minor depression are associated with poor physical health (Johnson, Weissman, & Klerman, 1992).

Anxiety

While not as common as depression, generalized anxiety disorder (GAD) and subsyndromal GAD are still found in a significant portion of the elderly population. In one community sample, 1.5% of people 65 and older and 3% of younger people had GAD (Dickey & Blumberg, 2002). Generalized anxiety disorder is defined as “excessive anxiety and worry … about a number of events or activities” for at least six months and includes symptoms such as restlessness, fatigue, irritability, difficulties sleeping, poor concentration, and somatic symptoms such as weight change or muscle tension (American Psychiatric Association, 1994; Doraiswamy, 2001; Rickels & Rynn, 2001). Symptoms of GAD fall into three main categories: “excessive physiologic arousal, distorted cognitive processes and poor coping strategies” ("Generalized anxiety disorder", 2000). Subsyndromal GAD does not have an official definition, but people with subsyndromal GAD tend to have the following symptoms more often than people with full GAD: they “worry more days than not”, they have troubles controlling their worrying, and they have clinically significant distress (Diefenbach et al., 2003). The symptoms of GAD can overlap with symptoms of depression, substance abuse, and panic disorder ("Generalized anxiety disorder", 2000). Anxiety in the elderly is usually a continuation of the condition from earlier in life, but it can be triggered in later life by stressful events such as worsening health or the death of a partner (Doraiswamy, 2001).

In younger patients, GAD can be treated with relaxation techniques, biofeedback, cognitive therapy, or psychotropic drugs. The most popular drugs for GAD are benzodiazepines. Even younger people can become dependent on benzodiazepines, and withdrawal from the drug can lead to temporarily increased levels of anxiety. If a benzodiazepine must be used in an elderly person, the best ones to use are those with short half-lives, such as lorazepam and oxazepam (Flint, 2005). Buspirone and antidepressants such as tricyclics or SSRIs also can be used to treat GAD in younger people. While buspirone does not have nearly as many adverse side effects as benzodiazepines, it must be taken multiple times a day, which leads to low adherence to prescriptions (Flint, 2005). Antidepressants work well for people with GAD alone or with a combination of GAD and depression. The antidepressants citalopram and venlafaxine are especially well-suited to elderly people because they have a low tendency for drug-drug interactions (Flint, 2005). Cognitive behavioral therapy and supportive psychotherapy might alleviate symptoms of GAD in elderly people (Ninan, 2001;

Stanley, Beck, & Glassco, 1996), but more studies are needed to assess their effectiveness.

Comorbid anxiety and depression are more common than "pure" anxiety disorders in the elderly (Flint, 2005), and some suggest that anxiety and depression are different facets of the same disease (Schoevers, Deeg, van Tilburg, & Beekman, 2005). In one study, comorbid GAD was found in 30% of elderly patients with major depressive disorder (Lenze et al., 2000). Mixed anxiety and depression, when compared to pure depression, have been related to increased suicidal ideation, worse depression scores, and impaired memory (DeLuca et al., 2005; Jeste, Hays, & Steffens, 2006). Concurrent anxiety and depression are not necessarily associated with increased mortality, and comorbid anxiety symptoms or disorders do not appear to affect the rate of remission or recurrence of depression (Flint & Rifat, 1997; Holwerda et al., 2007; Lenze et al., 2003; Lenze et al., 2000).

GAD excludes worry or anxiety that is focused, as in panic attacks, or that relates to specific situations. Non-GAD anxiety disorders include agoraphobia (fear of panic symptoms, especially in a public place), panic disorder, post-traumatic stress disorder, and social phobia. In a study of community-dwelling people in Canada, social phobia was found among 1% of respondents ages 65-74, and 0.5% of respondents ages 75 and above (Cairney, Corna, Veldhuizen, Herrmann, & Streiner, 2008). Agoraphobia and panic disorder were each found in less than 0.5% of respondents in both age groups (Cairney et al., 2008).

Now that the basic characteristics of depression and anxiety in elderly people have been reviewed, factors that might affect mental health service utilization among people with depression and anxiety can be discussed.

Attitudes toward Care

The presence of symptoms alone is not always enough to make an individual seek mental health care (Mechanic, 1978). Mechanic outlines ten attitudes and perceptions that influence decisions to seek care: recognition of symptoms, perceived seriousness, disruption of normal life activities, frequency or persistence of symptoms, tolerance, knowledge and cultural attitudes, “basic needs that lead to denial”, “needs competing with illness response” (such as familial duties), competing possible explanations for symptoms, and availability of treatment and stigma (p. 269, 1978). For example, some individuals do not seek care because they believe that they should deal with their illness by themselves or that the illness will go away on its own (Wells, Robins, Bushnell, Jarosz, & Oakley-Browne, 1994). People’s knowledge of and cultural attitudes toward mental health care can be large barriers to mental health service utilization. Fear of stigma, negative views of other people with mental illness, negative views of mental health services, and fear of medication side effects all are reasons people do not seek mental health care (Cooper-Patrick et al., 1997; Robb, Haley, Becker, Polivka, & Chwa, 2003; Segal, Coolidge, Mincic, & O'Riley, 2005; Simon, Fleck, Lucas, Bushnell, & Group, 2004; Sirey et al., 2001). Positive attitudes toward mental health have been correlated with increased perceived need for care in one study of non-elderly people in the community (Mojtabai, Olfson, & Mechanic, 2002).

Although it has not been studied in great detail among elderly people or in mental health care settings, there is some evidence that perceptions and attitudes influence satisfaction with care. At least for physical health care, trust or confidence in the health care system predicts satisfaction (LaVeist, Nickerson, & Bowie, 2000; Weiss, 1988). Also, people whose expectations are met during a physician visit are more satisfied than those whose expectations are not met (Campbell, Auerbach, & Kiesler, 2007; Linder-Pelz, 1982). Elderly people who perceive their health status to be better experience greater satisfaction with physical health care (Hall, Milburn, & Epstein, 1993), and people with psychological distress who do not acknowledge problems with their mental health report less satisfaction with their general health care (Greenley, Young, & Schoenherr, 1982).

Social Support

In addition to understanding individual attitudes toward mental health care, it is necessary to understand the context of an individual's social network, as interactions within this network can either encourage or discourage care seeking (Carpentier, Lesage, & White, 1999; Perrucci & Targ, 1982). Social networks can be measured by the number of people they contain, the types of relationships between the people in the network (nurturing, negative, etc.), and the amount of reciprocity that occurs (Eurelings-Bontekoe, Verschuur, & Diekstra, 1996). Social networks can positively or negatively influence an individual's health (House, Landis, & Umberson, 1988). Families or friends may recognize symptoms and encourage an individual to seek care, while others may pretend the symptoms are normal and make excuses for them (Perrucci & Targ, 1982).

When examining the relationship between social networks and treatment utilization, some studies include only the number of people in a network. This, however, is an insufficient measure, because a large number of people may indicate either increased resource availability or increased "interpersonal stress" (Eurelings-Bontekoe, Verschuur, & Diekstra, 1996). For example, people with depression might have a large social network but feel uncomfortable discussing their mental health with members of their network or may feel a need to hide their condition from those closest to them (Cooper-Patrick et al., 1997). According to Bernice Pescosolido's Network Episode Model, the number of relationships in a network provides a measure of the network's potential, but the characteristics of interactions and underlying culture actually influence the tendency to seek health services (Pescosolido, Wright, Alegría, & Vera, 1998). Increased formal health service utilization is related to low network quality and looser knit networks for physical health (Broadhead, Gehlbach, deGruy, & Kaplan, 1989) as well as for mental health care (Horwitz, 1977). Also, in Puerto Rico, poor people who had large social networks with members who were supportive of one another had less formal mental health service utilization (Pescosolido, Wright, Alegría, & Vera, 1998).

Few studies have specifically examined the effect of social networks on elderly people's perceived need for care, mental health service utilization, or satisfaction with mental health care. Less social isolation appears to be related to increased perceived need (Coulton & Frost, 1982; Snider, 1981), but others have found that the mere presence of a social network does not necessarily mean that an elderly person receives assistance when needed (Hogan & Eggebeen, 1995). Little is known about the relationship between quality of social support and perceived need for care in the elderly. Also, there is limited evidence that a greater number of social contacts is related to higher satisfaction with physical health care (Hall, Feldstein, Fretwell, Rowe, & Epstein, 1990), but little is known about the relation of the quantity or quality of social support to satisfaction with mental health care.

Effect of Alcohol Abuse on Mental Health Service Utilization

Besides attitudinal and social influences, comorbid illnesses, including alcohol abuse, might affect the probability of using mental health care services. Before examining how alcohol abuse might be related to perceived need for care and utilization of care, it is useful to examine characteristics of alcohol abuse in the elderly. The development, presentation, and treatment of alcohol abuse and dependence differ between younger and older people.

Alcohol Abuse in the Elderly

Alcohol dependence consists of three or more of the following symptoms in a 12 month period: tolerance, withdrawal, greater consumption than intended, unsuccessful attempts to reduce alcohol consumption, a large amount of time spent getting, using, or recovering from alcohol, decreased occupational or recreational activities because of alcohol use, and continued use despite knowledge that alcohol is affecting health status.

Alcohol abuse occurs when drinking leads to “a failure to fulfill major role obligations at work, school, or home”, when it is done in “physically hazardous” settings, causes legal problems, or is continued despite its effect on social or interpersonal relationships (American Psychiatric Association, 1994).

Because alcoholism lowers life expectancy, it is relatively uncommon for alcohol abuse from earlier in life to persist into older age. Alcohol abuse can begin in older age, and it can be precipitated by situational factors (Schuckit & Pastor, 1978). People may drink more or more often if they have increased free time during the day, or if they are suffering from grief, loneliness, worsening health, chronic pain, or if they have a personal or family history of substance abuse (Letizia & Reinbolz, 2005; McGrath, Crome, & Crome, 2005; Oslin, 2004). In addition to situational factors, as people age, they become more sensitive to alcohol. Elderly people have a lower volume of total body fluid, so alcohol reaches a higher concentration more quickly than it does in younger people (Letizia & Reinbolz, 2005; Oslin, 2004). Additionally, metabolism of alcohol slows as one ages (Letizia & Reinbolz, 2005). The interaction of alcohol with prescription and non-prescription medicines also raises the susceptibility of elderly people to negative effects of alcohol.

In order to recognize alcohol abuse or dependence in elderly people, clinicians must consider different factors than they would in younger people. Physicians might miss a diagnosis of alcoholism in an older patient because they regard it as primarily a problem for younger people or because they do not want to embarrass or chide an older patient for problems with alcohol (McGrath, Crome, & Crome, 2005; Sherin, Piotrowski, Panek, & Doot, 1982). Also, younger people with alcohol problems are often identified by their families or friends. If an elderly person does not have a large social network, however, his/her alcohol problem might go unnoticed for a longer time (McGrath, Crome, & Crome, 2005). Additionally, the DSM diagnostic criteria for alcohol abuse include the presence of legal and occupational problems that do not always apply to older people (Letizia & Reinbolz, 2005). Instead, it is more common for an elderly person to "present with depression, unkempt appearance, and self neglect, which may result in poor oral intake, malnutrition, and weight loss" (McGrath, Crome, & Crome, 2005). Clinicians also must recognize that elderly people do not need to drink as much as younger people in order to suffer from alcohol abuse or dependence (Curtis, Geller, Stokes, Levine, & Moore, 1989; Schuckit & Pastor, 1978).

Once alcohol abuse or dependence is recognized, the treatment setting differs for older and younger people. Very few elderly people go to specific substance abuse treatment programs; they are more likely to receive treatment from a primary care practitioner like they do for depression and anxiety. There is evidence that elderly people are at least as responsive to alcohol treatment as younger people, if not more responsive (Lemke & Moos, 2003; Satre, Mertens, Arean, & Weisner, 2003; Wiens, Menustik, Miller, & Schmitz, 1982-1983). Unfortunately, elderly people are not as likely to receive treatment even if they are diagnosed with alcohol abuse or dependence (Curtis et al., 1989).

As in younger people, alcohol abuse and dependence have deleterious effects on the physical and mental health of elderly people. These effects, which include Wernicke-

Korsakoff syndrome, liver disease, pancreatitis, polyneuropathy, hypertension, falls, and depression, can interact with other non-alcohol related diseases in an elderly person and cause further problems (Gambert & Katsoyannis, 1995). Alcohol abuse also can lead to malnutrition and electrolyte disturbance, to which elderly people are particularly susceptible (Gambert & Katsoyannis, 1995).

Concurrent Alcohol Abuse and Mental Health Service Utilization

Now that the general characteristics of alcohol abuse have been defined, it is easier to evaluate the literature concerning alcohol abuse's relationship to health service utilization and perceived need for care. Most studies of concurrent alcohol abuse and mental illness focus on the effect of a mental illness on seeking treatment for alcohol abuse, not the effect of concurrent alcohol abuse on seeking treatment for a mental illness (De Bernardo, Newcomb, Toth, Richey, & Mendoza, 2002; Proudfoot & Teesson, 2002). Evidence suggests that alcohol abuse and the probability of mental health service utilization are related in non-elderly populations (Bland, Newman, & Orn, 1997; Wu, Kouzis, & Leaf, 1999). Comorbid alcohol abuse or dependence appear to increase the likelihood that those with mental illnesses will seek both mental and physical health care (Bland, Newman, & Orn, 1997; Helzer & Pryzbeck, 1988). However, people with only one or two symptoms of alcohol abuse in addition to a mental illness such as GAD are less likely to seek care (for mental health or substance abuse problems) than someone with no alcohol abuse symptoms (Wu, Kouzis, & Leaf, 1999). These relationships, however, are not found consistently (Bijl & Ravelli, 2000).

Concurrent alcohol abuse may affect perceived need for mental health care, but very few studies have examined this relationship. The effect of alcohol abuse might differ with the type of mental illness one is experiencing. Mojtabai et al. (2002) found that concurrent alcohol abuse decreased perception of need in people with mood disorders but that it increased perception of need for those who had anxiety (compared to either disorder by itself).

Despite the importance of understanding alcohol abuse's effect on elderly people, few studies of alcohol abuse and mental health care include elderly people and many exclude them entirely (see Bland, Newman, & Orn, 1997). Because elderly people are more sensitive to the effects of alcohol and are likely to be exposed to interactions between alcohol and prescription drugs, relationships between comorbid alcohol abuse and mental health care utilization and perceived need for care should be examined in this population.

Severity and Concurrence of Depression and Anxiety

Effect of Concurrent Depression and Anxiety and Severity on Mental Health Service Utilization

While relatively little literature is available on the relationship between concurrent depression and anxiety and service utilization even in younger populations, it appears that concurrent mental illnesses are correlated with increased service utilization. In a sample of non-elderly community-dwelling people in the Netherlands, Bijl and Ravelli found that people with more than one psychiatric disorder (including mood, anxiety, substance abuse, and eating disorders, as well as schizophrenia) in the past 12 months used significantly more inpatient and outpatient mental health care than those who had only one psychiatric disorder (2000). A study of Finnish residents over the age of 30 found that comorbid anxiety and depression were associated with greater service use than either disorder alone (Hämäläinen, Isometsä, Sihvo, Pirkola, & Kiviruusu, 2007). Perceived need for care appears to be greater in people experiencing concurrent depression and anxiety than in those with either depression or anxiety alone (Meadows et al., 2002; Mojtabai, Olfson, & Mechanic, 2002).

It also appears that increased severity of depression and anxiety is related to a greater probability of mental health service utilization. Worse general mental health is related to increased mental health care utilization (Horgan, 1986; ten Have, Vollebergh, Bijl, & de Graaf, 2001). Additionally, younger people with major depression are more likely to use mental health care than those with dysthymia (Bijl & Ravelli, 2000). There is less literature on this subject specific to elderly people, but Unützer et al. did find that elderly women in one managed care organization were more likely to receive depression treatment (antidepressant use or inpatient or outpatient service utilization) when they had more severe symptoms (2000). Perceived need appears to increase with greater impairment in elderly people (Coulton & Frost, 1982), but more studies are needed to better understand the relationship.

There is some evidence that people with symptoms of anxiety and depression are more likely to be dissatisfied with the medical care they have received than people without these symptoms (Greenley, Young, & Schoenherr, 1982). Also, people with chronic mental health needs are more likely to be dissatisfied with care than those whose needs are met more quickly (Lehman & Zastowny, 1983). In one study of younger patients with psychosis, those with higher education, more contact with friends, greater duration of untreated psychosis, negative symptomatology, and hopelessness reported less satisfaction with their initial mental health visit (Mattson et al., 2005). The relationship between diagnosis and severity of symptomatology and satisfaction with care has not been studied in great detail in elderly people.

Also, the relationship between subsyndromal depression and anxiety and mental health outcomes has not been studied in great detail. Subsyndromal conditions such as minor depression and subsyndromal GAD are especially important to study in the elderly. Even though the prevalence of conditions meeting DSM criteria for diagnosis is lower in elderly people than in younger people, many still experience clinically significant depressive or anxiety symptoms. The effects of these subsyndromal conditions on mental health care utilization are not well understood.

Physical Comorbidities and Utilization

Besides the effects of severity and comorbid mental illness, physical comorbidity also may be related to mental health utilization, perceived need for care, and satisfaction. While it is well-established that greater physical comorbidity or worse physical functioning predicts increased health care utilization for a physical condition (Kurtz, Kurtz, Given, & Given, 2005; Parkerson, Broadhead, & Tse, 1995), the relationship between physical health and *mental* health care utilization for people with depression or anxiety is less clear. Elderly people often suffer from a comorbid chronic physical condition such as heart disease or diabetes at the same time as their mental illness (Blazer, 2000), which might change the amount of mental health care they seek or receive.

The little extant research on this topic suggests that the presence of a physical comorbidity increases the probability of mental health service utilization for both younger and older people with a mental illness. Worse functioning on general measures of physical health and disability predicts mental health service utilization (Carr et al., 2003; Horgan, 1986; Komiti, Judd, & Jackson, 2006), but the relationship between specific physical comorbidities and utilization has not been studied in as much detail. In one study, elderly people in one managed care organization who had a physical ailment in addition to depression were more likely to receive treatment for depression (Unützer et al., 2000).

Worse physical health also appears to increase perception of need for mental health care (Mojtabai, Olfson, & Mechanic, 2002; Rabinowitz, Gross, & Feldman, 1999). Worse physical health is related to less satisfaction with physical health care (Hall, Feldstein, Fretwell, Rowe, & Epstein, 1990), but its relationship to satisfaction with mental health care has not been studied in great detail. More studies that examine the effect of physical comorbidities on elderly people's mental health service utilization, perceived need, and satisfaction, especially in a sample representative of several different insurance plans, are needed.

Insurance and Mental Health Service Utilization

While attitudes, social support, concurrent alcohol abuse, concurrent depression and anxiety, severity of depression and anxiety, and physical comorbidities are likely to affect patterns of perceived need, mental health service utilization, and satisfaction with care for elderly people, insurance coverage for mental health treatment also may impact utilization and satisfaction. After describing payment systems for mental health care, the effects of managed care on mental health care utilization and satisfaction will be discussed.

Payment for Mental Health Care for Elderly People

Elderly people can receive mental health benefits through Medicare, Medicaid, or supplemental plans. Medicare is the first payer for mental health benefits of elderly people. This can be supplemented by Medicaid, Medigap, or other private plans purchased individually or through an employer. Medicare provides less coverage for mental than for physical health services. While there is no lifetime limit on inpatient care in a general hospital, Medicare Part A limits inpatient stays in psychiatric hospitals to 190 days in a lifetime. Medicare Part B covers both inpatient and outpatient mental health services (including psychotherapy) by doctors, clinical psychologists, clinical social workers, clinical nurse specialists, nurse practitioners, and physician's assistants, as well as partial hospitalization (which is more structured than outpatient treatment but does not require overnight stays). Under Medicare, there is a $131 deductible for both physical and mental health outpatient visits, but coinsurance is 50% for mental health visits and only 20% for physical health visits. For both physical and mental health care provided in a general hospital, Medicare charges a $992 deductible for every benefit period, and coinsurance is charged after 60 days in the hospital. Recipients also can enroll in Medicare managed care programs. These plans must provide at least the minimum amount of care provided under fee for service Medicare, but they might have different coinsurance rates and deductibles. The new Medicare prescription drug benefit (Part D) helps cover the costs of antipsychotics, antidepressants, and anxiolytic agents, as well as other prescription medications for elderly people. Benzodiazepines and barbiturates are not included under standard coverage.

Medicaid covers certain out of pocket Medicare costs for beneficiaries meeting income limits. Qualified Medicaid Beneficiaries (QMBs) receive payment for Medicare premiums, deductibles, and coinsurance if they are below the federal poverty limit and have assets below a state-defined level. Specified Low-income Medicaid Beneficiaries (SLMBs) have higher income limits than QMBs, and Medicaid covers their Medicare Part B premiums. Medicaid coverage of mental health care providers varies by state. All states must include the services of a clinical psychologist and a clinical social worker, but other psychologist and psychological nursing facility services are optional.

In addition to Medicare and Medicaid, elderly people can receive mental health care through a private insurance plan provided by an employer or through Medigap. Medigap supplemental policies are available to Medicare fee for service enrollees. There are 10 classes of standard Medigap supplemental policies. All pay the 50% coinsurance normally charged to Medicare recipients for outpatient mental health care, and three also pay for the Part B deductible. All of the plans but one pay for general and psychiatric hospital deductibles.

A large portion of the younger population is uninsured, which could affect the likelihood of mental health service utilization. While many people carry insurance through their employers or through individual policies, over 45 million non-elderly Americans do not have health insurance (Kaiser Commission on Medicaid and the Uninsured, 2005).

Effect of Managed Care on Mental Health Service Utilization

All of the types of insurance just described include a managed care option. Ideally, managed care contains health care costs, distributes personnel and resources efficiently, and improves quality of care (Scheid, 2003; Wells, Astrachan, Tischler, & Unutzer, 1995). Companies try to achieve these goals with utilization review (concurrent review and prior authorization for care), incentives to reduce unnecessary care, gatekeepers, and treatment guidelines (Mechanic, Schlesinger, & McAlpine, 1995; Wells, Astrachan, Tischler, & Unutzer, 1995). While some fear that capitated payments to providers might influence them to provide suboptimal care (Mechanic, Schlesinger, & McAlpine, 1995), the quality of care provided by managed care and fee for service plans is generally similar (Luft, 1998). Managed care plans do often exhibit cost savings over fee for service plans. For physical care, this is usually achieved by encouraging shorter or less intensive treatments and by substituting less costly outpatient care for inpatient procedures (Mechanic, Schlesinger, & McAlpine, 1995).

Under managed care, mental health treatment is often covered through carved out behavioral health organizations. Instead of providing mental health benefits as part of a package of total health care coverage, purchasers of health care (such as Medicaid) or insurance plans can contract with a separate mental health organization to provide benefits. These carve-outs operate as distinct entities; they have their own networks of providers, benefit levels, utilization management, and quality improvement programs (Frank & Garfield, 2006; Garnick et al., 2001). In behavioral carve-out plans with younger enrollees, costs are reduced, lengths of hospital stays are shorter, visits to physicians are less frequent, and the incidence of psychosocial therapy is lower than in plans that are not carved out (Busch, Frank, & Lehman, 2004; Goldman, McCulloch, & Sturm, 1998; Ma & McGuire, 1998; Merrick, 1998; West, Pingitore, & Zarin, 2002). While a greater percentage of enrollees in carve-outs receive outpatient mental health care than enrollees in integrated plans, there are fewer visits per year in carve-outs (Goldman, McCulloch, & Sturm, 1998).

The effect of carve outs on mental health care utilization by elderly people has not been studied in great detail. Elderly people who suffer from mental illness are more likely to have a comorbid physical condition than younger people and are more likely to seek mental health care from their primary care provider, so the effects of receiving mental health care from a separate managed care organization may differ for groups of different ages.

While enrollment in Medicare managed care or behavioral health carve-outs might impact a person’s utilization of mental health services or satisfaction with care, this will not be addressed in this study because the dataset does not include detailed insurance enrollment information.

Other Barriers to Mental Health Service Utilization

A number of other factors can influence whether or not a person receives mental health care. Unavailability of mental health care providers can reduce the likelihood of receiving treatment (McCarthy & Blow, 2004; Wei, Sambamoorthi, Olfson, Walkup, & Crystal, 2005). Other reasons for not seeking care include concerns about cost or insurance coverage (Robb, Haley, Becker, Polivka, & Chwa, 2003; Simon, Fleck, Lucas, Bushnell, & Group, 2004; Wells, Robins, Bushnell, Jarosz, & Oakley-Browne, 1994).

People who are older and married or widowed are less likely to use physical and/or mental health care (Coulton & Frost, 1982; Fox, 1984; Leaf et al., 1988). While people receiving mental health care from primary care practitioners and specialists seem to have similar symptomatology and disease profiles, Caucasians, younger people, and those with higher socioeconomic status (even after controlling for insurance status) are more likely to receive mental health services from a specialist (Cooper-Patrick, Crum, & Ford, 1994; Wells, Manning, Duan, Newhouse, & Ware, 1986). Women also are more likely to use mental health services (Wells, Manning, Duan, Newhouse, & Ware, 1986). People of African or Afro-Caribbean descent contact more non-specialist providers before receiving specialty care, and people of South Asian descent are the least likely to be referred to a specialist (Bhui et al., 2003). African-Americans also have a tendency to seek help from within their social networks in place of or in addition to seeking help from professionals (Neighbors & Jackson, 1984).

Perceived Need for Care and Mental Health Service Utilization

Some evidence suggests that perceived need is greater among younger people (Edlund, Unützer, & Curran, 2006; Klap, Unroe, & Unutzer, 2003; Meadows et al., 2002; Mojtabai, Olfson, & Mechanic, 2002), but more research on predictors of perceived need in the elderly is needed. The existing literature either excludes elderly people (Mojtabai, Olfson, & Mechanic, 2002), was conducted in other countries, where factors influencing need and utilization might be different (Meadows et al., 2002; Rabinowitz, Gross, & Feldman, 1999), or does not account for the impact of other attitudes toward care (Klap, Unroe, & Unutzer, 2003). Additionally, some studies define perceived need by whether or not a person made a mental health care visit (Mojtabai, Olfson, & Mechanic, 2002; Rabinowitz, Gross, & Feldman, 1999). Not everyone who receives mental health care may perceive a need for care; family members, friends, or employers may demand that a person utilize mental health care services (Edlund, Unützer, & Curran, 2006).

Perceiving a need for mental health care is an important step in deciding whether or not to seek treatment (Mechanic, 1978; Mojtabai, Olfson, & Mechanic, 2002) and it might influence levels of distress experienced even if one does not meet diagnostic criteria for a disorder (Sareen, Cox, Afifi, Clara, & Yu, 2005). Perceived need for care appears to increase the probability that one will utilize mental health care services in younger people (Brook, Klap, Liao, & Wells, 2006; Edlund, Unützer, & Curran, 2006), and this relationship also has been seen in a couple of studies of elderly people (Coulton & Frost, 1982; Klap, Unroe, & Unutzer, 2003), but little is known about how attitudes toward care relate to perceived need. More studies are needed that look at relationships between perceived need for mental health services and utilization of care by elderly people.

Satisfaction with Mental Health Care

Although satisfaction with care depends on characteristics of service delivery, such as availability of services or the conduct of the health care provider (Wressle et al., 2006; Zastowny, Roghmann, & Cafferata, 1989), patient attitudes also can influence satisfaction (Campbell, Auerbach, & Kiesler, 2007; Hall, Milburn, & Epstein, 1993; LaVeist, Nickerson, & Bowie, 2000; Linder-Pelz, 1982; Weiss, 1988). At least in younger people, satisfaction with mental health care increases when a person perceives they need help (see Greenley, Young, & Schoenherr, 1982). These relationships, however, have all but been ignored in elderly populations.

It is important to understand the predictors of satisfaction with mental health care received by elderly people, because satisfaction might influence the probability of future utilization of health care services (Linn, Linn, & Stein, 1982; Ware & Davies, 1983). Also, because there is not one single best treatment for depression, satisfaction with a particular treatment or provider (rather than objective medical effectiveness) might influence adherence to a treatment regimen and can provide a measure of the quality of care received (Cooper-Patrick et al., 1997; Shipley, Hilborn, Hansell, Tyrer, & Tyrer, 2000).

Research Questions

Attitudes toward mental illness and treatment, social support, and illness characteristics appear to affect perceived need for care, utilization of mental health care, and satisfaction with care in younger populations, but corresponding research in the elderly is weak. The relationships among perceived need, utilization, and satisfaction with mental health care in elderly people also are not well-understood. Few studies examine these relationships in elderly populations, and out of those that do, only one condition or one health plan usually is studied at a time. In this study, the relationships among attitudes, social support, illness and insurance characteristics, perceived need, mental health service utilization, and satisfaction with care will be examined in elderly people with MDD, minor depression, dysthymia, GAD, subsyndromal GAD, and other anxiety disorders. The following research questions will be studied. Hypotheses derived from these research questions will be discussed in further detail in the conceptual model.

1. What factors determine perceived need for mental health care in elderly people?
2. What factors determine whether an elderly person utilizes mental health care?
3. Among elderly people who utilize mental health services, how do attitudes, social support, and perceived need impact satisfaction with mental health care?

CONCEPTUAL MODEL

This model includes factors that might be related to perceived need for, utilization of, and satisfaction with mental health care among elderly people. In order to use care, most people need to perceive a need for care (although care also can be involuntary). Symptomatology alone does not explain whether someone will perceive a need; attitudes and social support also can impact need. Similarly, not everyone who perceives a need for care uses care; symptomatology, attitudes, and social support are related to utilization. All of these factors can help explain satisfaction with care as well. The relationships of these factors are diagrammed in Figure 1. All boxes refer to attributes or experiences of an elderly individual (i.e., elderly people's attitudes toward their own care are being studied). Sociodemographic control variables also influence the boxes on the left hand side of the diagram. Many of the relationships in this diagram could go in the opposite direction of the arrows (i.e. mental health service utilization should ideally influence illness characteristics, and satisfaction can influence future utilization of care), but one direction is presented for simplicity. This study aims to study associations, not causal pathways.

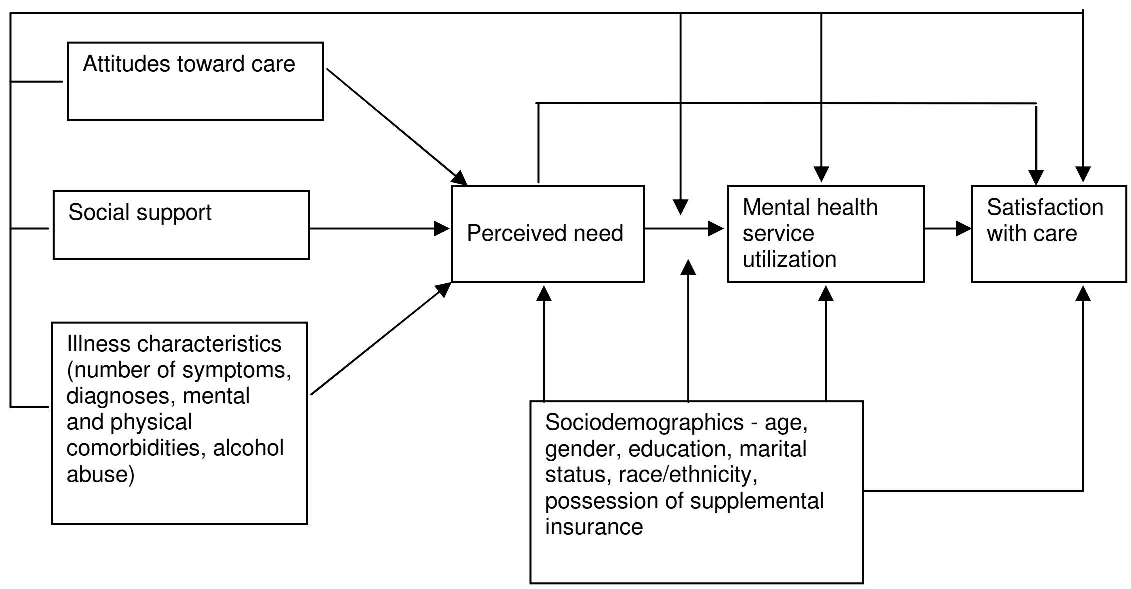

Figure 1. Conceptual Model.

Research Questions and Hypotheses

1. What factors determine perceived need for mental health care in elderly people?

Little is known about the impact of attitudes toward care on perceived need, but those with fewer fears of or negative attitudes toward mental health care may be more likely to admit a perceived need for mental health care. At least one study has shown that positive attitudes toward mental health are correlated with greater perceived need in younger populations (Mojtabai, Olfson, & Mechanic, 2002).

People with more supportive networks may have decreased perceived need, because those in close networks might feel their needs are met from within the network. Previous studies indicate that people with larger social networks perceive a greater need for care (Coulton & Frost, 1982; Snider, 1981), but little is known about the relationship between quality of a social network and perceived need. In younger populations, better quality social support is related to less utilization (Broadhead, Gehlbach, deGruy, & Kaplan, 1989; Horwitz, 1977), so a similar relationship might be seen between social support and perceived need.

Comorbid anxiety and depression appear to be associated with increased perceived need in younger people (Meadows et al., 2002; Mojtabai, Olfson, & Mechanic, 2002). Since having comorbid depression and anxiety could be considered to be worse than having either condition by itself, worse symptom severity also might be associated with perceived need. Some evidence suggests that worse physical health among people experiencing mental illness symptoms is associated with greater perceived need for mental health care (Mojtabai, Olfson, & Mechanic, 2002; Rabinowitz, Gross, & Feldman, 1999). These studies included receipt of treatment in their measure of perceived need for care, but it is expected that a similar relationship will be found when perceived need is examined alone.

Very little is known about the relationship of concurrent alcohol abuse symptoms on the perception of need for mental health treatment. People with some alcohol abuse symptoms who do not meet criteria for dependence may use alcohol to self-medicate. If alcohol is ameliorating the symptoms of anxiety or depression, one might not believe they require treatment. Once a person is dependent on alcohol, however, self-medication may not be as effective and may influence one to perceive a need for mental health treatment (see Wu, Kouzis, & Leaf, 1999). Also, once an elderly person exhibits a large number of alcohol abuse symptoms, members of his/her social network might encourage him/her to seek formal care.

From this literature, Hypothesis A is:

> Controlling for illness severity, increased perceived need for mental health care will be associated with positive attitudes toward mental health care, less supportive social networks, and high numbers of alcohol abuse symptoms.

2. What factors determine whether an elderly person utilizes mental health care?

Increased severity of depression and anxiety or comorbid depression and anxiety are both associated with increased probability of mental health service utilization in younger populations (Bijl & Ravelli, 2000; Horgan, 1986; ten Have, Vollebergh, Bijl, & de Graaf, 2001), and it appears that the relationship is the same among elderly people (Unützer et al., 2000).

While it is established that increased severity of *mental* illness is associated with increased *physical* health care utilization (Bijl & Ravelli, 2000; Horgan, 1986; Koenig & Kuchibhatla, 1999; Koenig, Shelp, Goli, Cohen, & Blazer, 1989), less is known about the relationship between comorbid *physical* conditions and *mental* health care utilization. Some evidence suggests that patients with a mental illness who also have a physical ailment are more likely to receive treatment for their mental illness (Unützer et al., 2000). Elderly people usually receive their mental health treatment from a primary care provider (Ettner, Hermann, & Tang, 1999) and may not want to seek treatment specifically for a mental illness. It is likely that those who seek treatment for a physical condition but also have a comorbid mental illness will be more likely to receive mental health care than those who do not have a physical condition. This is simply because a physician might notice mental health symptoms in someone who is seeking treatment for a physical condition, and he might provide care himself or refer the patient to a mental health specialist. Thus, the probability of receiving any mental health care should increase for people with comorbid physical conditions, but the number of mental health care visits may or may not be affected.

People with more comorbid conditions tend to use more health services overall than those with a single health problem (Kurtz, Kurtz, Given, & Given, 2005). In younger populations, people with comorbid alcohol abuse and mental illness are more likely to use health services than those with mental illness alone (Bland, Newman, & Orn, 1997; Wu, Kouzis, & Leaf, 1999), but the trend is not apparent in every study (Bijl & Ravelli, 2000). Some evidence suggests that young people with mental illness who exhibit some, but not all, of the characteristics of alcohol abuse actually use fewer health services than those with just a mental illness (Wu, Kouzis, & Leaf, 1999). This may be a result of self-medication with alcohol, either deliberately or from a lack of awareness of a mental health issue. This is particularly important for elderly people who might think their symptoms are part of normal aging and are something to be dealt with on their own (Martin, Fleming, & Evans, 1995). Self-medication may decrease service utilization until the alcohol abuse becomes worse and drives a person to seek care.

From the results of these studies in younger populations, the relationship between alcohol abuse symptoms and mental health service utilization might be quadratic in nature. That is, mental health service utilization might decrease as the number of alcohol abuse symptoms goes from zero to some threshold, and then it might increase again as the number of alcohol abuse symptoms increases past the threshold.

Those with positive attitudes toward care will probably be more likely to use care, because they are not afraid of entering treatment. Additionally, younger people with more social support are less likely to use services (Broadhead, Gehlbach, deGruy, & Kaplan, 1989; Horwitz, 1977). Elderly people with more supportive social networks may feel that their care needs are met by discussing problems with family members or friends, and they may delay seeking care from a professional.

Especially in younger people, perceived need for mental health or substance abuse treatment predicts the likelihood of receiving mental health care (Brook, Klap, Liao, & Wells, 2006; Edlund, Unützer, & Curran, 2006). Although fewer elderly people perceive a need for treatment than younger people (Edlund, Unützer, & Curran, 2006; Meadows et al., 2002; Mojtabai, Olfson, & Mechanic, 2002), perceived need should still influence the likelihood of receiving treatment.

From this literature, Hypothesis B is:

> A greater probability of using any mental health care services (as well as a greater number of visits) will be associated with greater mental illness severity, more physical health problems, high numbers of alcohol abuse symptoms, less supportive social networks, positive attitudes toward mental health care, and greater perceived need for care.

3. Among elderly people who utilize mental health services, how do attitudes, social support, and perceived need impact satisfaction with mental health care?

While characteristics of service delivery are important determinants of satisfaction with care, they do not completely explain variations in satisfaction between patients. At least among younger people in physical health care, satisfaction is affected by perceptions of expected care and perceived seriousness of symptoms (Campbell, Auerbach, & Kiesler, 2007; LaVeist, Nickerson, & Bowie, 2000; Weiss, 1988), and perceived seriousness has been related to satisfaction in at least one study involving elderly people (Hall, Milburn, & Epstein, 1993). There is also some evidence that greater social support is related to greater satisfaction with physical health care (Hall, Feldstein, Fretwell, Rowe, & Epstein, 1990). It is likely that these same relationships will be seen in mental health settings, controlling for health status.

From this literature, Hypothesis C is:

> Controlling for illness severity, satisfaction with mental health care will be greater for those who perceive a need for care, have positive attitudes toward care, or who have more positive social support.

METHODS

Source

For this study, data from the Collaborative Psychiatric Epidemiology Surveys (CPES) were used. The CPES merges data from three nationally representative surveys regarding mental health symptoms and formal and informal health services utilization among noninstitutionalized adults in the 48 contiguous states. The three studies included many of the same questions and used similar sampling frames, so they could be merged. The studies included are: the National Comorbidity Survey Replication (NCS-R), the National Survey of American Life (NSAL), and the National Latino and Asian American Study (NLAAS). All three of these studies were carried out primarily in respondents' homes, and a few surveys were conducted via telephone. Surveys were carried out in 252 different geographic areas. Samples were obtained via four stages: "primary stage sampling of U.S. Metropolitan Statistical Areas (MSAs) and counties, followed by a second stage sampling of area segments, a third stage sampling of housing units within the selected area segments, and concluding with the random selection of eligible respondents from the sample housing units… [The first sampling stage included] MSAs, single counties, or … grouping[s] of geographically contiguous counties with small populations" (Heeringa et al., 2004, p. 222). One adult was chosen at random out of eligible adults in each household as a respondent for the surveys. In 20% of the NCS-R households, a second adult from a household also was interviewed. Further information about sampling is provided elsewhere (Heeringa et al., 2004). The merged data include

20,013 adult respondents, 2,626 of whom are 65 years of age or older. Only variables that were used in all surveys or that are very similar between surveys were used in the multivariate analyses. NCS-R respondents who did not respond to both parts of the survey were not included in the analysis. The final sample size was 1,874 people 65 years of age or older.

National Comorbidity Survey Replication (NCS-R)

The NCS-R expands on the assessment of mental health conditions in the United States that was begun with the original National Comorbidity Survey (NCS). None of the respondents from the first wave of the NCS are included in the NCS-R. The NCS-R took place between 2001 and 2003 and contacted 11,222 households out of the 13,054 selected for the study. Out of the households contacted, the response rates were 70.9% for people in households with one eligible adult respondent and 80.4% for people in households with two eligible respondents. Data were weighted to adjust for differences between respondents and non-respondents (Kessler et al., 2004).

The core questionnaire (Part 1) was answered by 9,282 respondents, and it included questions to determine diagnoses for common mental disorders according to the DSM-IV as well as corresponding informal and formal health services utilization. Part 2 of the questionnaire, which included questions about social support, risk factors for disorders, and diagnostic information on additional disorders (such as Oppositional Disorder and Conduct Disorder), was answered by 5,692 of these respondents. All Part 1 respondents who reported a mental illness at some time in their life, had sought treatment for mental illness symptoms that met subthreshold diagnostic criteria, or who had attempted or planned suicide were asked the questions in Part 2. Additionally, a probability sample of 59% of those who reported subthreshold symptoms for a mental illness, who had ever sought care for any emotional or substance abuse problem, who had used any psychotropic medications in the past year, or who had thoughts of suicide were administered Part 2. A probability sample of a quarter of the remaining Part 1 respondents also were administered Part 2 (Kessler et al., 2004). Only those who answered at least some of the questions in Part 2 were included in this study; 709 were 65 years of age or older (see Table 1).

Table 1. Number of respondents in CPES sample

	Survey		
	NCS-R	**NLAAS**	**NSAL**
Years of data collection	2001-2003	2001-2003	2002-2003
Response rates	70.9% (1 eligible respondent/household) 80.4% (2 eligible respondents/household)	70.9% African-American 93.9% Afro-Caribbean 69.7% Non-Latino White	73.2%
Total number of respondents	5,692 (Parts 1 and 2)	6,199	4,864
Total number of respondents 65 years of age or older	709	770	395

National Survey of American Life (NSAL)

The NSAL was originally designed to examine differences in mental disorders between different ethnic groups and sampled African Americans with and without a Caribbean background as well as Caucasian people. In addition to a national sample, areas with higher numbers of Afro-Caribbean residents were oversampled. The response rates were 70.9% for African Americans, 93.9% for Afro-Caribbean people, and 69.7%

for non-Hispanic white people (Heeringa et al., 2004). Between 2001 and 2003, 6,199 respondents completed interviews; 770 were 65 years of age or older.

National Latino and Asian American Study (NLAAS)

The NLAAS surveyed Latinos and Asian Americans and looked at differences in mental disorders in different ethnic groups as well as the effect of social status and environment on mental disorders. In addition to the nationally representative survey, oversampling for people of Puerto Rican, Cuban, Filipino, or Vietnamese origin was done. Besides the 48 contiguous states, residents of Hawaii also were included. The total response rate was 73.2% (75.5% for the Latino sample and 65.6% for the Asian American sample (Heeringa et al., 2004). In total, 4,864 respondents completed interviews between 2002 and 2003; 395 were 65 years of age or older.

Sampling Weights

Sampling weights were used to account for unequal probabilities of respondents being chosen for the survey. These sampling weights correct for bias in estimates of coefficients and errors in regression analyses that are based on assumptions of use of a simple random sample. Sampling weights account for four-stage sampling of different areas and different ethnic groups in each individual survey. Each individual study also was weighted to account for differences between respondents and nonrespondents. Then, final sample weights from the individual surveys were combined and post-stratified according to race and geographical area of respondents. This final weight was based on 2002 population estimates from the Current Population Survey (Heeringa & Berglund, 2007). For this study, the data also are weighted to account for the fact that NCS-R respondents who did not answer the questions in Part 2 of the survey are excluded from the analysis.

Variables

The variables included in the analyses are listed in the Appendix. The variables can be grouped into the following categories: sociodemographics, attitudes toward care, social support, prevalence and severity of depression and anxiety, physical health and cognitive functioning, alcohol abuse, insurance status, perceived need for care, mental health service utilization, and satisfaction with care. When variables were not identical in the different surveys (the NLAAS has several questions that differ from the other two components of the CPES), new variables were created to capture the relevant information. Other variables were constructed that combine several variables from the CPES. Further details of this construction are listed below.

Sociodemographics

Sociodemographic variables included age, gender, race, marital status, education, and a poverty index. Age was modeled as a continuous variable because it had a linear relationship with perceived need and little variation with formal utilization, the two main outcome variables. Respondents were asked to indicate ethnicity and then race, and they could indicate more than one race. Races included Vietnamese, Filipino, Chinese, all other Asian, Cuban, Puerto Rican, Mexican, all other Hispanic, Afro-Caribbean, African American, and other. For the purposes of this analysis, race was recoded into the following categories: non-Hispanic white, African American or Afro-Caribbean, and other (Asian, Hispanic, and other). In some analyses, race had to be coded into non-

Latino white and nonwhite due to small samples sizes. The education variable was recoded into two categories: at least a high school education or less than a high school education. The poverty index is the ratio of household income to the poverty threshold used in the 2001 Census (adjusted for household size). This was recoded into two categories as well: household income at 0-200% of the poverty threshold, and household income over 200% of the poverty threshold.

Attitudes toward Mental Health Care

Attitudes toward care were measured by examining the reasons respondents did not seek care immediately or avoided seeking any care after identifying they needed it. As mentioned before, Mechanic has outlined different perceptions that impact treatment seeking, including perceived seriousness, knowledge/cultural attitudes, stigma, and availability of treatment (1978). The corresponding survey questions for these attitudes are: perceived seriousness (the respondent thought the problem would go away on its own, the problem did not bother the respondent at first), knowledge/cultural attitudes (he/she wanted to handle problem on his/her own, did not think treatment would work or it had been ineffective in the past, frightened of being hospitalized against his/her will), stigma (worried what others would think), and availability of treatment (too expensive, inconvenient, scheduling or transportation difficulties, unsure of where to go, disliked treatment options). The exact text of these questions is listed in the Appendix.

Attitude questions were asked of only a subset of people. Respondents who indicated a perceived need for mental health care but who waited at least 4 weeks before receiving care from a mental health specialist, primary care provider, spiritual advisor, or healer were asked why they delayed care. Respondents who perceived a need for care but who had not received any mental health care in the past 12 months were asked if this was due to insurance or if the problem had abated on its own. Respondents who said the problem did not go away were asked why they did not receive care. Although attitude information is not available for all respondents, including it in the analyses gives an idea of the relative importance of each attitude for those who delayed care or did not seek care despite perceived need.

Social Support

The exact number of friends and extended family in the respondents' social networks was not asked. Even though there is no information about network size, each respondent was asked a series of questions to determine the nature of relationships with his/her family and friends in general. The quality of interactions with family members and friends is often more informative than the quantity of interactions (Eurelings-Bontekoe, Verschuur, & Diekstra, 1996; Pescosolido, Wright, Alegría, & Vera, 1998). The quality of social support was measured by whether interactions with friends and family members outside of the household were positive or negative.

While the questions from the NSAL are not identical to those in the other two components of the survey, variables were constructed to provide an overall idea of whether the respondent has nurturing or close relationships with his/her friends and family members. For families, the questions in the NSAL are: "How often do they listen to you talk about your private problems and concerns?" and "How often do they express interest and concern in your well-being?" For both of these questions, the possible answers are: very often, fairly often, not too often, and never. In the NCS-R and the NLAAS, the questions about family interaction are "How much can you rely on relatives who do not live with you for help if you have a serious problem – a lot, some, a little, or not at all?" and "How much can you open up to relatives who do not live with you if you need to talk about your worries – a lot, some, a little, or not at all?" Scores on these questions were summed and converted into z-scores to develop a family support variable with two values: positive and negative support.

For friends, the NSAL asks: "How close do you feel toward your friends? Would you say very close, fairly close, not too close, or not at all?" In the NCS-R and NLAAS, the corresponding question is: "How much can you open up to friends if you need to talk about your worries – a lot, some, a little, or not at all?" The two questions were combined into one friend support measure; positive interaction with friends were coded for answers of "very close", "fairly close", "a lot", and "some".

The social support questions used in the analysis are very general, but they try to ascertain perceived emotional support. The language of these questions is similar to questions ascertaining positive and negative interactions with relatives and friends in previous studies (Lincoln, Chatters, Taylor, 2005; Schuster, Kessler, & Aseltine, 1990), but no psychometric properties are available for these measures.

Twelve-Month Prevalence and Severity of Depression and Anxiety

Respondents answered questions about symptoms and distress related to mental illness as part of the World Mental Health (WMH) Survey Initiative's adaptation of the World Health Organization (WHO) Composite International Diagnostic Interview (CIDI

3.0) (Kessler & Üstün, 2004). Diagnostic algorithms were then used to determine whether or not respondents met DSM-IV criteria for MDD, dysthymia, GAD, and/or another anxiety disorder (post-traumatic stress disorder, agoraphobia with or without panic disorder, panic attack, panic disorder, and social phobia) in the past 12 months. New algorithms were constructed for diagnoses of subsyndromal GAD and minor depression. From these algorithms, indicators were constructed to note when respondents met diagnostic criteria for a disorder; the diagnoses referred to in the analyses are not self-reported.

Diagnoses can be made either with or without a hierarchy; the hierarchy excludes diagnoses that might meet the criteria for more than one diagnosis. For example, a hierarchical diagnosis of GAD can only be made if the anxiety episode did not occur concurrently with a depressive episode. Diagnoses without hierarchy were used for this analysis to include the greatest number of people possible in each diagnostic category. Thus, GAD could be diagnosed even if anxiety and depression were concurrent, and the criteria for MDD are the same as the criteria for having a single major depressive episode.

Because there is no official definition of subthreshold GAD, the diagnostic criteria were modeled after a previous study (Carter 2001). Respondents met diagnostic criteria for subthreshold GAD if they did not meet DSM-IV criteria for GAD but worried for at least three months and met at least two of the following three DSM-IV criteria for GAD: often or sometimes have difficulty controlling worry, have at least three symptoms (restless, tired, irritable, difficulty concentrating, muscle soreness, or difficulty sleeping), or if the anxiety caused significant distress or impairment in everyday life.

An algorithm for minor depression was constructed to meet criteria specified in the DSM-IV for further study of the condition. Respondents were determined to have minor depression if they had been depressed for at least two weeks (and did not meet DSM criteria for MDD), had either depressed mood or anhedonia, and had between two and four other symptoms (depressed mood, anhedonia, weight gain or loss, difficulties sleeping, psychomotor agitation or slowing, fatigue, feelings of worthlessness, difficulty concentrating, or suicidal ideation).

Severity of depression was indicated by whether the respondent has MDD or minor depression. GAD and subsyndromal GAD were the two levels of anxiety severity that were measured. The severity of depression also was measured by occurrence of suicidal thoughts or attempted or planned suicide. Increased suicidal ideation is associated with greater depression severity (Casey et al., 2006; Cooper-Patrick, Crum, & Ford, 1994; Raue, Meyers, Rowe, Heo, & Bruce, 2007).

In addition to diagnostic criteria, the number of symptoms of depression and GAD in the WMH CIDI were counted. Depression symptoms included: depressed mood, anhedonia, weight gain or loss, difficulties sleeping, psychomotor agitation or slowing, fatigue, feelings of worthlessness, difficulty concentrating, and suicidal ideation. GAD symptoms included: occupation with nervousness or worries, restlessness, fatigue, irritability, difficulty concentrating, muscle fatigue, and difficulty sleeping.

The WMH CIDI 3.0 was designed for epidemiological studies and uses definitions from the DSM-IV and the International Classification of Diseases (ICD-10). Few studies have examined the psychometric properties of this version of the CIDI. It has good concordance with the Structured Clinical Interview for DSM-IV (SCID) for diagnosing any anxiety disorder (area under receiver-operating characteristic curve [AUC] = 0.88) and any mood disorder (AUC = 0.83) in the past 12 months (Haro 2006), as well as for diagnosing lifetime prevalence of any anxiety disorder (AUC = 0.73) and MDD (0.75) (Kessler, Berglund, et al., 2005). Older versions of the CIDI have high inter-rater reliability, with kappa values over .90 for MDD, dysthymia, and GAD (Peters, Clark, & Carroll, 1998). Sensitivity and specificity values vary in studies of older versions of the CIDI. Komiti et al. found a sensitivity of .39 and a specificity of .91 for MDD (2001), while another study found a sensitivity of .92 and a specificity of .69 for MDD (Peters & Andrews, 1995).

Diagnosis information for psychosis is not available in the CPES, because of concerns of the validity of the diagnostic measure (Kessler, Birnbaum, et al., 2005). An indicator variable was constructed to reflect self-reported psychotic episodes that occurred in the past year. Psychotic episodes include visual or auditory hallucinations, experiencing feelings of mind control or communication from strange forces, or paranoia. Questions on psychotic episodes were asked of a random subset of respondents to shorten the length of the survey, so this variable is excluded from the multivariate analyses.

Physical Health and Cognitive Functioning

Physical comorbidities were measured by computing the number of self-reported chronic conditions that the respondent had experienced during his/her lifetime. Respondents were asked if a health professional had ever told them they had heart troubles, ulcers, cancer, high blood pressure, diabetes, asthma, or chronic lung disease. Numbers of chronic conditions are correlated with length of hospital stay, increased physical limitations, and increased mortality (Elixhauser, Steiner, Harris, & Coffey, 1998; Verbrugge, Lepkowski, & Imanaka, 1989).

Measures of respondent cognitive functioning, self-care ability, and mobility were measured by the World Health Organization Disability Assessment Schedule II (WHO-DAS II), which measures the dimensions of functioning and activity outlined in the WHO International Classification of Functioning, Disability, and Health (ICF) (WHO 2001, Kessler et al., 2003). The ICF was designed to classify functioning and disability, as well as environmental factors affecting functioning, and it is meant to be complementary to the International Classification of Diseases (ICD-10) (WHO 2001).

All of the scales in the WHO-DAS II are a product of frequency (number of days) and severity of problems (none, mild, moderate, severe) experienced in the past 30 days and are normalized to have scores ranging from 0 to 100, where higher numbers indicate worse functioning. Cognitive functioning is based on ability to concentrate, remember, understand, think clearly, and learn a new task. Mobility is based on ability to stand for long periods, move around inside and outside of the home, and walk a distance of half a mile. Self-care is based on ability to perform activities of daily living (ADLs).

Respondents who answer yes to the question “Was there ever a time in the past 30 days when health-related problems caused you difficulties with self care, such as washing your body, getting dressed, or feeding yourself?” are then asked how many days out of the past 30 they experienced these difficulties. Then, they are asked to rate the level of difficulty during those days (none, mild, moderate, severe) of the following activities: “washing your whole body”, “getting dressed”, and “staying by yourself a few days”. Further information regarding scoring of the WHO-DAS is available at the CPES web site (http://www.icpsr.umich.edu/CPES/files/WHO-DAS-Scoring.pdf).

In non-elderly adults (age 18-60) with depression, the mobility and self-care scores of the WHO-DAS II have high internal consistency ($\alpha = 0.75$, 0.68 respectively) (Chwastiak & Von Korff, 2003). Chwastiak and Von Korff also found the mobility score to have good concurrent validity with the SF-36 physical health score ($r^2 = -0.73$), but the self-care score had low concurrent validity with dimensions of the SF-36 ($r^2 = -0.32$ with vitality dimension, -0.24 with physical dimension).

While self-ratings of overall physical and mental health functioning were included in the dataset, these questions were not asked of most of the NCS-R respondents, so these variables were only included in bivariate analyses. Global measures of self-rated health predict mortality, functional decline, hospitalization, and outpatient physical health service use (DeSalvo, Fan, McDonell, & Fihn, 2005; Idler & Benyamini, 1997; Lee, 2000). Self-rated mental health is also correlated with emotional role functioning as measured by the SF-12 (-0.45) (Fleishman & Zuvekas, 2007).

Twelve-Month Prevalence of Alcohol Abuse

Alcohol abuse and dependence experienced in the past 12 months also were diagnosed by the WMH CIDI. The WHM CIDI and SCID have good specificity for diagnoses of alcohol abuse (AUC = 0.81), and alcohol dependence (0.72) (Kessler, Berglund, et al., 2005). In addition to diagnostic indicators, the number of alcohol abuse symptoms was computed. Symptoms included: irresistible urge to drink, increased tolerance, symptoms of withdrawal, drinking to avoid symptoms of withdrawal, drinking when unintended, drinking more frequently or for more days in a row than intended, becoming drunk when unintended, inability to reduce drinking, spending many days recovering from drinking, drank instead of doing social activities or working, drank while knowing it was causing or exacerbating physical or mental health problems.

Insurance Status

Private plans include insurance through the respondent's or a respondent's family member's employer, as well as Medigap or other private insurance purchased directly from a company. Private plans were for any type of health care, not mental health specifically.

Perceived Need for Mental Health Care

Perceived need for mental health care was ascertained by two questions. Respondents who received mental health care in the past 12 months were asked if they sought care voluntarily: "When you went to see a professional about your emotions [(or substance abuse)] in the past year, was this something you wanted to do, or did you go only because someone else was putting pressure on you?" Other studies have included mental health utilization as a measure of perceived need, but not everyone who receives care perceives a need for it (Edlund, Unützer, & Curran, 2006). Respondents who did not receive mental health care in the past 12 months were asked "Was there ever a time during the past 12 months when you felt that you might need to see a professional because of problems with your emotions or nerves [(or your use of alcohol or drugs)]?"

Respondents were categorized as perceiving a need for mental health care if they indicated care-seeking was voluntary or if they felt they might need to see a mental health professional. This was consistent with Katz et al.'s definition of perceived need in a study using data from the NCS (Katz, Kessler, Frank, Leaf, & Lin, 1997).

The measure of perceived need is not available for all respondents. Respondents who had sought care in the past 12 months but did not know what type of provider they had seen were not asked about perceived need. Additionally, questions relating to perceived need were not asked of white respondents in the NSAL, and they were only asked of 25% of NLAAS respondents.

Pressure to Seek Mental Health Care

Pressure to seek mental health care was indicated by yes answers to one of three questions. Respondents who had received mental health care in the past twelve months were asked, "When you went to see a professional about your emotions [(or substance abuse]) in the past year, was this something you wanted to do, or did you go only because someone else was putting pressure on you?". If respondents answered that they wanted to seek treatment, they also were asked, "Did anyone encourage you or put pressure on you to see a professional about your emotions [(or substance abuse)]?". Respondents who had never received mental health care or had received it over a year ago were asked, “Was there ever a time in the past 12 months when someone encouraged you or put pressure on you to see a professional about your emotions or mental health [(or your use of alcohol or drugs)]?”

The measure of pressure is not available for all respondents. Respondents who had sought care in the past 12 months but did not know what type of provider they had seen were not asked about pressure. Additionally, questions relating to pressure were not asked of white respondents in the NSAL, and they were only asked of 25% of NLAAS respondents.

Mental Health Service Utilization

Outpatient mental health service utilization was measured in informal, specialist, and primary care settings. Both incidence and number of visits in the 12 months prior to the survey were measured. Informal (non-medical) providers included: online support groups, self-help groups, hotlines, healers, or spiritual advisors. Specialists included psychiatrists, psychologists, social workers, psychiatric nurses, counselors, and other mental health providers. Primary care providers included physicians, nurses, and occupational therapists. Respondents were counted as having received formal services if they had received care from either a primary care provider or mental health specialist (regardless of whether or not they had also received informal care or used alternative therapies).

Respondents were asked if they had taken any prescription medications for emotions, nerves, or substance abuse problems in the past 12 months. Also, an indicator variable was constructed to determine if respondents had used any alternative therapies such as herbal medicines, chiropractors, imagery, or hypnosis to deal with mental health issues in the past 12 months.

Satisfaction with Mental Health Care

Respondents who indicated that they used mental health services (either specialty or primary care) were asked about how satisfied they were with the services they received in the past 12 months. Response options ranged on a five point scale from very satisfied to very dissatisfied. For respondents who received care from multiple providers, the satisfaction scores were averaged and categorized as follows: 1 < satisfaction <= 1.5: Very satisfied; 1.5 < satisfaction <=2.5: Satisfied; 2.5 < satisfaction <= 3.5: Neither satisfied nor dissatisfied; 3.5 < satisfaction <=4.5: Dissatisfied; 4.5< satisfaction: Very dissatisfied. An indicator variable for satisfaction was also created for some analyses, where satisfaction included "satisfied" and "very satisfied", and absence of satisfaction included "neither", "dissatisfied", and "very dissatisfied".

Analysis

The model depicted in Figure 1 was analyzed in separate sections: odds of perceived need, probability and quantity of utilization, and satisfaction. Bivariate relationships with categorical variables were tested for significance with Rao-Scott adjusted chi-square tests, which take survey design into account. Bivariate relationships with continuous variables were tested for significance with t-tests. A cutoff of $p < 0.05$ was used for significance in all models. All variables with sufficient sample size were included in multivariate models. The Taylor series method (linearization; also known as the delta method) was used to estimate variance. All analyses were performed with SAS 9.1.3 and SAS-Callable SUDAAN 9.0.3.

The fit of linear regression models was measured with the proportion of explained variation (R^2). For logistic models, however, the R^2 measure is not recommended; values of R^2 are low even for models that fit the data well according to other measures (Hosmer & Lemeshow, 2000). Therefore, Akaike's Information Criterion with a second-order correction for small sample sizes was used (AICc) to evaluate logistic and logit model fit (Suguira, 1978). The small sample size correction is recommended when the ratio of observations to parameters is less than 40 (Burnham & Anderson, 2002, p. 66). Among models that are run on the same sample, the model that minimizes the value of AICc is a better fit for the data. There is not a standardized scale for interpretation of the AICc, but some have suggested that a difference greater than 10 in AICc values indicates that two models are distinct, while differences between zero and two indicate that two models fit the data equally well (Burnham & Anderson, 2002, p. 70).

Specifics of regression models and other analyses are listed below.

Hypothesis A:

Controlling for illness severity, increased perceived need for mental health care will be associated with positive attitudes toward mental health care, less supportive social networks, and high numbers of alcohol abuse symptoms.

Logistic regression was used to determine the relationship between perceived need and illness characteristics, pressure to seek care, and social networks. The regression was run once with diagnostic variables and once with symptom variables (regressions 1 and 2), and the fit of the model was measured by AICc (see Table 2).

An additional logistic regression model was run on the subsample of respondents without diagnoses of any depression or anxiety disorder to explore relationships possibly obscured by the strong relationship between diagnosis and perceived need for care (regression 3). While it would be ideal to look at interaction terms between diagnoses and other factors in models 1 and 2, the sample size was not large enough to allow this. Additionally, because of small sample sizes, a corresponding model for perceived need for care among those with a depression or anxiety disorder was not constructed.

Hypothesis B:

A greater probability of using any mental health care services (as well as a greater number of visits) will be associated with greater mental illness severity, more physical health problems, high numbers of alcohol abuse symptoms, less supportive social networks, positive attitudes toward mental health care, and greater perceived need for care.

Two-stage regression was used to determine relationships with mental health care utilization. Logistic regression was used first to determine the probability of any use and linear regression was used to examine relationships with the number of visits for those who did use some mental health services. Selection bias is often a problem in studies of utilization rates, because many datasets include information only on people who use care. Because the CPES data include both users and non-users of care, however, it was possible to determine differences between people who did not use any care and those who used care.

First, logistic regression was used to determine the probability of receiving mental health care from either a primary care provider or specialist. One model included diagnostic variables (regression #4), and the other included symptoms (regression #5).

Because diagnoses of depression and anxiety were so strongly related to formal utilization, more logistic regressions were run that blocked on diagnoses. The first model was run for people who did not meet criteria for either depression or anxiety (regression #6), and the second model was run for people who did meet criteria for either depression or anxiety (regression #7).

Perceived need was not included in the initial model of utilization because it was so closely related to the probability of formal utilization. Subsequent logistic regressions analyzed the probability of formal utilization among only those who perceived a need for care (regressions 8 and 9). Only 17 people who did not perceive a need for care utilized formal mental health care, so a separate model was not constructed for this subsample.

Next, linear regressions were done to determine relationships between variables and the number of mental health visits. Separate regressions analyzed associations with the number of visits to either type of provider (regressions 10-11), to a specialist (12-13), and to a primary care provider (14-15). Each of these models had two subparts: one with diagnoses and one with symptoms. Regressions 10 and 11 were restricted to respondents who had at least one visit to a specialist or primary care provider in the past year. Regressions 12 and 13 were restricted to respondents who had at least one visit to a specialist, and regressions 14 and 15 were restricted to those who had at least one visit to a primary care provider.

Two additional logistic regressions (16-17) were used to analyze the probability of using a prescription medication for a mental health reason in the past 12 months.

Hypothesis C:

Controlling for illness severity, satisfaction with mental health care will be greater for those who perceive a need for care, have positive attitudes toward care, or who have more positive social support.

Logistic regression was used to determine the relationship between overall satisfaction with care, illness characteristics, pressure to seek care, and social networks among people who used any mental health care (regression 18). While satisfaction can influence future utilization, the satisfaction variables used in this study refer to satisfaction with care received in the past year. Therefore, the associations are likely to indicate how utilization impacts satisfaction, not how satisfaction impacts utilization. Because of low variability in the satisfaction measure and small numbers of respondents who used formal mental health care, a stable model of satisfaction could not be constructed.

Other Analyses

Chi-square and t-tests were done to test for differences between respondents who received care right away after perceiving a need for it and those who delayed receiving care for at least four weeks.

While it would have been preferable to examine differences between each possible combination of care (informal only, primary only, specialist only, informal and primary, informal and specialist, primary and specialist, or all three), small sample sizes did not allow valid bivariate or multinomial logit models to be performed at this level. Instead, bivariate tests were first used to test for differences between those who used care from a specialist but not a primary care provider, from a primary care provider but not a specialist, and from both a specialist and primary care provider (some respondents in all of these groups received informal mental health care as well). Additional tests were done to test for differences between respondents who did and did not use informal care (care from spiritual advisors, healers, and self-help groups). Furthermore, the data were tested with bivariate analyses for differences between those who used one source of care versus those who used two or three types of care (informal, primary care, mental health specialist). Further analysis with multivariate models was not possible due to the small sample size.

Descriptive results are reported in terms of unweighted sample sizes and weighted percentages, which is consistent with other studies of perceived need and utilization (Edlund, Unützer, & Curran, 2006; Klap, Unroe, & Unützer, 2003).

Table 2. List of main regressions performed

#	Hyp.	Type of Model	Sample	Dependent Variable	Diagnoses/ Symptoms
1	A	Logistic	All	Perceived Need	Diagnoses
2	A	Logistic	All	Perceived Need	Symptoms
3	A	Logistic	Rs without a depression or anxiety disorder	Perceived Need	Symptoms
4	B	Logistic	All	Indicator for receipt of MH care from either a PCP or MHS	Diagnoses
5	B	Logistic	All	Indicator for receipt of MH care from either a PCP or MHS	Symptoms
6	B	Logistic	Rs without a depression or anxiety disorder	Indicator for receipt of MH care from either a PCP or MHS	Symptoms
7	B	Logistic	Rs with a depression or anxiety disorder	Indicator for receipt of MH care from either a PCP or MHS	Symptoms
8	B	Logistic	Rs who perceived a need for MH care	Indicator for receipt of MH care from either a PCP or MHS	Diagnoses
9	B	Logistic	Rs who perceived a need for MH care	Indicator for receipt of MH care from either a PCP or MHS	Symptoms
10	B	Linear	Rs who received MH services from a PCP or MHS	# of MH visits to PCP or MHS	Diagnoses
11	B	Linear	Rs who received MH services from a PCP or MHS	# of MH visits to PCP or MHS	Symptoms
12	B	Linear	Rs who received MH services from a MHS	# of visits to MHS	Diagnoses
13	B	Linear	Rs who received MH services from a MHS	# of visits to MHS	Symptoms
14	B	Linear	Rs who received MH services from a PCP	# of MH visits to PCP	Diagnoses
15	B	Linear	Rs who received MH services from a PCP	# of MH visits to PCP	Symptoms
16	B	Logistic	All	Indicator for use of any prescription medications for MH reasons	Diagnoses
17	B	Logistic	All	Indicator for use of any prescription medications for MH reasons	Symptoms
18	C	Logistic	Rs who received MH services from a PCP or MHS	Indicator for satisfaction with MH care	Symptoms

MH = Mental Health; PCP = Primary Care Provider; S = Specialist; R = Respondent
All dependent variables correspond to events occuring in the past 12 months

RESULTS

Sociodemographic Characteristics

The CPES dataset included 1,874 people 65 years or older. Of this sample, 8.4% (108) were 85 years of age or older, and the mean age was 74 (see Table 3). Males comprised 43.2% of the sample, and 69.3% of respondents had at least a high school education. Non-Latino whites comprised 82.4% of the sample, 8.1% were African American or Afro-Caribbean, 5.7% were Hispanic, and 2.7% were Asian. Slightly over half of the respondents (54.8%) were married, and the mean number of people in the respondents' households was 1.6. Half of the respondents (49.2%) had incomes at or below 200% of the poverty threshold, and 79.5% possessed some type of private health insurance.

Mental Health of the Sample

Of the entire sample, 14.0% met diagnostic criteria for at least one of the following: MDD, minor depression, dysthymia, GAD, subthreshold GAD, or another anxiety disorder (see Table 4). Relatively few people had a diagnosis of major depression (2.9%), minor depression (3.3%), or dysthymia (1.1%), but 13.5% had at least one depressive symptom and 9.2% had six or more depressive symptoms in the past 12 months. Similarly, 1.5% met diagnostic criteria for GAD and 3.7% met criteria for subthreshold GAD, but 17.0% had at least one symptom and 8.8% had four or more symptoms of GAD. Few (3.5%) had any symptoms of alcohol abuse, and only one respondent met the diagnostic criteria for alcohol abuse. Diagnostic criteria for non-GAD anxiety disorders (agoraphobia, panic disorder, post-traumatic stress disorder, and social phobia) were met for 6.5% of respondents. Psychotic experiences occurring in the past year were reported by 39 respondents (1.6% of those who were asked questions about psychoses). Self-rated mental health was available only for a subset of the sample, but of those who were asked this question, 9.4% reported their mental health status as fair or poor.

Of those with at least one depression or anxiety condition, 76.4% had one condition, 17.5% had two conditions, and 6.1% had three or four conditions. Respondents with MDD often had a comorbid mental health condition: 26.6% had dysthymia, 25.3% had GAD, 8.3% had subthreshold GAD, and 51.9% had a non-GAD anxiety disorder. Thoughts of death or suicide or plans for suicide were experienced by 86.1% of respondents with MDD and 53.7% of respondents who met diagnostic criteria for minor depression. The age of onset of depression and/or anxiety symptoms varied for respondents. Over a quarter (26.5%) of respondents with MDD and 10.1% of respondents with minor depression experienced their first depressive episode when they were 65 years of age or older. A third (32.5%) of respondents with GAD and 27.2% of respondents with subthreshold GAD experienced their first episode of anxiety or worry lasting at least a month when they were 65 years of age or older.

Bivariate analyses showed some significant differences between respondents who did and did not meet diagnostic criteria for MDD, minor depression, dysthymia, GAD, subthreshold GAD, or a non-GAD anxiety disorder. Men were less likely to meet diagnostic criteria for depression or anxiety than women (8.9% of men and 17.9% of women had depression or anxiety). Eighteen percent of unmarried and 10.3% of married respondents had depression or anxiety. Additionally, 22.2% of respondents with private insurance and 12.0% of respondents without private insurance had depression or anxiety.

Depression and/or anxiety were present in 47.9% of respondents with a self-reported psychotic episode in the past year and 12.1% of those without an episode. Respondents with fair or poor physical health status also were more likely to have depression or anxiety than respondents with excellent or very good physical health. Respondents with more chronic physical conditions were more likely to meet diagnostic criteria for depression and/or anxiety than those without any chronic physical conditions.

Physical Health of the Sample

Three-fourths (72.8%) of the sample had been told they had at least one chronic physical condition in their lifetime, and 39.1% had two or more physical conditions (see Table 5). The most common condition was high blood pressure (50.6%), followed by cancer (18.5%), heart disease (16.9%), and diabetes (16.5%). Respondents had low mean scores on the WHO-DAS functioning scales; scores on the WHO-DAS range from 0-100, where a value of 0 indicates the best functioning possible. Respondents had a mean score of 1.7 (SE = 0.3) for the self-care scale, 0.7 (SE = 0.1) for cognitive functioning, and 8.8 (SE = 0.7) for mobility. For the subsample (mostly NSAL and NLAAS respondents) that was asked to rate their physical health status, 28.8% reported their health as fair or poor.

Social Support and Pressure to Seek Care

Sixty-one percent of respondents reported positive interactions with family members, and 67.7% reported positive interactions with friends (see Table 5). Of the entire sample, 3.0% reported being pressured to seek mental health care.

Table 3. Sociodemographic characteristics

Variable	Frequency (%)[a]						
		Mental Disorder		Perceived Need		Formal Utilization	
	All (N = 1874)	No (N = 1550)	Yes (N = 324)	No (N = 1197)	Yes (N = 157)	No (N = 1736)	Yes (N = 138)
Age					†		
65-74	1172 (55.6%)	962 (85.0%)	210 (15.0%)	741 (91.2%)	108 (8.2%)	1085 (93.9%)	138 (6.1%)
75-84	594 (36.1%)	498 (87.7%)	96 (12.3%)	376 (93.4%)	42 (6.6%)	551 (93.7%)	43 (6.3%)
85+	108 (8.4%)	90 (85.4%)	18 (14.6%)	80 (95.7%)	7 (4.3%)	100 (95.2%)	8 (4.8%)
Male	711 (43.2%)	625 (91.1%)	86 (8.9%) *	455 (96.0%)	38 (4.0%) *	678 (96.5%)	33 (3.5%) *
Female	1163 (56.8%)	925 (82.1%)	238 (17.9%)	742 (90.4%)	119 (9.6%)	1058 (91.9%)	105 (8.1%)
Race					*		
Non-Latino Whites	778 (82.4%)	600 (85.5%)	178 (14.5%)	523 (93.2%)	78 (6.8%)	706 (93.9%)	72 (6.1%)
African American / Afro-Caribbean	651 (8.1%)	579 (89.9%)	72 (10.1%)	573 (94.4%)	35 (5.6%)	627 (96.2%)	24 (3.8%)
Asian	166 (2.7%)	148 (89.2%)	18 (10.3%)	17 (56.3%)	16 (43.7%)	150 (91.7%)	16 (8.3%)
Hispanic	267 (5.7%)	214 (85.8%)	53 (14.2%)	74 (80.8%)	26 (19.2%)	243 (92.3%)	24 (7.7%)
Other	12 (1.2%)	9 (89.3%)	3 (10.7%)	10 (94.7%)	2 (5.3%)	10 (93.2%)	2 (6.8%)
Not married	1066 (45.2%)	850 (81.5%)	216 (18.5%) *	706 (91.2%)	94 (8.8%) *	989 (93.5%)	77 (6.5%)
Married	799 (54.8%)	691 (89.7%)	108 (10.3%)	491 (94.0%)	63 (6.0%)	738 (94.2%)	61 (5.8%)
Education							
0-11 years	753 (30.7%)	625 (85.3%)	128 (14.7%)	461 (90.8%)	62 (9.2%)	701 (93.4%)	52 (6.6%)
12 years	520 (34.2%)	440 (87.6%)	80 (12.4%)	363 (95.0%)	40 (5.0%)	483 (95.3%)	37 (4.7%)
13-15 years	299 (19.0%)	234 (84.4%)	65 (15.6%)	186 (92.0%)	32 (8.0%)	270 (92.8%)	29 (7.2%)
16 or more years	302 (16.1%)	251 (85.7%)	51 (14.3%)	187 (92.2%)	23 (7.8%)	282 (93.2%)	20 (6.8%)
Household size	1.65 (0.03)	1.65 (0.04)	1.61 (0.08)	1.62 (0.04)	1.58 (0.07)	1.64 (0.03)	1.72 (0.12)
Poverty index							
0-200%	1128 (49.2%)	932 (84.8%)	196 (15.2%)	712 (91.8%)	90 (8.2%)	1053 (93.6%)	75 (6.4%)
Above 200%	746 (50.8%)	618 (87.2%)	128 (12.8%)	485 (93.7%)	67 (6.3%)	683 (94.1%)	63 (5.9%)
Private insurance	1155 (79.5%)	565 (77.8%)	113 (22.2%) *	762 (92.7%)	111 (7.3%)	1056 (93.4%)	99 (6.6%)
No private insurance	678 (20.5%)	944 (88.0%)	211 (12.0%)	435 (92.2%)	46 (6.8%)	639 (95.4%)	39 (4.6%)

a) Unweighted n's and weighted percentages are reported

* Significantly related at p < .05 with Rao-Scott chi-square; † Significantly related at p < .05 with t-test

Table 4. Mental health characteristics of sample

Variable	Frequency (%)[a]						
		Mental Disorder		Perceived Need		Formal Utilization	
	All (N = 1874)	No (N = 1550)	Yes (N = 324)	No (N = 1197)	Yes (N = 157)	No (N = 1736)	Yes (N = 138)
MDD					*		*
No	1749 (97.1%)			1163 (93.9%)	122 (6.1%)	1640 (94.6%)	109 (5.4%)
Yes	82 (2.9%)			34 (52.6%)	35 (47.4%)	53 (66.7%)	29 (33.3%)
Minor depression							
No	1765 (96.7%)			1154 (93.0%)	146 (7.0%)	1637 (94.0%)	128 (6.0%)
Yes	66 (3.3%)			43 (87.6%)	11 (12.4%)	56 (89.8%)	10 (10.2%)
GAD					*		*
No	1790 (98.5%)			1178 (93.4%)	138 (6.6%)	1669 (94.4%)	121 (5.6%)
Yes	41 (1.5%)			19 (53.7%)	19 (46.3%)	24 (54.7%)	17 (45.3%)
Subthreshold GAD					*		*
No	1759 (96.3%)			1155 (93.3%)	138 (6.7%)	1636 (94.1%)	123 (5.9%)
Yes	72 (3.7%)			42 (81.0%)	19 (19.0%)	57 (86.5%)	15 (13.5%)
Dysthymia					*		*
No	1805 (98.9%)			1183 (93.1%)	148 (6.9%)	1675 (94.1%)	130 (5.9%)
Yes	26 (1.1%)			14 (65.9%)	9 (34.1%)	18 (71.4%)	8 (28.6%)
Other anxiety disorders					*		*
No	1522 (93.5%)			1119 (94.7%)	103 (5.3%)	1429 (94.8%)	93 (5.2%)
Yes	159 (6.5%)			78 (59.2%)	54 (40.8%)	114 (74.8%)	45 (25.2%)
Any mental disorder					*		*
No	1550 (86.0%)			1023 (95.6%)	64 (4.1%)	1489 (96.1%)	61 (3.9%)
Yes	324 (14.0%)			174 (73.2%)	93 (26.8%)	247 (80.5%)	77 (19.5%)
Psychotic episode			*		*		
No	1265 (98.4%)	1072 (87.9%)	193 (12.1%)	871 (93.4%)	97 (6.6%)	1177 (93.7%)	88 (6.3%)
Yes	39 (1.6%)	28 (52.1%)	11 (47.9%)	25 (76.8%)	6 (23.2%)	35 (87.8%)	4 (12.2%)
# Depression symptoms			*†		*†		*†
0-2	1565 (86.9%)	1430 (92.8%)	135 (7.2%)	1018 (95.3%)	78 (4.7%)	1490 (95.5%)	75 (4.5%)
3-5	81 (3.9%)	8 (10.2%)	73 (89.8%)	54 (87.8%)	14 (12.2%)	68 (89.6%)	13 (10.4%)
6-9	228 (9.2%)	112 (54.6%)	116 (45.4%)	125 (71.5%)	65 (28.5%)	178 (80.5%)	50 (19.5%)

Table 4 (Continued)

Variable		Frequency (%)[a]					
		Mental Disorder		Perceived Need		Formal Utilization	
	All (N = 1874)	No (N = 1550)	Yes (N = 324)	No (N = 1197)	Yes (N = 157)	No (N = 1736)	Yes (N = 138)
# GAD symptoms			*†		*†		*†
0-1	1596 (88.0%)	1438 (92.0%)	158 (8.0%)	1039 (95.6%)	79 (4.4%)	1516 (95.7%)	80 (4.3%)
2-3	65 (3.2%)	35 (67.9%)	30 (32.1%)	42 (79.8%)	14 (20.2%)	57 (85.7%)	8 (14.3%)
4-5	108 (4.7%)	43 (33.7%)	65 (66.3%)	59 (74.9%)	27 (25.1%)	89 (81.6%)	19 (18.4%)
6-7	105 (4.1%)	34 (30.9%)	71 (69.1%)	57 (65.4%)	37 (34.6%)	74 (75.3%)	31 (24.7%)
# Alcohol abuse symptoms					*		*
0	1793 (96.5%)	1490 (86.2%)	303 (13.8%)	1133 (93.2%)	146 (6.8%)	1663 (94.2%)	130 (5.8%)
1-4	52 (2.2%)	39 (80.1%)	13 (19.9%)	45 (85.7%)	4 (14.3%)	48 (85.5%)	4 (14.5%)
5-8	29 (1.2%)	21 (79.9%)	8 (20.1%)	19 (75.3%)	7 (24.7%)	25 (81.0%)	4 (19.0%)
Self-rated mental health			*†		*†		*†
Excellent	316 (30.9%)	287 (93.1%)	29 (6.9%)	181 (99.1%)	4 (0.9%)	314 (99.6%)	2 (0.4%)
Very Good	400 (30.9%)	358 (88.0%)	42 (12.0%)	257 (95.0%)	19 (5.0%)	382 (95.9%)	18 (4.1%)
Good	421 (28.9%)	349 (85.3%)	72 (14.7%)	241 (89.5%)	31 (10.5%)	391 (92.6%)	30 (7.4%)
Fair	182 (8.5%)	140 (67.1%)	42 (32.9%)	99 (83.2%)	27 (16.8%)	161 (90.8%)	21 (9.2%)
Poor	32 (0.9%)	21 (77.0%)	11 (23.0%)	16 (71.0%)	8 (29.9%)	26 (86.7%)	6 (13.0%)

a) Unweighted n's and weighted percentages are reported

* Significantly related at $p < .05$ with Rao-Scott chi-square; † Significantly related at $p < .05$ with t-test

Table 5. Social support of sample and physical health characteristics

Variable	Mean (SE) or Frequency (%)[a]									
		Mental Disorder			Perceived Need			Formal Utilization		
	All (N = 1874)	No (N = 1550)	Yes (N = 324)		No (N = 1197)	Yes (N = 157)		No (N = 1736)	Yes (N = 138)	
Self-rated physical health				*†			*†			*†
Excellent	118 (9.8%)	108 (95.4%)	10 (4.6%)		72 (99.7%)	2 (0.3%)		117 (99.8%)	1 (0.2%)	
Very Good	310 (25.5%)	282 (89.5%)	28 (10.5%)		186 (96.5%)	10 (3.5%)		301 (97.4%)	9 (2.6%)	
Good	425 (36.0%)	379 (90.7%)	46 (9.3%)		248 (96.0%)	18 (4.0%)		408 (96.6%)	17 (3.4%)	
Fair	371 (21.3%)	292 (80.1%)	79 (19.9%)		223 (87.1%)	41 (12.9%)		337 (92.2%)	34 (7.8%)	
Poor	126 (7.5%)	93 (69.0%)	33 (31.0%)		64 (81.9%)	18 (18.1%)		110 (89.1%)	16 (10.9%)	
WHODAS self-care	1.7 (0.3)	1.2 (0.2)	4.7 (1.3)	*	1.6 (0.35)	4.6 (1.6)		1.6 (0.3)	3.2 (1.2)	
WHODAS cognitive	0.7 (0.1)	0.6 (0.1)	1.3 (0.3)	*	0.5 (0.2)	2.4 (0.8)	*	0.6 (0.1)	2.8 (1.0)	*
WHODAS mobility	8.8 (0.7)	7.3 (0.8)	17.9 (2.9)	*	8.4 (0.8)	14.1 (2.5)	*	8.5 (0.7)	14.0 (2.5)	*
# of chronic conditions				*†			*†			*†
0	412 (27.2%)	360 (89.5%)	52 (10.5%)		272 (96.3%)	22 (3.7%)		391 (96.0%)	21 (4.0%)	
1	626 (33.7%)	529 (87.4%)	97 (12.6%)		397 (91.9%)	54 (8.1%)		578 (93.1%)	48 (6.9%)	
2-3	714 (36.0%)	564 (82.9%)	150 (17.1%)		481 (92.1%)	68 (7.9%)		658 (94.1%)	56 (5.9%)	
4-6	81 (3.1%)	56 (72.8%)	25 (27.2%)		47 (78.2%)	13 (21.8%)		68 (80.2%)	13 (19.8%)	
Family support										
Negative	874 (37.0%)	741 (86.2%)	133 (13.8%)		527 (90.9%)	72 (9.1%)		814 (93.6%)	134 (6.4%)	
Positive	889 (61.0%)	716 (85.1%)	173 (14.9%)		582 (93.4%)	78 (6.6%)		815 (93.9%)	74 (6.1%)	
Friend support										
Negative	505 (32.3%)	406 (87.5%)	99 (12.5%)		252 (91.8%)	53 (8.2%)		459 (93.6%)	46 (6.4%)	
Positive	1236 (67.7%)	1033 (84.4%)	203 (15.6%)		838 (92.7%)	95 (7.3%)		1150 (93.6%)	86 (6.4%)	
Pressure to seek care				*			*			*
No	1303 (97.0%)	1057 (86.8%)	246 (13.2%)		1165 (93.5%)	138 (6.5%)		1189 (94.2%)	114 (5.8%)	
Yes	51 (3.0%)	30 (72.8%)	21 (21.2%)		32 (69.6%)	19 (30.4%)		27 (52.2%)	24 (47.8%)	

a) Unweighted n's and weighted percentages are reported

* Significantly related at $p < .05$ with Rao-Scott chi-square; † Significantly related at $p < .05$ with t-test

Table 6. Perceived need, utilization, and satisfaction with mental health care

Variable	All (N = 1874)	Mental Disorder: No (N = 1550)	Mental Disorder: Yes (N = 324)	Perceived Need: No (N = 1197)	Perceived Need: Yes (N = 157)	Formal Utilization: No (N = 1736)	Formal Utilization: Yes (N = 138)
	Frequency (%)[a]						
Perceived need			*				
No	1197 (92.8%)	1023 (89.2%)	174 (10.8%)			1180 (98.8%)	17 (1.2%) *
Yes	157 (7.2%)	64 (49.6%)	93 (50.4%)			36 (17.1%)	121 (82.9%)
Received care			*		*		
No formal care	1736 (93.9%)	1489 (88.0%)	247 (12.0%)	1180 (98.7%)	36 (1.3%)		
MHS only	31 (1.2%)	18 (67.0%)	13 (33.0%)	4 (30.4%)	27 (69.6%)		
PCP only	84 (4.1%)	34 (57.7%)	50 (42.3%)	12 (13.9%)	72 (86.1%)		
MHS and PCP	23 (0.8%)	9 (24.9%)	14 (75.1%)	1 (0.7%)	22 (99.3%)		
Informal care			*		*		*
No	1837 (98.1%)	1532 (86.4%)	305 (13.6%)	1182 (93.5%)	135 (6.5%)	1715 (94.4%)	122 (5.6%)
Yes	37 (1.9%)	18 (64.8%)	19 (35.2%)	15 (59.2%)	22 (40.8%)	21 (67.5%)	16 (32.5%)
# visits to MHS					**		
0	1820 (98.0%)	1523 (86.7%)	297 (13.3%)	1192 (94.5%)	108 (5.5%)		
1	11 (0.5%)	6 (78.4%)	5 (21.6%)	3 (41.6%)	8 (58.4%)		
2-4	20 (0.7%)	11 (41.3%)	9 (58.7%)	1 (9.1%)	19 (90.9%)		
5-10	9 (0.4%)	5 (51.6%)	4 (48.4%)	1 (23.4%)	8 (76.6%)		
11-30	14 (0.4%)	5 (27.7%)	9 (72.3%)	0 (0.0%)	14 (100.0%)		
# visits to PCP							
0	1767 (95.1%)	1507 (87.7%)	260 (12.3%)	1184 (97.7%)	63 (2.3%)		
1	52 (2.8%)	22 (60.0%)	30 (40.0%)	6 (8.4%)	46 (91.6%)		
2-4	36 (1.6%)	14 (44.3%)	22 (55.7%)	4 (14.4%)	32 (85.6%)		
5-10	10 (0.3%)	4 (52.3%)	6 (47.7%)	2 (42.5%)	8 (57.5%)		
11-35	9 (0.3%)	3 (23.2%)	6 (76.8%)	1 (2.9%)	8 (97.1%)		
Prescription			*		*		*
No	1514 (85.0%)	1316 (88.5%)	198 (11.5%)	1025 (97.8%)	49 (2.2%)	1482 (98.4%)	32 (1.6%)
Yes	360 (15.0%)	234 (71.8%)	126 (28.2%)	172 (66.0%)	108 (34.0%)	254 (68.3%)	106 (31.7%)
Alternative therapies			*		*		*
No	1444 (85.6%)	1227 (89.0%)	217 (11.0%)	1052 (95.6%)	90 (4.4%)	1361 (95.6%)	83 (4.4%)
Yes	216 (14.4%)	132 (71.0%)	84 (29.0%)	138 (77.0%)	66 (23.0%)	162 (80.3%)	54 (19.7%)

a) Unweighted n's and weighted percentages are reported

MHS = mental health specialist; PCP = primary care provider

* Significantly related at p< .05 with Rao-Scott chi-square; **Significantly related at p< .05 with t-test for those who had at least one visit

Perceived Need for Care

Of the entire sample, 7.2% (157) perceived a need for mental health care in the past 12 months (see Table 6). Half of the respondents who perceived a need for care met diagnostic criteria for a depression or anxiety disorder or a subthreshold disorder. Of the respondents who met diagnostic criteria for depression or anxiety, 26.8% perceived a need for care. Conversely, 4.1% of those who did not meet criteria for depression or anxiety perceived a need for care.

Perceived need for care was significantly related to a number of variables in bivariate analyses. Perceived need for care decreased as age increased, and it was more likely to be reported by females and respondents who were unmarried (Table 3). Perceived need was higher for respondents with MDD, dysthymia, GAD, and subthreshold GAD than for those without diagnoses, but not everyone who met diagnostic criteria perceived a need for care (Table 4). Half of respondents meeting diagnostic criteria for MDD or GAD perceived a need for care. Nineteen percent of those with subthreshold GAD and 34.1% of people with dysthymia perceived a need for care. Minor depression was not significantly related to perceived need for care. People who perceived a need for care had significantly more symptoms of depression (3.0, SE = 0.4) and GAD (2.4, SE = 0.3) than those who did not perceive a need for care (depression symptoms: mean = 0.68, SE = 0.1, GAD symptoms: mean = 0.5, SE = 0.1). Perceived need also was higher among respondents reporting five or more alcohol abuse symptoms than among those without any symptoms. Additionally, perceived need was more likely among respondents with other anxiety disorders and self-reported psychotic episodes.

Perceived need for mental health care increased as both self-rated mental and physical health declined. Respondents with worse scores on the WHO-DAS scales for cognitive functioning and mobility were more likely to perceive a need for mental health care (Table 5). Perceived need was reported more often by respondents with greater numbers of chronic physical conditions. Thirty percent of respondents who were pressured to seek care and 6.5% of those who were not pressured to seek care perceived a need for it. The quality of support from family members or friends was not related to perceptions of need.

Perceived Need – Multivariate Analyses

In multivariate logistic regression analyses, many of the variables that were significantly related to perceived need in the bivariate analyses were no longer significant. Model fit was better when symptoms were included (AICc = 525.6) rather than diagnoses (AICc = 550.8). The odds of perceiving a need for care increased with the number of symptoms of depression (OR per symptom = 1.17, 95% CI = [1.08, 1.26]), GAD (OR per symptom = 1.23, 95% CI = [1.09, 1.4]), and alcohol abuse (OR per symptom = 1.27, 95% CI = [1.08, 1.51]) (see Table 7). The odds of perceiving a need for mental health care increased when the respondent had an anxiety disorder other than GAD (OR = 6.27, 95% CI = [3.15, 12.48]). It also was more likely among people who reported more chronic physical conditions (OR per condition = 1.34, 95% CI = [1.03, 1.75]). Perceived need was higher when the respondent had been pressured to seek care (OR = 3.98, 95% CI = [1.8, 8.81]). Men were less likely to perceive a need for mental health care than women (OR = 0.37, 95% CI = [0.17, 0.79]). Social support was not significantly associated with perceived need for care.

Substituting diagnoses for counts of depression and anxiety symptoms changed the results of the model slightly. Diagnoses of a non-GAD anxiety disorder were significantly related to increased odds of perceived need (OR = 7.51, 95% CI = [3.68, 15.33]). MDD was related to perceived need as well (OR = 3.02, 95% CI = [1.15, 7.69]). As in the symptom model, men were less likely to perceive a need for care, and respondents who were pressured to seek care or who reported more alcohol abuse symptoms were more likely to perceive a need for care.

Perceived Need among those without a Mental Disorder

A logistic regression was performed to analyze relationships of perceived need to health and social factors among those who did not meet diagnostic criteria for a depression or anxiety-related disorder or subthreshold condition. For these respondents, numbers of symptoms of various disorders were still significantly related to odds of perceived need. Perceived need increased with the number of depression symptoms (OR per symptom = 1.17, 95% CI = [1.05, 1.30]), GAD symptoms (OR per symptom = 1.35, 95% CI = [1.15, 1.58]), and alcohol abuse symptoms (OR per symptom = 1.23, 95% CI = [1.00, 1.50]) (see Table 8). Additionally, among respondents without a mental disorder, males were less likely to perceive a need for care than women (OR = 0.35, 95% CI = [0.12, 0.97]), and respondents who were pressured to seek care were more likely to perceive a need for it (OR = 4.76, 95% CI = [1.82, 12.49]).

Table 7. Logistic regressions for perceived need

	Diagnosis Variables (N = 1230, AICc = 550.8)				Symptom Variables (N = 1230, AICc = 525.6)		
Variable	**OR**	**95% CI**		**Variable**	**OR**	**95% CI**	
# of chronic conditions	1.33	(1.03, 1.71)	*	**# of chronic conditions**	1.34	(1.03, 1.75)	*
Age	0.97	(0.93, 1.01)		**Age**	0.99	(0.94, 1.04)	
Household size	0.86	(0.64, 1.14)		**Household size**	0.94	(0.7, 1.27)	
MDD	3.02	(1.15, 7.96)	*	**# depression symptoms**	1.17	(1.08, 1.26)	*
Minor depression	2.50	(0.73, 8.51)		**# GAD symptoms**	1.23	(1.09, 1.4)	*
GAD	3.17	(0.76, 13.3)					
Subsyndromal GAD	2.07	(0.69, 6.19)					
# alcohol abuse symptoms	1.29	(1.09, 1.52)	*	**# alcohol abuse symptoms**	1.27	(1.08, 1.51)	*
Other anxiety disorder	7.51	(3.68, 15.33)	*	**Other anxiety disorder**	6.27	(3.15, 12.48)	*
Positive interactions with family	0.66	(0.33, 1.31)		**Positive interactions with family**	0.69	(0.35, 1.37)	
Positive interactions with friends	0.80	(0.44, 1.46)		**Positive interactions with friends**	0.69	(0.38, 1.25)	
Male	0.37	(0.18, 0.73)	*	**Male**	0.37	(0.17, 0.79)	*
Race				**Race**			
Non-Latino White	1.00			Non-Latino White	1.00		
African American / Afro-Caribbean	0.50	(0.21, 1.19)		African American / Afro-Caribbean	0.67	(0.3, 1.52)	
Other	2.15	(0.94, 4.9)		Other	1.87	(0.81, 4.33)	
Not married	0.85	(0.43, 1.66)		**Not married**	0.83	(0.4, 1.7)	
High school education	0.71	(0.36, 1.38)		**High school education**	0.85	(0.4, 1.79)	
WHODAS self-care†	1.11	(0.83, 1.46)		**WHODAS self-care**†	0.95	(0.64, 1.42)	
WHODAS cognition†	1.14	(0.84, 1.54)		**WHODAS cognition**†	1.11	(0.76, 1.6)	
WHODAS mobility†	0.95	(0.62, 1.45)		**WHODAS mobility**†	0.98	(0.63, 1.53)	
Poverty index > 200%	1.26	(0.74, 2.13)		**Poverty index > 200%**	1.30	(0.75, 2.26)	
Pressured to seek care	4.98	(1.94, 12.76)	*	**Pressured to seek care**	3.98	(1.8, 8.81)	*

* = Significant at $p < 0.05$; † = ORs on WHODAS scores refer to change in odds per standard deviation

Table 8. Logistic regression for perceived need among respondents without a mental illness

	N = 985		
Variable	**OR**	**95% CI**	
# of chronic conditions	1.22	(0.80, 1.88)	
Age	0.97	(0.92, 1.03)	
Household size	0.92	(0.59, 1.43)	
# depression symptoms	1.17	(1.05, 1.3)	*
# GAD symptoms	1.35	(1.15, 1.58)	*
# alcohol abuse symptoms	1.23	(1.00, 1.50)	*
Positive interactions with family	0.48	(0.16, 1.44)	
Positive interactions with friends	0.66	(0.25, 1.73)	
Male	0.35	(0.12, 0.97)	*
Non-white race	1.30	(0.49, 3.44)	
Not married	0.94	(0.48, 1.83)	
High school education	0.85	(0.33, 2.19)	
WHODAS self-care†	1.12	(0.67, 1.88)	
WHODAS cognition†	1.11	(0.69, 1.77)	
WHODAS mobility†	1.25	(0.72, 2.18)	
Poverty index > 200%	1.45	(0.62, 3.41)	
Pressured to seek care	4.76	(1.82, 12.49)	*

* = Significant at $p < 0.05$

† = ORs on WHODAS scores refer to change in odds per standard deviation

Utilization of Mental Health Care

Of the entire sample, 6.1% (138) received some type of formal mental health services in the past 12 months. Of the respondents who received mental health services, most (67.8%) received mental health care from a primary care provider only, 19.7% received care from a mental health specialist only, and 12.5% received care from both types of providers. Of those who used formal mental health services, 10.0% (16) also received mental health care from informal sources (see Table 6, Figure 2).

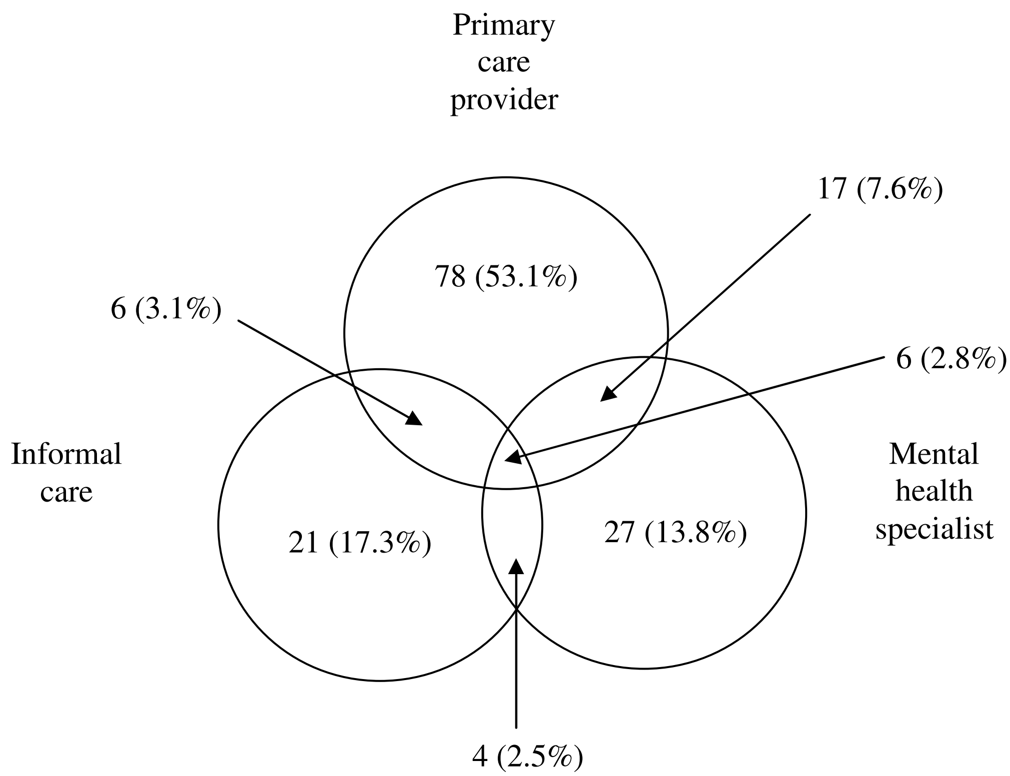

Figure 2. Sources of mental health care. Unweighted n's and weighted percentages are reported.

Nearly half (44.6%) of the respondents who used some type of formal mental health services met diagnostic criteria for a depression or anxiety disorder. Of the respondents in the entire sample who met diagnostic criteria for a mental disorder, 19.5% used care in the past 12 months. Conversely, 4.1% of those who did not meet criteria for a mental disorder used formal mental health care.

Utilization of formal mental health services was significantly related to a number of variables in bivariate analyses. Women were more likely to use care than men, with 8.1% of women and 3.5% of men in the sample using formal mental health care. Utilization rates were greater for respondents with MDD, dysthymia, GAD, and subthreshold GAD than for those without diagnoses, but not everyone who met diagnostic criteria used care (Table 4). A third of respondents with MDD and 45.3% of respondents who met criteria for GAD used care. Thirteen percent of those with subthreshold GAD and 28.6% of people with dysthymia used mental health care. Minor depression was not significantly related to utilization of care. People who used care had significantly more symptoms of depression (2.5, SE = 0.3) and GAD (2.0, SE = 0.3) than those who did not use care (depression symptoms: mean = 0.7, SE = 0.1, GAD symptoms: mean = 0.5, SE = 0.1). Utilization also was higher among respondents reporting any alcohol abuse symptoms than among those without any symptoms. Additionally, formal utilization was more likely among respondents with other anxiety disorders.

Utilization of mental health care increased as both self-rated mental and physical health declined. Respondents with worse cognitive functioning and mobility were more likely use mental health care (Table 5). Utilization of mental health care was reported more often by respondents with greater numbers of chronic physical conditions. The quality of support from family members or friends was not related to utilization of care.

Utilization – Multivariate Analyses

In multivariate logistic regression analyses, many of the variables that were significantly related to odds of utilization in bivariate analyses were no longer significant. Model fit was nearly identical for the symptom model (AICc = 686.8) and diagnosis model (AICc = 688.8). The odds of utilization increased with the number of symptoms of depression (OR per symptom = 1.15, 95% CI = [1.06, 1.24]), symptoms of GAD (OR per symptom = 1.16, 95% CI = [1.02, 1.31]), as well as with symptoms of alcohol abuse (OR per symptom = 1.34, 95% CI = [1.11, 1.61]) (see Table 9). The odds of utilization also increased when the respondent had an anxiety disorder other than GAD (OR = 4.18, 95% CI = [2.04, 8.57]). Men were less likely to use care than women (OR = 0.34, 95% CI = [0.17, 0.69]). Utilization was more likely among respondents with private health insurance (OR = 2.34, 95% CI = [1.08, 5.08]). Physical health status was not significantly related to utilization.

Substituting diagnoses for counts of depression and anxiety symptoms changed the results of the model slightly. The odds of utilization were significantly related to diagnoses of MDD (OR = 3.56, 95% CI = [1.47, 8.59]) and diagnoses of any anxiety disorder (OR = 5.62, 95% CI = [2.88, 10.99]). In the diagnosis model, utilization increased with greater numbers of chronic physical conditions (OR per condition = 1.32, 95% CI = [1.02, 1.71]) as well as with worse cognitive functioning (OR per standard deviation of WHO-DAS scale = 1.26, 95% CI = [1.02, 1.56]). As in the symptom model, men were less likely to use care than women, and respondents with more symptoms of alcohol abuse or who had private insurance were more likely to use care.

Utilization among Respondents with and without Depression or Anxiety

Logistic regressions were performed on both the group of respondents with a probable depression or anxiety disorder and the group who did not meet diagnostic criteria for any of these disorders to determine if relationships among health and social factors and utilization differed depending on diagnosis (Table 10). For respondents without any diagnoses, the odds of utilization increased with the number of depression symptoms (OR per symptom = 1.15, 95% CI = [1.02, 1.29]) as well as with the number of symptoms of alcohol abuse (OR per symptom = 1.29, 95% CI = [1.03, 1.60]). Additionally, among respondents who did not meet diagnostic criteria for depression or anxiety, men were less likely to use care than women (OR = 0.4, 95% CI = [0.16, 0.99]).

As was the case for respondents without depression or anxiety, the number of alcohol abuse symptoms also was related to odds of utilization for those with a depression or anxiety disorder (OR per symptom = 1.64, 95% CI = [1.20, 2.26]). Otherwise, the relationship between health factors and utilization was different for those with depression/anxiety than for those without either disorder. Among those with a probable diagnosis of depression or an anxiety disorder, the number of chronic physical conditions was associated with higher odds of utilization (OR per condition = 1.44, 95% CI = [1.06, 1.97]). Additionally, worse cognitive functioning was related to higher odds of mental health care use (OR per standard deviation of WHO-DAS scale = 1.39, 95% CI = [1.11, 1.74]).

Table 9. Logistic regressions for any formal mental health care

	Diagnosis Variables (N = 1553, AICc = 688.8)				Symptom Variables (N = 1552, AICc = 686.8)		
Variable	**OR**	**95% CI**		**Variable**	**OR**	**95% CI**	
# of chronic conditions	1.32	(1.02, 1.71)	*	**# of chronic conditions**	1.29	(0.99, 1.69)	
Age	0.99	(0.95, 1.04)		**Age**	1.01	(0.97, 1.06)	
Household size	1.16	(0.84, 1.59)		**Household size**	1.21	(0.87, 1.67)	
MDD	3.56	(1.47, 8.59)	*	**# depression symptoms**	1.15	(1.06, 1.24)	*
Minor depression	2.27	(0.68, 7.61)		**# GAD symptoms**	1.16	(1.02, 1.31)	*
Anxiety disorder	5.62	(2.88, 10.99)	*	**Other anxiety disorder**	4.18	(2.04, 8.57)	*
Subsyndromal GAD	1.61	(0.56, 4.66)					
# alcohol abuse symptoms	1.34	(1.11, 1.61)	*	**# alcohol abuse symptoms**	1.34	(1.11, 1.61)	*
Positive interactions with family	0.71	(0.41, 1.23)		**Positive interactions with family**	0.77	(0.44, 1.37)	
Positive interactions with friends	1.02	(0.60, 1.72)		**Positive interactions with friends**	0.91	(0.53, 1.57)	
Male	0.31	(0.15, 0.63)	*	**Male**	0.34	(0.17, 0.69)	*
Race				**Race**			
Non-Latino White	1.00			Non-Latino White	1.00		
African American / Afro-Caribbean	0.56	(0.27, 1.18)		African American / Afro-Caribbean	0.68	(0.32, 1.45)	
Other	1.12	(0.56, 2.25)		Other	1.16	(0.59, 2.26)	
Not married	0.72	(0.40, 1.29)		**Not married**	0.74	(0.39, 1.42)	
High school education	0.86	(0.49, 1.51)		**High school education**	0.99	(0.50, 1.93)	
WHODAS self-care†	0.92	(0.70, 1.19)		**WHODAS self-care†**	0.84	(0.60, 1.18)	
WHODAS cognition†	1.26	(1.02, 1.56)	*	**WHODAS cognition†**	1.22	(0.97, 1.54)	
WHODAS mobility†	1.02	(0.68, 1.54)		**WHODAS mobility†**	1.05	(0.69, 1.60)	
Poverty index > 200%	1.14	(0.62, 2.07)		**Poverty index > 200%**	1.24	(0.66, 2.30)	
Private insurance	2.86	(1.33, 6.15)	*	**Private insurance**	2.34	(1.08, 5.08)	*

* = Significant at $p < 0.05$; † = ORs on WHODAS scores refer to change in odds per standard deviation

Table 10. Logistic regressions for formal utilization; blocking on diagnosis

Variable	Respondents without depression/anxiety (N = 1400)			Respondents with depression/anxiety (N = 301)		
	OR	95% CI		OR	95% CI	
# of chronic conditions	1.16	(0.76, 1.78)		1.44	(1.06, 1.97)	*
Age	0.99	(0.93, 1.06)		1.03	(0.97, 1.09)	
Household size	1.23	(0.75, 2.02)		1.05	(0.66, 1.68)	
# depression symptoms	1.15	(1.02, 1.29)	*	1.10	(0.98, 1.23)	
# GAD symptoms	1.20	(1.00, 1.43)		1.07	(0.91, 1.25)	
# alcohol abuse symptoms	1.29	(1.03, 1.60)	*	1.64	(1.20, 2.26)	*
Positive interactions with family	0.65	(0.26, 1.64)		1.03	(0.47, 2.24)	
Positive interactions with friends	1.03	(0.47, 2.25)		0.58	(0.24, 1.39)	
Male	0.40	(0.16, 0.99)	*	0.31	(0.12, 0.79)	
Non-white race	1.17	(0.45, 3.05)		1.09	(0.57, 2.07)	
Not married	0.68	(0.33, 1.42)		0.61	(0.19, 1.95)	
High school education	0.95	(0.38, 2.41)		0.98	(0.45, 2.15)	
WHODAS self-care†	1.11	(0.71, 1.72)		0.76	(0.55, 1.06)	
WHODAS cognition†	1.17	(0.83, 1.65)		1.39	(1.11, 1.74)	*
WHODAS mobility†	1.28	(0.79, 2.07)		0.83	(0.49, 1.41)	
Poverty index > 200%	1.39	(0.61, 3.17)		0.73	(0.30, 1.76)	
Private insurance	2.52	(0.88, 7.22)		2.91	(0.84, 10.08)	

* = Significant at $p < 0.05$; † = ORs on WHODAS scores refer to change in odds per standard deviation

Utilization and Perceived Need

Respondents who perceived a need for care were more likely to receive care, but need and receipt of care are not perfectly related (see Table 6). Eighty-three percent of those who felt they needed care received it from a primary care provider or mental health specialist, and about one percent of those who did not perceive a need for care received care. Among those who perceived a need for care, there were few significant differences between those who did and did not receive care. Those who received care were slightly older (mean = 73.6, SE = 0.7) and had fewer symptoms of anxiety (mean = 2.2, SE = 0.3) than those who did not receive care (age: mean = 70.5, SE = 0.7, GAD symptoms: mean = 3.7, SE = 0.6).

For those who perceived a need for care and delayed seeking care, there was information on the prevalence of attitudes related to the delay of care (Table 11). Slightly over 20% of the respondents who used care delayed seeking care for at least four weeks. The most common reasons for delaying care were related to perceived seriousness (93.3% of those who delayed care were not bothered very much by the problem at first and 73.6% thought the problem would get better on its own) and knowledge/cultural attitudes (75.4% wanted to handle the problem by themselves and 33.8% did not think treatment would work). Several also had problems relating to the logistics of receiving care: 27.1% did not know where to go for care, 21.9% had scheduling difficulties, 18.3% were worried about insurance coverage, and 12.4% could not get an appointment. Twenty-five percent of respondents who delayed care reported doing so because of stigma associated with mental illness.

Table 11. Reasons for delaying mental health care [a]

For respondents who received mental health care from a specialist or primary care provider in the past 12 months, but delayed seeking care for at least 4 weeks (N = 43)

Reason	N	%
Problem did not bother respondent very much at first	33	93.3
Wanted to handle problem on own	32	75.4
Thought problem would get better by itself	31	73.6
Did not think treatment would work	21	33.8
Did not know where to go or who to see	13	27.1
Thought it would take too much time or be inconvenient	13	25.1
Concerned about what people would think if they found out respondent was in treatment	5	24.9
Had problems with things like transportation, childcare, or scheduling that made it hard to get to treatment	13	21.9
Scared about being put in a hospital against will	10	20.7
Was concerned about how much money it would cost	10	20.1
Was not satisfied with available services	7	18.4
Health insurance would not cover treatment	7	18.3
Received treatment before and it did not work	6	11.5
Could not get an appointment	5	12.4
Other	1	0.7

a) Unweighted n's and weighted percentages are reported

Table 12. Reasons for not seeking care

For respondents who perceived a need for care but did not seek care when problems did not go away on their own (N = 12)

Reason	N
Wanted to handle problem on own	7
Concerned about how much money it would cost	5
Thought the problem would get better by itself	4
Unsure about where to go or who to see	4
Thought it would take too much time or be inconvenient	4
Health insurance would not cover this type of treatment	3
Did not think treatment would work	3
Was not satisfied with available services	3
Problem did not bother respondent very much	3
Concerned about what others might think if they found out respondent was in treatment	2
Received treatment before and it did not work	2
Other	2
Could not get an appointment	1
Scared about being put in a hospital against will	1
Had problems with things like transportation, childcare, or scheduling that made it hard to get to treatment	0

Table 13. Logistic regressions for formal utilization among respondents with perceived need

	Diagnosis Variables (N = 148, AICc = 139.0)				Symptom Variables (N = 148, AICc = 133.9)		
Variable	**OR**	**95% CI**		**Variable**	**OR**	**95% CI**	
# of chronic conditions	1.32	(0.80, 2.17)		**# of chronic conditions**	1.13	(0.71, 1.79)	
Age	1.20	(1.08, 1.33)	*	**Age**	1.19	(1.06, 1.33)	*
Household size	2.86	(1.24, 6.58)	*	**Household size**	3.01	(1.13, 7.98)	*
MDD	2.30	(0.33, 16.27)		**# depression symptoms**	1.08	(0.91, 1.28)	
Anxiety disorder	0.64	(0.13, 3.15)		**# GAD symptoms**	0.79	(0.64, 0.98)	*
Subsyndromal GAD	0.31	(0.07, 1.35)		**Other anxiety disorder**	0.45	(0.15, 1.41)	
Dysthymia	0.39	(0.02, 6.09)					
# alcohol abuse symptoms	0.99	(0.76, 1.29)		**# alcohol abuse symptoms**	0.95	(0.71, 1.27)	
Positive interactions with family	2.16	(0.51, 9.14)		**Positive interactions with family**	1.56	(0.44, 5.56)	
Positive interactions with friends	0.38	(0.10, 1.45)		**Positive interactions with friends**	0.43	(0.12, 1.53)	
Male	0.29	(0.07, 1.19)		**Male**	0.31	(0.06, 1.61)	
Non-white race	2.18	(0.38, 12.44)		**Non-white race**	1.85	(0.34, 10.07)	
Not married	0.28	(0.05, 1.45)		**Not married**	0.28	(0.05, 1.56)	
High school education	6.44	(2.33, 17.82)	*	**High school education**	6.64	(2.10, 21.02)	*
WHODAS self-care†	0.43	(0.24, 0.77)	*	**WHODAS self-care†**	0.42	(0.23, 0.74)	*
WHODAS cognition†	1.09	(0.76, 1.56)		**WHODAS cognition†**	0.98	(0.70, 1.39)	
WHODAS mobility†	1.87	(0.67, 5.19)		**WHODAS mobility†**	2.45	(0.84, 7.17)	
Poverty index > 200%	0.94	(0.27, 3.36)		**Poverty index > 200%**	0.68	(0.16, 2.82)	
Private insurance	0.54	(0.14, 2.13)		**Private insurance**	0.37	(0.09, 1.58)	

* = Significant at $p < 0.05$; † = ORs on WHODAS scores refer to change in odds per standard deviation

While attitudinal questions were not asked of respondents who received care immediately after perceiving a need for it, there were few differences in illness characteristics, sociodemographics, or social support between those who delayed care for at least four weeks after perceiving a need and those who received it right away, so it is likely that the attitudes cited above were important in decisions to delay care. Those who delayed care had better functioning as measured by the WHO-DAS mobility score (mean = 5.75, standard error [SE] = 1.74 for those who delayed; mean = 16.06, SE = 2.97 for those who did not delay receipt of care). Seventeen percent of white respondents delayed care, while 38.8% of African American and Afro-Caribbean and 38.0% of Asian, Hispanic, and respondents of other racial/ethnic backgrounds delayed care (Rao-Scott chi-square test, $p < 0.05$).

Additionally, 21 respondents reported perceiving a need for care some time during the past 12 months but did not receive mental health care. Of these, nine reported that the problem went away by itself. For the remaining 12 whose problems did not go away, the most common reasons for not seeking care were that they wanted to handle the problem on their own (N=7) or they were concerned about the cost of treatment (N=5) (see Table 12).

Multivariate analyses were performed to examine the relationships among health and social factors and utilization for those who perceived a need for care (Table 13). (Results from diagnosis and symptom models were very similar; only the symptom model is reported here.) Among those who perceived a need for care, older respondents had greater odds of utilization (OR = 1.19, 95% CI = [1.06, 1.33]). Odds of utilization decreased when respondents had a greater number of GAD symptoms (OR per symptom = 0.79, 95% CI = [0.64, 0.98]), and they also decreased for people with worse self-care abilities (OR per standard deviation on the WHO-DAS scale = 0.42, 95% CI = [0.23, 0.74]). Utilization of formal mental health care also was more likely among respondents who had more people in their household and who had completed at least a high school education.

Type of Formal Care Received

Simple multinomial logit models were used to examine the direction and significance of relationships with type of care received (primary care only, specialist only, both primary care and specialist). Small sample sizes prohibited multivariate analysis of type of care. Among all users of mental health care (whether or not they perceived a need for care), there were some differences between type of care received and mental health status or sociodemographic characteristics (Table 14). Older respondents were more likely to receive care from a primary care provider than from both a primary care provider and a specialist. Respondents with MDD and with more symptoms of depression were more likely to receive care from both sources than from a primary care provider only. Additionally, respondents with greater numbers of GAD symptoms were more likely to receive care from both types of providers than from either type alone. Men were more likely to receive care from a specialist than a primary care provider. Respondents whose family income was over 200% of the poverty threshold were more likely to receive care from a specialist than a primary care provider as well.

When the sample was restricted to those who perceived a need for care, similar patterns were seen with types of care received. In this subsample, however, gender was not associated with type of care received. Respondents with MDD were more likely to use care from a specialist only or from both types of providers than from a primary care provider only. Also, respondents who perceived a need for care and possessed private insurance were more likely to receive care from a specialist only than from both a specialist and primary care provider.

Informal Care and Multiple Sources of Care

Several respondents also received mental health care from "informal" sources, including online support groups, self-help group meetings, hotlines, spiritual advisors, and healers. Out of the entire sample, 21 respondents received care from these informal sources only, 6 used a combination of informal care and care from a primary care provider, four received informal care as well as care from a specialist, and six received care from all three sources. Because of these small sample sizes, it was not possible to analyze differences between respondents who used each possible combination of care, nor was it feasible to include informal care as a category in the regression models.

Bivariate analyses were performed to examine differences between those who received formal care only and those who received both formal and informal mental health care. People who used both types of care had more symptoms of depression (mean = 5.56, SE = 1.14) and symptoms of GAD (mean = 3.91, SE = 0.86) than those who used formal services only (depression: mean = 2.14, SE = 0.34; GAD: mean = 1.77, SE = 0.27). Respondents with MDD or subthreshold GAD were more likely to use care from both sources than from a formal source only, but respondents with a non-GAD anxiety disorder were more likely to use care from only a formal source. Those who used both formal and informal care had fewer chronic conditions (mean = 1.03, SE = 0.23), better self-rated physical health (mean = 2.45, SE = 0.3) and better mobility (mean = 6.3, SE = 2.95) than those who used formal services only (chronic conditions: mean = 1.7, SE = 0.17; self-rated physical health: mean = 2.93, SE = 0.14; mobility: mean = 14.8, SE = 2.77).

The differences between respondents who received informal care in addition to formal care and respondents who received formal care only might be due to a difference in the number of sources of care, not the types of care themselves. In the multinomial logit models between primary care only, specialist only, and primary and specialist services combined, most of the significant differences were between those who used one type of care and those who used both types (people who received informal care in addition to these types of care were included in those models). There were few significant differences between respondents who received care from a specialist only and those who received care from a primary care provider only. In bivariate analyses among respondents who received any type of care (formal or informal), there were several differences between those who used one type of care and those who used multiple types of care (some combination of informal, specialist, and primary care provider) (Table 15). Multiple types of care were used by 47.7% of those with MDD who used care, but 11.2% of those without MDD. Similarly, multiple types of care were used by 37.3% of the respondents with subthreshold GAD who used care, but 14.0% of those without subthreshold GAD. People who received care from more than one type of provider had more symptoms of depression (mean = 5.45, SE = 0.94) and GAD (mean = 3.61, SE = 0.62) than those who received care from only one type of provider (depression: mean = 1.93, SE = 0.31; GAD: mean = 1.65, SE = 0.26). Additionally, those who received care from multiple sources were younger than those who received care from one source.

Number of Formal Mental Health Visits

Linear regression was used to examine relationships among illness characteristics, social support, sociodemographics, and the number of formal mental health visits among the respondents who had at least one visit in the past year. Models including diagnoses and symptoms had nearly identical fit (R^2 = 0.40, 0.41 respectively) (Table 16). In the symptom model, the number of visits increased with both the number of depression symptoms (β = 0.29, 95% CI = [0.02, 0.56]) and with the number of GAD symptoms (β = 0.35, 95% CI = [0.35, 1.01]). Respondents with at least a high school education had fewer visits than those without a high school education, and respondents with private insurance had fewer visits than those without private insurance. The number of visits increased with worse self-care scores on the WHO-DAS scale.

In the diagnosis model, the number of formal mental health visits was greater for respondents with MDD (β = 2.67, 95% CI = [0.39, 4.95]) and for those with subthreshold GAD (β = 5.56, 95% CI = [1.19, 9.92]). The number of visits was lower, however, for respondents with a non-GAD anxiety disorder (β = -2.51, 95% CI = [-4.69, -0.32]). In this model, the number of visits was lower for respondents with positive interactions with friends (β = -2.67, 95% CI = [-5.11, -0.24]). Similar to the symptom model, people with worse self-care scores had more visits and respondents with private insurance had fewer mental health visits than those without private insurance.

Number of Specialist Visits

Model fit improved dramatically when the number of visits to specialists and primary care providers were modeled separately. Respondents had a mean of 6.3 visits to specialists (SE = 1.1, range 1-30). The number of specialist visits was predicted similarly by the symptom model ($R^2 = 0.58$) and diagnosis model ($R^2 = 0.56$) (Table 17). Respondents with greater numbers of GAD symptoms had more visits to mental health specialists ($\beta = 1.31$, 95% CI = [0.73, 1.90]). Men had more visits to specialists than women ($\beta = 4.56$, 95% CI = [0.49, 8.64]), and respondents with at least a high school education had fewer visits than those who had not completed high school ($\beta = -6.87$, 95% CI = [-10.51, -3.23]). Also, worse cognitive functioning was associated with more specialist visits (β per standard deviation on WHO-DAS scale = 1.70, 95% CI = [0.77, 2.63]). Private insurance was not significantly related to the number of specialist visits.

Neither gender nor cognitive functioning was associated with number of visits in the diagnosis model. In the diagnosis model, however, respondents with African American or Afro-Caribbean backgrounds had more visits to specialists than non-Latino whites ($\beta = 6.37$, 95% CI = [0.36, 12.38]). Additionally, respondents with larger households had fewer visits to specialists ($\beta = -2.3$, 95% CI = [-4.41, -0.18]). Similar to the symptom model, anxiety was related to the number of visits, with the number of visits increasing for respondents with GAD ($\beta = 11.62$, 95% CI = [4.16, 19.09]) as well as for those with subthreshold GAD ($\beta = 9.60$, 95% CI = [4.74, 14.46]).

Table 14. Unadjusted multinomial logit models for type of care among respondents with some formal utilization

All respondents who used formal care

	Both vs. MHS only OR (95% CI)	PCP only vs. MHS only OR (95% CI)	Both vs. PCP only OR (95% CI)
Age	0.92 (0.83, 1.02)	1.03 (0.91, 1.17)	0.89 (0.80, 0.98)
MDD	2.46 (0.53, 11.32)	0.38 (0.12, 1.16)	6.53 (1.62, 26.24)
Subthreshold GAD	19.76 (2.03, 192.80)	5.81 (0.67, 50.57)	3.40 (0.76, 15.11)
# depression symptoms	1.22 (0.99, 1.49)	0.96 (0.83, 1.11)	1.27 (1.05, 1.54)
# anxiety symptoms	1.35 (1.01, 1.81)	1.02 (0.83, 1.24)	1.33 (1.07, 1.66)
Male	0.62 (0.12, 3.18)	0.16 (0.04, 0.65)	3.83 (0.86, 16.94)
Poverty index > 200%	0.27 (0.05, 1.44)	0.12 (0.03, 0.45)	2.29 (0.63, 8.39)

Respondents who used formal care and perceived a need for care

	Both vs. MHS only OR (95% CI)	PCP only vs. MHS only OR (95% CI)	Both vs. PCP only OR (95% CI)
Age	0.89 (0.79, 0.99)	1.00 (0.88, 1.15)	0.89 (0.80, 0.99)
MDD	1.53 (0.32, 7.32)	0.23 (0.06, 0.88)	6.59 (1.56, 27.96)
# depression symptoms	1.20 (0.91, 1.39)	0.89 (0.76, 1.04)	1.26 (1.04, 1.54)
# anxiety symptoms	1.20 (0.9, 1.63)	0.91 (0.76, 1.10)	1.33 (1.06, 1.67)
Poverty index > 200%	0.26 (0.04, 1.56)	0.11 (0.03, 0.48)	2.36 (0.64, 8.72)
Private insurance	0.15 (0.04, 0.57)	0.57 (0.14, 2.27)	0.26 (0.06, 1.11)

Only variables with at least one comparison significant at p < .05 with the Wald F-test are listed

Table 15. Bivariate relationships with number of sources of care (among respondents with at least one informal or formal care visit)

	# types of care		
	1 (N = 126)	2-3 (N = 33)	
Variable	Frequency (%) or Mean (SE)[a]		
Age	74.0 (0.7)	71.8 (1.0)	†
MDD			*
No	108 (88.8%)	22 (11.2%)	
Yes	18 (52.3%)	11 (47.7%)	
Subthreshold GAD			*
No	116 (86.0%)	27 (14.0%)	
Yes	10 (62.7%)	6 (37.3%)	
# depression symptoms			*†
0-2	75 (93.6%)	11 (6.4%)	
3-5	11 (76.2%)	3 (23.8%)	
6-9	40 (65.3%)	19 (34.7%)	
# GAD symptoms			*†
0-1	79 (90.6%)	14 (9.4%)	
2-3	9 (98.0%)	1 (2.0%)	
4-5	13 (73.4%)	7 (26.6%)	
6-7	25 (62.6%)	11 (37.4%)	
Any depression or anxiety disorder			*
No	65 (92.2%)	11 (7.8%)	
Yes	61 (72.2%)	22 (27.8%)	

a) Unweighted n's and weighted percentages are reported
* Significantly related at p < .05 with Rao-Scott chi-square
† Significantly related at p < .05 with t-test
Only variables that were significant at p<.05 are listed here

Table 16. Linear regressions for number of formal mental health visits

	Diagnosis Variables (N = 132, R^2 =0.40)				Symptom Variables (N = 132, R^2 = 0.41)		
Variable	**Beta**	**CI**			**Beta**	**CI**	
# of chronic conditions	-0.34	(-1.08, 0.39)		**# of chronic conditions**	-0.26	(-0.95, 0.43)	
Age	0.05	(-0.10, 0.21)		**Age**	0.08	(-0.10, 0.25)	
Household size	0.20	(-0.90, 1.31)		**Household size**	0.36	(-0.58, 1.30)	
MDD	2.67	(0.39, 4.95)	*	**# depression symptoms**	0.29	(0.02, 0.56)	*
Minor depression	2.10	(-1.05, 5.25)		**# GAD symptoms**	0.68	(0.35, 1.01)	*
Generalized Anxiety Disorder	2.32	(-0.81, 5.44)					
Subthreshold GAD	5.56	(1.19, 9.92)	*				
Dysthymia	1.96	(-5.35, 9.28)					
# alcohol abuse symptoms	0.03	(-0.48, 0.55)		**# alcohol abuse symptoms**	-0.14	(-0.67, 0.40)	
Other anxiety disorder	-2.51	(-4.69, -0.32)	*	**Other anxiety disorder**	-1.99	(-3.98, 0.00)	
Positive interactions with family	0.15	(-1.92, 2.22)		**Positive interactions with family**	0.01	(-1.78, 1.79)	
Positive interactions with friends	-2.67	(-5.11, -0.24)	*	**Positive interactions with friends**	-1.97	(-4.10, 0.16)	
Male	1.99	(-0.74, 4.72)		**Male**	1.32	(-1.58, 4.21)	
Race				**Race**			
Non-Latino White	0.00			Non-Latino White	0.00		
African American / Afro-Caribbean	3.63	(-0.41, 7.67)		African American / Afro-Caribbean	3.86	(-0.12, 7.84)	
Other	0.14	(-2.33, 2.61)		Other	-0.63	(-3.56, 2.31)	
Not married	-1.65	(-3.74, 0.43)		**Not married**	-1.25	(-3.42, 0.92)	
High school education	-3.36	(-7.01, 0.29)		**High school education**	-3.11	(-6.04, -0.19)	*
WHODAS self-care†	1.39	(0.16, 2.62)	*	**WHODAS self-care†**	1.21	(0.07, 2.36)	*
WHODAS cognition†	0.15	(-0.53, 0.82)		**WHODAS cognition†**	0.29	(-0.46, 1.04)	
WHODAS mobility†	-0.36	(-1.88, 1.15)		**WHODAS mobility†**	-0.45	(0.78, -1.99)	
Poverty index > 200%	0.20	(-2.19, 2.59)		**Poverty index > 200%**	0.34	(-2.28, 2.97)	
Private insurance	-3.97	(-6.97, -0.97)	*	**Private insurance**	-4.08	(-6.74, -1.41)	*

* = Significant at $p < 0.05$; † = ORs on WHODAS scores refer to change in odds per standard deviation

Table 17. Linear regressions for number of visits to a mental health specialist

	Diagnosis Variables ($N = 54$, $R^2 = 0.56$)				Symptom Variables ($N = 54$, $R^2 = 0.58$)		
Variable	**Beta**	**CI**			**Beta**	**CI**	
# of chronic conditions	-1.08	(-2.79, 0.64)		**# of chronic conditions**	0.39	(-1.02, 1.79)	
Age	0.10	(-0.16, 0.37)		**Age**	-0.04	(-0.37, 0.29)	
Household size	-2.30	(-4.41, -0.18)	*	**Household size**	-0.49	(-2.63, 1.65)	
MDD	2.42	(-1.18, 6.03)		**# depression symptoms**	0.28	(-0.12, 0.69)	
Generalized Anxiety Disorder	11.62	(4.16, 19.09)	*	**# GAD symptoms**	1.31	(0.73, 1.90)	*
Subthreshold GAD	9.60	(4.74, 14.46)	*				
Dysthymia	-0.23	(-8.33, 7.88)					
# alcohol abuse symptoms	-0.81	(-2.25, 0.63)		**# alcohol abuse symptoms**	-0.39	(-1.37, 0.58)	
Other anxiety disorder	-6.38	(-14.29, 1.53)		**Other anxiety disorder**	-1.60	(-7.60, 4.39)	
Positive interactions with family	0.81	(-2.49, 4.11)		**Positive interactions with family**	1.61	(-2.07, 5.30)	
Positive interactions with friends	-0.44	(-5.38, 4.50)		**Positive interactions with friends**	-0.34	(-3.30, 2.61)	
Male	5.03	(-0.84, 10.89)		**Male**	4.56	(0.49, 8.64)	*
Race				**Race**			
Non-Latino White	0.00			Non-Latino White	0.00		
African American / Afro-Caribbean	6.37	(0.36, 12.38)	*	African American / Afro-Caribbean	5.12	(-2.30, 12.53)	
Other	-1.28	(-4.22, 1.65)		Other	-2.71	(-7.30, 1.89)	
Not married	-0.67	(-4.12, 2.78)		**Not married**	1.35	(-4.44, 7.14)	
High school education	-8.03	(-13.96, -2.10)	*	**High school education**	-6.87	(-10.51, -3.23)	*
WHODAS self-care†	1.05	(-0.76, 2.85)		**WHODAS self-care†**	1.42	(-0.81, 3.65)	
WHODAS cognition†	1.24	(-0.27, 2.75)		**WHODAS cognition†**	1.70	(0.77, 2.63)	*
WHODAS mobility†	-0.23	(2.03, -4.24)		**WHODAS mobility†**	-2.54	(-6.50, 1.42)	
Poverty index > 200%	-1.18	(-5.05, 2.69)		**Poverty index > 200%**	-1.11	(-4.91, 2.68)	
Private insurance	-1.06	(-5.30, 3.19)		**Private insurance**	1.05	(-3.23, 5.33)	

* = Significant at $p < 0.05$; † = ORs on WHODAS scores refer to change in odds per standard deviation

Number of Mental Health Visits to a Primary Care Provider

The sample size was greater for analyses of number of mental health visits to a primary care provider (N = 101) than for visits to a specialist (N = 54), and the results of the symptom and diagnosis models were more similar for visits to primary care providers than they were in the models of specialist visits. Respondents had a mean of 2.4 visits to primary care providers (SE = 0.4, range 1-35). Model fit was nearly identical for the two models (R^2 = 0.54 for symptoms, 0.55 for diagnoses) (Table 18). Coefficients listed here are from the symptom model. The number of mental health visits to a primary care provider increased with age (β = 0.10, 95% CI = [0.01, 0.18]) and worse self-care scores (β per standard deviation = 1.69, 95% CI = [0.90, 2.48]). Respondents of Asian or Hispanic ethnic backgrounds had more visits to primary care providers (β = 2.05, 95% CI = [0.26, 3.85]). Fewer visits were seen for respondents with more alcohol abuse symptoms (β = -0.25, 95% CI = [-0.46, -0.04]) and for those with private insurance (β = -1.92, 95% CI = [-3.76, -0.08]), although private insurance was significant only in the symptom model.

Satisfaction with Care

Most respondents were very satisfied (48.2%) or satisfied (38.8%) with the formal mental health services they received. Only 5.9% reported being dissatisfied or very dissatisfied, and 7.1% were neither satisfied nor dissatisfied. Satisfaction with care was not significantly related to perceived need for care, number of visits, presence of a mental disorder, or use of prescription medication in bivariate analyses (Table 19). The only variable significantly related to satisfaction in bivariate analyses was the number of alcohol abuse symptoms reported by the respondent; respondents with greater numbers of alcohol abuse symptoms were more likely to be satisfied with mental health services. Because of the low variability in the satisfaction measure and the small sample size, results of multivariate analyses were unstable and are not reported here.

Use of Prescription Medication for Mental Health Reasons

Prescription medications for mental health reasons were taken in the past 12 months by 15.0% of all respondents and by 77.9% of respondents who had received formal mental health services in the past year (Tables 20-21). The most common medications taken were lorazepam (taken by 15.0% of respondents taking a prescription medication), paroxetine (10.5%), diazepam (10.4%), alprazolam (9.7%), and sertraline (8.7%). Prescription medications were used more often by Hispanic respondents (33.1% used a prescription medication) and Asian respondents (22.8%) than by non-Latino whites (14.2%) (Table 21). Respondents who met diagnostic criteria for MDD and anxiety disorders were more likely to take a prescription medication than respondents without these disorders; 45.9% of respondents with MDD, 56.6% of those with GAD, 35.6% of those with subthreshold GAD, and 33.2% of those with other anxiety disorders received prescription medications. Neither minor depression nor dysthymia were significantly related to prescription use. Additionally, 39.4% of those with a self-reported psychotic episode in the past year received a prescription medication for mental health reasons. The odds of using a prescription medication increased with each additional symptom of depression, GAD, and alcohol abuse symptoms reported by respondents.

Prescription medication usage was more common among those with lower self-rated mental and physical health (questions on self-rated health were asked prior to questions about prescription medications). It also was more common among those with worse self-care skills, lower cognitive functioning, and worse mobility, as well as among those with a greater number of chronic physical conditions. Additionally, 74.0% of those who perceived a need for care received a prescription medication, whereas only 11.2% of those who did not perceive a need for mental health care received a prescription medication for mental health reasons.

In multivariate analyses of prescription usage, many of the mental and physical health measures mentioned above remained significant (see Table 22). The model including symptoms fit the data better than the diagnosis model (AICc = 1265.2 in symptom model vs. 1288.7 in diagnosis model). The odds of prescription medication usage increased with the number of depression symptoms (OR per symptom = 1.14, 95% CI = [1.07, 1.22]), GAD symptoms (OR per symptom = 1.14, 95% CI = [1.05, 1.25]), alcohol abuse symptoms (OR per symptom = 1.17, 95% CI = [1.05, 1.30]), and chronic physical conditions (OR per condition = 1.39, 95% CI = [1.15, 1.69]). It also was higher among those with worse cognitive functioning (OR per standard deviation on WHO-DAS = 1.56, 95% CI = [1.30, 1.86]). Asian and Hispanic respondents were more likely to receive prescription medications than non-Latino white respondents as well (OR = 2.13, 95% CI = [1.21, 3.76]).

Results were similar when diagnoses were modeled. In addition to increasing with alcohol abuse symptoms, worsened cognitive functioning and chronic physical conditions, the odds of using a prescription medication for mental health reasons increased with diagnoses of MDD (OR = 3.16, 95% CI = [1.45, 6.92]), GAD (OR = 4.44, 95% CI = [1.88, 10.52]), as well as with subthreshold GAD (OR = 2.40, 95% CI = [1.25, 4.6]). Odds of using a prescription medication decreased for respondents who met diagnostic criteria for dysthymia (OR = 0.23, 95% CI = [0.06, 0.81]). As in the symptom model, Asian and Hispanic respondents had higher odds of receiving prescription medications, but in the diagnosis model, African American and Afro-Caribbean respondents were less likely to take prescription medications than non-Latino whites (OR = 0.50, 95% CI = [0.29, 0.87]).

Table 18. Linear regressions for number of mental health visits to a primary care provider

	Diagnosis Variables (N = 101, R^2 =0.55)				Symptom Variables (N = 101, R^2 = 0.54)		
Variable	**Beta**	**CI**			**Beta**	**CI**	
# of chronic conditions	-0.23	(-0.79, 0.33)		**# of chronic conditions**	-0.21	(-0.78, 0.36)	
Age	0.10	(0.01, 0.18)	*	**Age**	0.10	(0.01, 0.18)	*
Household size	0.44	(-0.19, 1.07)		**Household size**	0.42	(-0.21, 1.06)	
MDD	0.62	(-0.73, 1.97)		**# depression symptoms**	0.06	(-0.08, 0.19)	
Minor depression	0.89	(-0.47, 2.25)		**# GAD symptoms**	0.04	(-0.16, 0.24)	
Generalized Anxiety Disorder	0.51	(-1.28, 2.31)					
Subthreshold GAD	0.62	(-0.54, 1.79)					
Dysthymia	-1.12	(-2.88, 0.65)					
# alcohol abuse symptoms	-0.22	(-0.40, -0.03)	*	**# alcohol abuse symptoms**	-0.25	(-0.46, -0.04)	*
Other anxiety disorder	-0.59	(-1.55, 0.36)		**Other anxiety disorder**	-0.60	(-1.55, 0.35)	
Positive interactions with family	0.07	(-0.76, 0.91)		**Positive interactions with family**	0.12	(-0.71, 0.95)	
Positive interactions with friends	-0.91	(-2.18, 0.36)		**Positive interactions with friends**	-0.92	(-2.19, 0.35)	
Male	0.05	(-1.24, 1.35)		**Male**	0.08	(-1.27, 1.43)	
Race				**Race**			
Non-Latino White	0.00			Non-Latino White	0.00		
African American / Afro-Caribbean	0.24	(-1.75, 2.23)		African American / Afro-Caribbean	0.21	(-1.76, 2.18)	
Other	2.26	(0.52, 4.01)	*	Other	2.05	(0.26, 3.85)	*
Not married	-0.84	(-2.06, 0.38)		**Not married**	-0.79	(-1.90, 0.32)	
High school education	-1.10	(-2.55, 0.34)		**High school education**	-1.10	(-2.43, 0.23)	
WHODAS self-care†	1.66	(0.76, 2.56)	*	**WHODAS self-care†**	1.69	(0.90, 2.48)	*
WHODAS cognition†	-0.25	(-0.68, 0.18)		**WHODAS cognition†**	-0.22	(-0.63, 0.19)	
WHODAS mobility†	-0.31	(-0.98, 0.36)		**WHODAS mobility†**	-0.34	(-0.98, 0.30)	
Poverty index > 200%	-0.65	(-1.70, 0.40)		**Poverty index > 200%**	-0.58	(-1.55, 0.40)	
Private insurance	-1.62	(-3.53, 0.30)		**Private insurance**	-1.92	(-3.76, -0.08)	*

* = Significant at $p < 0.05$; † = ORs on WHODAS scores refer to change in odds per standard deviation

Table 19. Mean (SE) or frequency (%)[a] of respondents in each category who were satisfied with care
Satisfied (N = 117); Not satisfied (N = 20)

Variable	%	Variable	%	Variable	%
Age		**MDD**		**# GAD symptoms**	
65-74	75 (89.4%)	No	92 (87.9%)	0-1	69 (88.1%)
75-84	34 (81.3%)	Yes	25 (82.5%)	2-3	6 (78.7%)
85+	8 (100.0%)	**Minor depression**		4-5	15 (84.2%)
Male	31 (95.7%)	No	108 (87.3%)	6-7	27 (89.5%)
Female	86 (84.3%)	Yes	9 (83.2%)	**# Alcohol abuse symptoms**	†
Race		**GAD**		0	109 (85.8%)
Non-Latino Whites	61 (86.5%)	No	104 (88.0%)	1-8	8 (100%)
Caribbean	18 (73.5%)	Yes	13 (79.5%)	**Family Support**	
Asian	16 (100.0%)	**Subthreshold GAD**		Negative	48 (80.9%)
Hispanic	20 (94.0%)	No	105 (88.6%)	Positive	65 (89.9%)
Other	2 (100.0%)	Yes	12 (69.8%)	**Friend Support**	
Not married	60 (82.4%)	**Dysthymia**		Negative	38 (81.9%)
Married	57 (91.3%)	No	112 (88.4%)	Positive	74 (88.3%)
No high school	42 (83.1%)	Yes	5 (62.1%)	**Pressure to seek care**	
High school education	75 (89.1%)	**Other anxiety disorders**		No	98 (86.2%)
Household size	1.6 (0.1)	No	81 (90.9%)	Yes	19 (90.6%)
Poverty index		Yes	36 (75.7%)	**Perceived need**	
0-200%	60 (80.3%)	**Any mental disorder**		No	13 (83.1%)
Above 200%	57 (94.3%)	No	54 (93.5%)	Yes	104 (87.8%)
Private insurance	86 (88.3%)	Yes	63 (79.2%)	**Received care**	
No private insurance	31 (80.5%)	**Psychotic episode**		MHS only	28 (98.7%)
WHODAS self-care	3.3 (1.3)	No	77 (88.2%)	PCP only	70 (86.0%)
WHODAS cognitive	2.8 (1.0)	Yes	2 (52.0%)	MHS and PCP	19 (75.2%)
WHODAS mobility	13.3 (2.7)	**# Depression symptoms**		**Informal care**	
# of chronic conditions		0-2	63 (87.1%)	No	103 (86.8%)
0	17 (97.5%)	3-5	11 (83.8%)	Yes	14 (89.8%)
1	41 (79.9%)	6-9	43 (87.8%)	**Prescription**	
2-3	49 (88.6%)			No	25 (81.0%)
4-6	10 (90.7%)			Yes	92 (88.8%)

a) Unweighted n's and weighted percentages are reported

MHS = Mental Health Specialist; PCP = Primary Care Provider

* Significantly related at p < .05 with Rao-Scott chi-square; † Significantly related at p < .05 with t-test

Table 20. Frequency (%)[a] of respondents in each care category who received a prescription medication for mental health reasons

Prescription: Yes (N = 360), No (N = 1514)

Variable	%	
Received care		
No formal care	254 (11.0%)	
MHS only	26 (87.5%)	
PCP only	57 (71.1%)	
MHS and PCP	23 (100.0%)	
Informal care		*
No	338 (14.3%)	
Yes	22 (55.2%)	
# visits to MHS		†
0	311 (13.5%)	
1	8 (82.4%)	
2-4	20 (100.0%)	
5-10	8 (87.5%)	
11-30	13 (97.1%)	
# visits to PCP		
0	280 (11.9%)	
1	37 (77.5%)	
2-4	30 (76.9%)	
5-10	8 (59.1%)	
11-35	5 (63.8%)	

a) Unweighted n's and weighted percentages are reported
* Significantly related at p < .05 with Rao-Scott chi-square
† Significantly related at p < .05 with t-test
MHS = Mental Health Specialist; PCP = Primary Care Provider

Table 21. Mean(SE) or frequency(%)[a] of respondents in each category who received a prescription medication for mental health reasons (Yes (N = 360); No (N = 1514))

Variable	%	Variable	%	Variable	%
Age		**MDD**	*	**# GAD symptoms**	*†
65-74	221 (15.0%)	No	313 (14.3%)	0-1	253 (12.4%)
75-84	125 (16.0%)	Yes	47 (45.9%)	2-3	20 (23.4%)
85+	14 (11.3%)	**Minor depression**		4-5	37 (33.1%)
Male	105 (12.2%)	No	344 (15.1%)	6-7	50 (43.5%)
Female	255 (17.2%)	Yes	16 (18.3%)	**# Alcohol abuse symptoms**	*†
Race	*	**GAD**	*	0	343 (14.5%)
Non-Latino Whites	150 (14.2%)	No	337 (14.5%)	1-4	10 (22.9%)
Caribbean	64 (9.3%)	Yes	23 (56.6%)	5-8	7 (40.5%)
Asian	43 (22.8%)	**Subthreshold GAD**	*	**Self-rated mental health**	*†
Hispanic	100 (33.1%)	No	325 (14.4%)	Excellent	36 (8.0%)
Other	3 (12.3%)	Yes	35 (35.6%)	Very Good	46 (8.3%)
Not married	212 (17.2%)	**Dysthymia**		Good	82 (16.3%)
Married	148 (13.3%)	No	350 (15.0%)	Fair	64 (29.7%)
No high school	155 (16.5%)	Yes	10 (26.7%)	Poor	8 (25.2%)
High school education	205 (14.4%)	**Other anxiety disorders**	*	**Self-rated physical health**	*†
Household size	1.64 (0.06)	No	298 (14.9%)	Excellent	9 (1.9%)
Poverty index		Yes	61 (33.2%)	Very Good	28 (7.5%)
0-200%	215 (16.0%)	**Any mental disorder**	*	Good	70 (11.9%)
Above 200%	145 (14.2%)	No	234 (12.6%)	Fair	903 (21.6%)
Private insurance	229 (14.9%)	Yes	126 (30.3%)	Poor	36 (20.2%)
No private insurance	131 (16.1%)	**Psychotic episode**	*	**Negative family support**	146 (14.0%)
WHODAS self-care	3.13 (0.81) †	No	251 (15.3%)	**Positive family support**	198 (16.9%)
WHODAS cognitive	2.97 (0.81) †	Yes	16 (39.4%)	**Negative friend support**	120 (16.5%)
WHODAS mobility	13.82 (1.92) †	**# Depression symptoms**	*†	**Positive friend support**	218 (15.4%)
# of chronic conditions	*†	0-2	249 (12.3%)	**Perceived need**	*
0	49 (10.1%)	3-5	21 (18.2%)	No	172 (11.2%)
1	111 (12.3%)	6-9	90 (39.3%)	Yes	108 (74.0%)
2-3	176 (20.2%)				
4-6	24 (32.7%)				

a) Unweighted n's and weighted percentages are reported   MHS = Mental Health Specialist; PCP = Primary Care Provider

* Significantly related at p < .05 with Rao-Scott chi-square; † Significantly related at p < .05 with t-test

Table 22. Logistic regressions for use of prescription medication for mental health reason in past 12 months

	Diagnosis Variables (N = 1552, AICc = 1288.7)				Symptom Variables (N = 1552, AICc = 1265.2)		
Variable	**OR**	**95% CI**		**Variable**	**OR**	**95% CI**	
# of chronic conditions	1.41	(1.16, 1.7)	*	**# of chronic conditions**	1.39	(1.15, 1.69)	*
Age	0.98	(0.95, 1.00)		**Age**	0.99	(0.96, 1.02)	
Household size	0.98	(0.79, 1.22)		**Household size**	1.03	(0.82, 1.28)	
MDD	3.16	(1.45, 6.92)	*	**# depression symptoms**	1.14	(1.07, 1.22)	*
Minor depression	1.12	(0.57, 2.20)		**# GAD symptoms**	1.14	(1.05, 1.25)	*
GAD	4.44	(1.88, 10.52)	*	**# alcohol abuse symptoms**	1.17	(1.05, 1.30)	*
Subsyndromal GAD	2.40	(1.25, 4.60)	*	**Other anxiety disorder**	1.50	(0.73, 3.09)	
Dysthymia	0.23	(0.06, 0.81)	*	**Positive interactions with family**	1.35	(0.97, 1.86)	
Other anxiety disorder	1.73	(0.82, 3.64)		**Positive interactions with friends**	0.93	(0.60, 1.45)	
# alcohol abuse symptoms	1.18	(1.04, 1.34)	*	**Male**	0.79	(0.44, 1.44)	
Positive interactions with family	1.28	(0.93, 1.76)		**Race**			
Positive interactions with friends	0.99	(0.65, 1.50)		Non-Latino White	1.00		
Male	0.74	(0.42, 1.32)		African American / Afro-Caribbean	0.59	(0.33, 1.05)	
Race				Other	2.13	(1.21, 3.76)	*
Non-Latino White	1.00			**Not married**	1.22	(0.71, 2.11)	
African American / Afro-Caribbean	0.50	(0.29, 0.87)	*	**High school education**	0.96	(0.67, 1.39)	
Other	2.23	(1.28, 3.89)	*	**WHODAS self-care†**	0.95	(0.78, 1.17)	
Not married	1.24	(0.72, 2.15)		**WHODAS cognition†**	1.56	(1.30, 1.86)	*
High school education	0.93	(0.65, 1.33)		**WHODAS mobility†**	1.03	(0.78, 1.35)	
WHODAS self-care†	1.02	(0.85, 1.22)		**Poverty index > 200%**	0.99	(0.64, 1.54)	
WHODAS cognition†	1.62	(1.34, 1.96)	*	**Private insurance**	1.38	(0.70, 2.72)	
WHODAS mobility†	0.99	(0.74, 1.33)					
Poverty index > 200%	0.99	(0.63, 1.55)					
Private insurance	1.46	(0.71, 3.03)					

* = Significant at $p < 0.05$; † = ORs on WHODAS scores refer to change in odds per standard deviation

DISCUSSION

The preceding analyses aimed to quantify associations among perceived need for care, utilization of mental health care, and satisfaction with care and characteristics of mental illness, chronic physical conditions, comorbid alcohol abuse, attitudes, social support, private insurance, and sociodemographic characteristics. General observations about the relationships of each category of independent variables with perceived need, utilization, and satisfaction will be discussed individually before the three hypotheses are discussed, and a revised conceptual model will be presented.

Diagnoses and Symptoms of Mental Illnesses

Prevalence estimates of MDD and anxiety disorders in this sample (2.9% for MDD, 1.5% for GAD) are within the range of estimates reported in other studies of community-dwelling elderly people. Most studies report an MDD prevalence of less than 3% of elderly respondents (Beekman, Copeland, & Prince, 1999). Other studies report diagnoses of GAD in 1.5% to 4% of elderly respondents (Dickey & Blumberg, 2002; Klap, Unroe, & Unützer, 2003).

Diagnoses of MDD were related to greater odds of perceived need and odds of utilization as expected, but GAD was not associated with the outcome variables to the expected degree. Non-GAD anxiety disorders (agoraphobia, panic disorder, social phobia, post-traumatic stress disorder) were associated with perceived need, but GAD itself was not. This is inconsistent with results of studies of perceived need among respondents of all ages that examined GAD and non-GAD anxiety disorders separately

(Edlund, Unützer, & Unroe, 2006). In the utilization models, the effects of GAD and/or non-GAD anxiety disorders were measured with one variable. In those models, anxiety in general was significantly related to greater odds of utilization, which is consistent with results of other studies examining anxiety disorders as a group (ten Have et al., 2001).

While both MDD and anxiety disorders were associated with increased odds of perceived need and increased odds of utilization, none of these conditions were significantly related to utilization among only those who perceived a need for care. Similar findings have been seen in younger people; mental illnesses that were associated with perceived need were not associated with care receipt in the NCS (Mojtabai, Olfson, & Mechanic, 2002). This suggests a possible causal relationship: mood and anxiety disorders influence perceived need, which in turn influences utilization. Further studies are needed to confirm this possibility.

Respondents who met diagnostic criteria for GAD had more mental health visits to specialists, but neither MDD nor other anxiety disorders were associated with the number of visits. The mixed results seen here match the lack of consensus on the relationship between diagnosis and quantity of care seen in other studies. Some have found no relationship between depression and number of visits (Koenig & Kuchibhatla, 1998), others have found relationships between anxiety and mood disorders and number of visits in some samples but not others (Elhai & Ford, 2007), and others have found a relationship between visits and self-reported "neurosis" (Horgan, 1986).

In contrast to MDD and GAD, subthreshold conditions were not associated with the outcome variables to the expected degree. Neither minor depression nor subsyndromal GAD was associated with perceived need or overall odds of utilization. Additionally, minor depression was not related to increased odds of use of prescription medications for mental health reasons, despite evidence that this condition may be ameliorated by sertaline or paroxetine (Brenes et al., 2007; Murray et al., 2005; Williams et al., 2000). The absence of relationships among these disorders and perceived need and care utilization is important because minor depression and subsyndromal GAD are associated with adverse physical health consequences, often to the same extent as MDD or GAD (Beekman, Deeg, Braam, Smit, & Tilburg, 1997; de Beurs et al., 1999; Lyness et al., 2006; Wagner et al., 2000). Elderly people with minor depression or subsyndromal GAD do not appear to be receiving the care they need. Both providers and patients need to be aware of the implications of these disorders so that treatment is received when necessary.

While subthreshold GAD was not related to overall odds of utilization, people who met diagnostic criteria for this disorder were more likely to receive mental health care from both a primary care provider and a specialist than from a specialist alone. Also, among respondents who received mental health care from a specialist, people who met diagnostic criteria for subthreshold GAD had more specialist visits. The greater frequency and quantity of care sought by respondents who met diagnostic criteria for subthreshold GAD may reflect patients' perceived burden of the condition, or it may indicate an uncertainty on the part of provider as to the best course of treatment for subthreshold GAD. This study adds to the growing body of literature suggesting that anxiety disorders outside of the criteria for full GAD have clinical significance (Diefenbach et al., 2003; Kessler, Brandenburg, et al., 2005).

Respondents with dysthymia were less likely than other respondents to be taking prescription drugs for mental health reasons. There is some evidence that prescription medicines and psychotherapy are effective in the treatment of elderly people with dysthymia (Devanand, 2002; Devanand et al., 2004; Markowitz, 1994; Williams et al., 2000), but it does not appear that elderly people with this need are receiving the necessary treatment. Nearly three-quarters (71%) of respondents with dysthymia had not received formal mental health care in the past year. Implications of dysthymia include reduced physical and mental health functioning (ESEMeD/MHEDEA Investigators, 2004), so it is important to raise patient and provider awareness of this disorder.

There were not enough people with dysthymia in this sample to include the diagnosis in multivariate models of perceived need, odds of utilization, or satisfaction with care, so the association of this condition with the outcome variables could not be fully explored. In bivariate analyses, however, dysthymia was associated with increased odds of perceived need and utilization of care. Many studies of perceived need and utilization combine mood disorders into one category (Mojtabai, Olfson, & Mechanic, 2002; ten Have et al., 2001) or completely exclude dysthymia (Sareen et al., 2005); this study highlights the lack of appropriate care for elderly people with dysthymia.

Additionally, perceived need and odds of utilization were both higher for respondents with greater numbers of depression or GAD symptoms. Furthermore, greater numbers of visits to specialists were seen among respondents with more GAD symptoms. In the majority of analyses, model fit was improved when symptoms were included rather than diagnoses, adjusted for the number of parameters. This underscores the need for providers to recognize groups of symptoms that do not meet diagnostic thresholds but that might have clinical significance.

Comorbid Alcohol Abuse

Only one person in the sample met diagnostic criteria for alcohol dependence, which is lower than the estimates of alcohol abuse and dependence seen elsewhere in the literature (0.3% to 0.9%) (Patterson & Jeste, 1999). It is possible that more respondents in the survey are affected by alcohol consumption and this is not being captured by the questions in the survey; most measures of alcohol abuse and dependence have been created for and tested on younger populations (Patterson & Jeste, 1999). Alcohol abuse symptoms were exhibited by 3.4% of respondents. Greater numbers of alcohol abuse symptoms were associated with greater perceived need for mental health care, greater odds of formal mental health care utilization, and greater odds of use a prescription medication for mental health reasons. Greater numbers of alcohol abuse symptoms also were associated with fewer visits to primary care providers. The sample size was too low to determine whether low and high numbers of alcohol abuse symptoms were related in different directions to the outcome variables.

Chronic Physical Conditions

Overall, greater numbers of chronic physical conditions experienced over respondents' lifetimes were related to higher likelihood of perceived need and utilization as expected, although they were not significant in the symptom model for utilization.

Greater numbers of conditions were associated with greater odds of perceived need when the entire sample was included in the model. When the sample was restricted to those without any depression or anxiety, however, chronic physical conditions were no longer significantly related to perceived need. Similarly, greater numbers of conditions were related to increased odds of care utilization, but only among those who met diagnostic criteria for a depression or anxiety disorder. Furthermore, among respondents with perceived need for care, chronic conditions were no longer significantly associated with odds of utilization, which is consistent with findings from another study of perceived need (Rabinowitz, Gross, & Feldman, 1999). Mojtabai et al. (2002), however, found that chronic physical conditions were associated with utilization when compared to people who perceived need but did not use care (but they did not specify whether those who used care also perceived a need for care). Taken together, the findings from this analysis indicate that chronic conditions combine with diagnoses of MDD or anxiety disorders to influence perceived need, and indirectly work through perceived need to influence odds of mental health service utilization. Further studies are needed to confirm the direction of these relationships.

The number of chronic conditions was not related to type of care received, number of visits, or satisfaction with care. Because elderly people often receive mental health care from a primary care provider (Bartels, Horn, Sharkey, & Levine, 1997; Ettner, Hermann, & Tang, 1999), it was thought that increased numbers of chronic conditions would be related to increased probability of mental health care received from a primary care provider. The results may have been different if a more comprehensive or severity-adjusted measure of chronic conditions experienced in the past 12 months was used; this analysis only examined the number of conditions out of a short list the respondent had experienced at any point in his/her life. Alternatively, physical conditions may be related more strongly to incident mental health care from a primary care provider; providers may then refer patients to specialists. This study examined any mental health care received in a one year period, not just incident care received after the onset of a mental illness.

Overall, physical functioning in terms of ADLs and mobility were not related to perceived need, odds of care receipt, or the type of care received. Among respondents who perceived a need for care, however, those with more ADL problems were less likely to receive formal mental health care. Also, those with more ADL problems had more mental health visits to a primary care provider. Most studies have not found overall physical functioning to be associated with perceived need in multivariate analyses (Mojtabai, Olfson, & Mechanic, 2002; Edlund, Unützer, & Curran, 2006), but some have found it to be associated with increased odds of utilization (Horgan 1986, Komiti 2006, Unützer 2000).

Social Support

The relationships between social support and outcome variables were not as strong or consistent as hypothesized. Neither of the social support variables was significantly related to perceived need, which is inconsistent with the results of other studies in community-dwelling adults of all ages (Sareen et al., 2005; Edlund, Unützer, & Curran, 2006). It may be that perceived need is not influenced by social interactions in elderly people with symptoms of mental illness, but it is more likely that the measures of social support used in this analysis simply were not nuanced enough. Scales that measure perceived emotional, affective, and confidant support more specifically should be studied for relationships with perceived need to understand the true nature of the relationship between these factors in elderly people. The studies that have found a relationship between social support and perceived need in broader age groups have used measures from the Medical Outcomes Study that include availability of relationships that provide affection, fun, and advice or other information (Sareen et al., 2005; Edlund, Unützer, & Curran, 2006; see Sherbourne & Stewart, 1991). Another study that used similar social support measures as the current analysis also did not find a relationship between social support and perceived need (Mojtabai, Olfson, & Mechanic, 2002). Longitudinal studies of care utilization also may be better suited to understanding the role of social support in mental health care utilization among elderly people. For example, Pescosolido et al. (1998) found that while perceived social support was not significantly related to formal mental health care utilization in traditional analyses, it became significant when the pattern and order of use of different types of informal and formal mental health services were taken into consideration. Perceived need may play a role in these use patterns.

Additionally, neither of the social support variables was significantly related to odds of utilization, which is inconsistent with literature suggesting that better perceived support or better social functioning is associated with lower odds of receiving care (Pescosolido, Wright, Alegría, & Vera, 1998; ten Have et al., 2001). There is some evidence that interactions with friends influence the number of overall mental health visits; respondents with positive interactions with friends had fewer formal mental health visits in the diagnosis model, but not the symptom model. This inconsistent trend showcases the need for the use of more detailed measures of social support to fully understand its relationship with mental health service use in elderly people. It is unclear if the lack of significance of the social support variables seen here is due to a poor measure, low power, or if it has some further meaning.

Other literature suggests that perceived social support and mental illness are related (i.e. people with depression have lower perceived social support) (Schuster, Kessler, & Aseltine, 1990). When the relationship between social support and utilization was examined separately among people with and without depression or anxiety disorders, no evidence for this was seen. Bivariate analyses also failed to show a relationship between social support and diagnoses of MDD, GAD, and other anxiety disorders.

Private Insurance

Having private insurance was related to mental health care utilization when all respondents were included in the analysis. It was not significantly related to utilization among respondents with perceived need. This suggests that people who perceive a need for care will seek care regardless of whether they have private insurance (or purchased private insurance with the knowledge they would need mental health care later).

Sociodemographics

The role of gender in the analyses was similar to what is generally found in the literature. In overall models, men were less likely to perceive a need for or to use care, which is consistent with other studies (Mojtabai, Olfson, & Mechanic, 2002; Rabinowitz, Gross, & Feldman, 1999; Wells et al., 1986; Sareen et al., 2005; Edlund, Unützer, &

Curran, 2006). When utilization was examined among respondents with depression or anxiety, however, gender was no longer significantly related to utilization.

Within this sample of people over the age of 65, increasing age had some association with the outcome measures. It was not related to odds of perceived need for care. Among those who did perceive a need for care, however, increased age was related to increased odds of utilization, which is consistent with studies examining the choice between using care and perceiving need but not using care (Mojtabai, Olfson, & Mechanic, 2002; Sareen et al., 2005). Increased age was related to more visits to a primary care provider, and older people were more likely to receive care from one type of provider than from both a specialist and a primary care provider. Unexpectedly, age was not associated with the choice between a primary care provider and a specialist for mental health care. While the over-65 age group as a whole may receive more mental health care from a primary care provider, increasing age within this group was not related to this choice.

Among respondents who perceived a need for care, the odds of utilization were greater for respondents with at least a high school education. Among those who actually used care, however, respondents with less than a high school education had more visits to specialists. Education was not related to the number of visits to a primary care provider. This is inconsistent with the results of other studies. Elhai & Ford (2007) found that increased education was associated with more visits to specialists and fewer visits to primary care providers, and others have found increased education to be related to increased care from either type of provider (Sturm et al., 1995).

Racial and ethnic background also was associated with perceived need and patterns of care. In bivariate analyses, Asian and Hispanic respondents were more likely than other respondents to perceive a need for care. In multivariate analyses, however, racial and ethnic background was not associated with perceived need. Race was not associated with odds of utilization or satisfaction with care, but it was associated with the number of mental health visits. Among respondents who received some formal mental health care, African American and Afro-Caribbean respondents had more visits to specialists than non-Latino white respondents, and Asian and Hispanic respondents had more visits to primary care providers than non-Latino white respondents. Also, Hispanic respondents were more likely than non-Latino white respondents to have used a prescription medication for mental health reasons in the past 12 months.

Other Characteristics of Care

The odds of use of a prescription medication for mental health reasons were greater for people with MDD, GAD, and subthreshold GAD, but decreased for respondents with dysthymia (compared to respondents without each of these diagnoses). As the number of symptoms of depression, GAD, or alcohol abuse rose, the odds of using a prescription increased. Receipt of medications was related to physical conditions and mental illnesses in much the same way as receipt of formal mental health care, but use of prescription medications was not related to gender or private insurance (which were significantly associated with receipt of formal mental health care).

Based on the patterns discussed so far, the original conceptual model can be revised (see Figure 3). Solid lines indicate relationships found within this study, and dotted lines indicate relationships that could not be tested with multivariate analyses. Question marks indicate relationships that need to be tested with more sensitive measures of social support. Results pertaining to each hypothesis are discussed below.

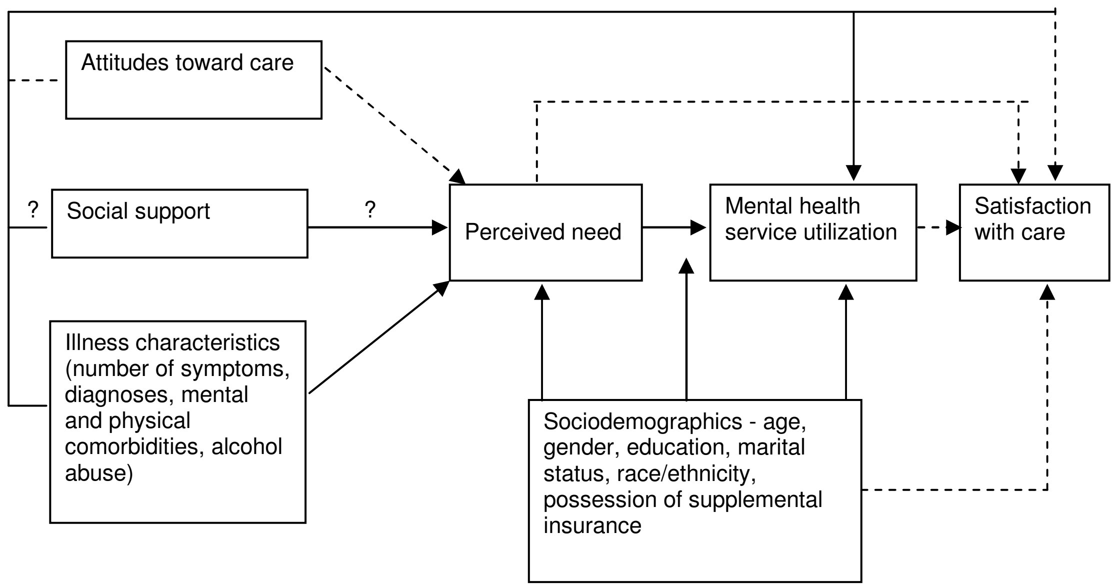

Figure 3. Revised conceptual model

Hypothesis A

Controlling for illness severity, increased perceived need for mental health care will be associated with positive attitudes toward mental health care, less supportive social networks, and high numbers of alcohol abuse symptoms.

As predicted, respondents who had more severe mental illnesses and those with more symptoms were more likely to perceive a need for care. Respondents with MDD and/or non-GAD anxiety disorders had increased odds of perceived need for care, while minor depression, GAD, and subthreshold GAD were not significantly related to perceived need. Also, those with more symptoms of depression, GAD, and alcohol abuse were more likely to perceive need for care. Also as expected, perceived need was more likely when people had more chronic physical conditions, but it was not related to overall physical functioning as measured by the WHO-DAS.

Respondents who were pressured to seek care were much more likely to perceive a need for care, but it is unclear how this might relate to individual attitudes toward care. Since attitude questions were asked only of those who perceived a need for care, it was not possible to determine the extent of the relationship between these two factors. Contrary to expectations, the nature of interactions with family members and friends was not related to perceived need.

Future studies that incorporate more specific measures of perceived emotional support and attitudes toward care in elderly people are necessary. Additionally, studies should include measures of the decision-making process leading to perceptions of need for care. For example, in the Common Sense Model of Illness Representation (Leventhal, Meyer, & Nerenz, 1980), individuals evaluate the "identity, timeline, cause, controllability, and consequences" of a group of symptoms (Diefenbach & Leventhal, 1996, p. 20). These evaluations may be impacted by individual and family attitudes.

Perceived Need in the Context of Diagnosis

When perceived need was examined separately for respondents who did not have depression or anxiety, greater numbers of chronic conditions were no longer significantly related to perceived need. The number of symptoms of depression, GAD, and alcohol abuse experienced by respondents who did not meet diagnostic criteria for depression or anxiety remained significantly associated with perceived need.

Hypothesis B

A greater probability of using any mental health care services (as well as a greater number of visits) will be associated with greater mental illness severity, more physical health problems, high numbers of alcohol abuse symptoms, less supportive social networks, positive attitudes toward mental health care, and greater perceived need for care.

Probability of Any Mental Health Care

As hypothesized, the odds of receiving mental health care from a specialist and/or primary care provider increased with the severity of mental illness. Diagnoses of MDD and anxiety disorders, but not their subthreshold counterparts, were related to greater odds of utilization. When symptoms were examined separately from diagnoses, the severity hypothesis still stood up. Increased numbers of symptoms of depression, GAD, and alcohol abuse all were associated with increased probability of utilization.

Also consistent with the hypothesis, an increase in the number of chronic physical conditions experienced by respondents over their lifetime was associated with greater odds of utilization, but only in the diagnosis model. While the effect was significant among the entire sample, it only remained significant among the subset of respondents who met diagnostic criteria for either depression or anxiety when respondents with and without diagnoses were examined separately. Only chronic conditions, not overall self-care abilities or mobility as measured by the WHO-DAS, were related to probability of utilization. The number of chronic conditions was not related to the type of care sought.

The hypothesis that increased quality of social interactions with relatives and friends would be related to lower probability of utilization was not supported. More specific measures of social support, such as ones that measure perceived emotional and confidant support from different sources, might clarify if this lack of significance is due to a poor measure of support.

Utilization in the Context of Perceived Need

Perceived need and utilization were highly, but not perfectly, correlated. Care was received by 77% of those who perceived a need for it, and 85% of those who used care perceived a need for it. When utilization was examined among only those who perceived a need for care, some interesting relationships emerged. While diagnoses and symptoms were strongly related to utilization in the entire sample, only the number of GAD symptoms was related to utilization for those who perceived a need for care. Older age among those who perceived a need for care was related to increased odds of mental health care utilization. The number of chronic conditions was no longer related to utilization, but worse self-care abilities were related to less utilization for respondents who felt they needed care.

Few studies have examined utilization in the context of perceived need, and those that do model the choice between help-seeking (whether or not need was perceived) and no help-seeking (but with perceived need) (Mojtabai, Olfson, & Mechanic, 2002; Sareen et al., 2005). In contrast, this study examined the odds of utilization among people who indicated a perceived need for care; help-seeking was not used as a proxy for perceived need. The results suggest that mental illness diagnoses and chronic physical conditions work indirectly through perceived need to influence the probability of utilization, but further studies are needed to confirm the direction of this relationship.

Delay of Care

Attitudes toward care seemed important in respondents' decisions to delay care. Nearly three-quarters of respondents who delayed receiving care after perceiving a need for it wanted to take care of the issue by themselves and/or thought the symptoms would ameliorate on their own. A third did not believe treatment would help. These attitudes toward care were cited more often than practical reasons such as scheduling or insurance and more often than fears of care, such as hospitalization against will or stigma, as reasons for delaying care.

These attitudes likely are the reason for care delay, although it is impossible to tell from this data because questions about attitudes toward care were asked only of respondents who perceived a need for care and then delayed receiving care by at least four weeks or who did not receive any care. The only differences between those who delayed and those who received care right away after perceiving need were race and mobility. More nonwhite respondents and respondents with better mobility delayed receipt of care. The relationship between race and delay needs to be explored further; some studies have found that minorities have shorter delays than whites (Wang et al., 2005), while others have found that minorities have longer delays (Lin, Inui, Kleinman, & Womack, 1982), and still others have found no relationship between sociodemographics and length of delay (Kessler, Olfson, & Berglund, 1998). No studies were found that explore the impact of physical health on delay of mental health care.

Number of Mental Health Care Visits

The relationships between the factors in Hypothesis B and the number of mental health care visits were more complicated than originally hypothesized. Depending on the type of provider, different factors were significant. While MDD and the number of depression symptoms were significantly related to the probability of any utilization, neither impacted the number of visits to either type of provider. Diagnoses of GAD and subthreshold GAD, as well as greater numbers of GAD symptoms, were associated with more specialist visits, but they were not related to the number of primary care visits. Although greater numbers of alcohol abuse symptoms were associated with greater odds of utilization of mental health care, they were associated with fewer visits to primary care providers.

Additionally, while the number of chronic conditions was associated with odds of utilization of mental health care, it was not related to the number of visits. Worse self-care scores were related to an increased number of mental health care visits to primary care providers.

Positive interactions with friends were related to fewer formal mental health service visits, but this relationship did not remain significant when the two types of care were modeled separately. Further studies are needed to see if this result is due to a true relationship or to a statistical anomaly. Others have found more general medical visits among people with low levels of confidant and affective support (Broadhead, Gehlbach, deGruy, & Kaplan, 1989), but the nature of the relationship between support and mental health care visits is unknown.

Type of Care Received

It appears that while the number of visits to specialists and providers are related to different factors, there was little difference in the probability of receiving any care from either type of provider. Instead, there seems to be a larger difference between people who received mental health care from one source and respondents who received care from both a specialist and a primary care provider. Older respondents and those with private insurance were more likely to use one source of care than both, and people with more symptoms of depression and/or GAD were more likely to receive care from both a primary care provider and a specialist than from either source alone. This is consistent with results of a study of younger patients, where those with multiple recent conditions were more likely to receive care from multiple sources than those with fewer or less recent mental illnesses (Kessler et al., 1999). Furthermore, in this study, respondents who had received informal care in addition to formal care had more depression and GAD symptoms, but people were more likely to use only formal care if they had more chronic physical conditions, poor mobility, or a non-GAD anxiety disorder.

Few studies have examined differences between patients who seek mental health care from both primary care providers and specialists and those who seek care from only one of those sources (i.e. seeking care from a specialist without receiving a referral to see one) (Pescosolido et al., 1998). It is important to examine correlates of different care patterns among the general population in order to fully understand the profile of people who seek care from different or multiple sources.

Hypothesis C

Controlling for illness severity, satisfaction with mental health care will be greater for those who perceive a need for care, have positive attitudes toward care, or who have more positive social support.

There was little variation in the satisfaction variable, which measured only very general impressions of satisfaction with care. Only 7% of respondents were dissatisfied or very dissatisfied with the mental health care they had received in the past year. Because of this low variation, a stable multivariate model for satisfaction could not be constructed. In bivariate analyses, only the number of alcohol abuse symptoms was significantly related to satisfaction, with satisfaction being more likely for respondents with at least one alcohol abuse symptom. Satisfaction was not related to perceived need, use of prescription medications, or number of visits.

Previous research has found psychological distress and worsened physical health to be associated with less satisfaction with care (Greenley, Young, & Schoenherr, 1982; Hall et al., 1990; Hall, Milburn, & Epstein, 1993). Because these known relationships of decreasing satisfaction with worsening health care (Hall et al., 1990; Hall, Milburn, & Epstein, 1993) were not found, it is likely that the satisfaction measure was simply not sensitive enough to differences in patient characteristics. Other studies have found patient satisfaction with physical health care to be impacted by attitudes and provider behavior more so than by illness characteristics (Campbell, Auerbach, & Kiesler, 2007; Weiss, 1988), but this study was unable to examine the impact of attitudes on satisfaction with mental health care. Because questions of attitudes toward care were not asked of all respondents, it was difficult to ascertain if there was a relationship between prior attitudes and later satisfaction with care (or to see how satisfaction influenced future attitudes toward care). There was, however, not a significant relationship between satisfaction with care and whether or not a respondent delayed seeking care.

Further studies are needed to better understand relationships among social factors, attitudes toward care, and satisfaction. Ideal measures of satisfaction are multi-dimensional, and each dimension is probably related differently to psychosocial factors. Dimensions that may be more susceptible to social interactions and attitudes include: whether or not expectations were met within a mental health care visit, satisfaction with patient-provider communication or relationships, outcomes of care (See Smith, 2000; Owens & Batchelor, 1996, Campbell, Auerbach, & Kiesler 2007), or having a regular source of care (Weiss, 1988).

LIMITATIONS

As with any study, there are limitations to the methods used here. First of all, the data are cross-sectional and can show only associations between many of the groups of variables. Elements predicting perceived need, service utilization, and satisfaction would be better understood if changes in illness and behaviors were observed over time. Additionally, because this study uses secondary data and was not designed to address the specific hypotheses put forth here, some information that would have been useful is not available or had too many missing values due to skip patterns. HMO status, global measures of physical health status, chronic conditions experienced within the past 12 months (rather than over the respondents' lifetimes), attitudes toward care for people who sought care immediately, and the number of people in the respondents' social networks are not available in all components of this merged dataset. More detailed measures of social support and satisfaction with care also would have been ideal.

Secondly, because of the small sample size, this study had limited power to examine some relationships among social factors, dysthymia, and perceived need and utilization in elderly people. The CPES data used in this study, however, are the most comprehensive data related to psychosocial factors, perceived need, utilization, and satisfaction with mental health care in elderly people. Furthermore, there was sufficient power to study the more traditional determinants of mental health needs.

Because the data are cross-sectional, only associations between variables could be established; predictions were not possible. For example, while greater perceived need may predict increased utilization, greater utilization might in turn lower perceived need. With this dataset, it was not possible to separate these relationships. Most studies of perceived need have been unable to determine directionality of associations (Edlund, Unützer, & Curran, 2006; Meadows et al., 2002; Mojtabai, Olfson, & Mechanic, 2002).

Finally, the results of this study cannot be generalized to elderly people living in nursing homes. People in these settings have less control over the type or frequency of mental health care they receive, and less control is associated with more depressive symptoms (Chen, Zimmerman, Sloane, & Barrick, 2007). Additionally, in many nursing homes, depression occurs concurrently with dementia. In these cases, a family member may be more likely than the patient to determine when or from whom someone with dementia receives mental health care.

CONCLUSIONS AND IMPLICATIONS FOR FUTURE RESEARCH

Few studies have examined perceived need for mental health care, utilization of mental health care, and satisfaction with this care among elderly people. Existing studies either include help-seeking as a measure of perceived need (Mojtabai, Olfson, & Mechanic, 2002) or do not control for psychosocial factors such as social support (Klap et al., 2003). This study separates the measure of perceived need from measures of utilization while controlling for patient illness characteristics, sociodemographics, and social support. From the results, several important findings emerge.

First, many elderly people who meet diagnostic criteria for depression and/or anxiety disorders do not use mental health services or even perceive a need for these services. It is important for patients and providers to recognize depression and anxiety, as they are related to poor physical health outcomes and increased risk for mortality. Improved patient recognition of symptoms and understanding of outcomes and treatment procedures might lead to greater adherence to mental health treatments that require a long-term commitment (Lingam & Scott, 2002).

Furthermore, even among respondents who did not meet diagnostic criteria for depression or anxiety, the number of symptoms of these conditions was related to perceived need and utilization. This indicates that formal criteria for diagnosis do not match individual experiences of symptomatology and that providers should be sensitive to the mental health symptoms presented by patients, even if they do not meet the threshold for depression or anxiety. The CPES does not include data on physician attributions of symptoms or ability to diagnose mental illness, but the similarities in relationships among symptoms and diagnoses and utilization suggest that physicians might not be effective at differentiating between those who do and do not meet diagnostic criteria for anxiety and depression. Primary care providers are less likely to recognize mental illnesses in patients with physical, rather than psychological, complaints (Tylee & Gandhi, 2007), and they often do not include mental illnesses in differential diagnosis procedures (Goldman, Nielsen, & Champion, 1999).

Increased sensitivity to symptoms by patients and providers, however, is not sufficient to improve the mental health treatment of elderly people. While increased vigilance by primary care providers might lead to more referrals to specialty care, these referrals do not ensure that patients actually will receive care. Problems with the structure of the mental health care system need to be addressed. Mental health treatment interventions focusing on increasing referrals to specialists or on screening for mental illness symptoms have generally not been successful in improving the number of visits or engagement with therapy for elderly people or have not been cost-effective (Bartels et al., 2004; Thielke, Vannoy, & Unützer, 2007). Integrated treatments that involve mental health practitioners and primary care providers communicating within the same clinic location are preferred by physicians over referral programs and are more successful at achieving patient engagement (Bartels et al., 2004; Gallo et al., 2004). They do not, however, consistently improve mental health functioning when compared to referral programs or traditional mental health care (Druss, Rohrbaugh, Levinson, & Rosenheck, 2001; Krahn et al., 2006). Collaborative care models that involve primary care providers, mental health specialists and case managers who help patients manage (and sometimes self-monitor) their mental illness under a chronic care model, however, show some promise in alleviating at least depression symptoms in elderly patients (Bower, Gilbody, Richards, Fletcher, & Sutton, 2006; Thielke, Vannoy, & Unützer, 2007). It is unclear which particular care elements (such as presence of a case manager or educational background of case managers) are most effective in improving access to mental health treatment and improved outcomes (Bower et al., 2006). Further studies are needed to understand how social networks and individual attitudes influence perceived need and utilization of mental health services in a collaborative care model in order to discover what combination of psychosocial factors and symptomatology are most conducive to elderly people receiving effective mental health care.

The results of this study also suggest that physical and mental health are important for determining perceived need, but that other factors are responsible for determining utilization among those with perceived need. Further studies that examine all respondents' attitudes toward care and social interactions in detail (and in a longitudinal manner) might better elucidate the relationship between perceived need and utilization.

Future studies of mental health service utilization in the elderly also should include more detailed measures of satisfaction that may be more sensitive to patient characteristics, expectations of care, patient-provider communication, or outcomes of care. Understanding the factors that lead to satisfaction with care and how satisfaction affects future attitudes toward care and perceptions of need would help researchers and clinicians devise treatments to which patients are more likely to adhere.

Depression and anxiety symptoms and disorders are present in a large portion of community-dwelling elderly individuals. While mental and physical health are associated with perceived need, more studies are needed to understand how psychosocial factors might influence people with depression and/or anxiety to perceive a need for care and how these factors might influence those who perceive a need for care to seek treatment.

APPENDIX

Variables used in analysis

Variable	Name (if applicable)	Type	Notes
SOCIODEMOGRAPHICS			
Age	V07306	Continuous	Range 65-99
Gender	Male (Constructed from V09036)	Categorical	Female = 1 Male = 2
Race	RACESMALL (Constructed from rancest	Categorical	Non-Latino Whites = 1 African-Americans or Afro-Caribbean = 2 All others = 3
Minority	MINORITY (Constructed from rancest)	Categorical	Non-Latino Whites = 1 All others = 2
Marital Status	NOTMARRIED (Constructed from V08759)	Categorical	Married/cohabiting = 1 Never married or Divorced/widowed/separated = 2
Level of education	V08172	Categorical	0-11 years of education = 1 12 years = 2 13-15 years = 3 16 or more years = 4
At least a high school education	HS (Constructed from V08172	Categorical	1 = Less than a high school education 2 = Completed high school or higher education
Poverty index	NOPOV (Constructed from V08930)	Categorical	Household income between 0-200% of poverty threshold = 1 Household income above 200% of poverty threshold = 2
ATTITUDES TOWARD CARE			
Respondent was pressured to seek care	Constructed from V02301, V02303, V02359	Categorical	2 = Pressure 1 = No Pressure
REASONS FOR DELAYING CARE			
“Health insurance would not cover treatment”	V02307	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
“Thought the problem would get better by itself”	V02308	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
“The problem didn’t bother me very much at first”	V02309	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care

"Wanted to handle the problem on my own"	V02310	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
"Didn't think treatment would work"	V02311	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
"Received treatment before and it didn't work"	V02312	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
"I was concerned about how much money it would cost"	V02313	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
"I was concerned about what people would think if they found out I was in treatment"	V02314	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
"Had problems with things like transportation, childcare or scheduling that made it hard to get to treatment"	V02315	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
"Didn't know where to go or who to see"	V02316	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
"Thought it would take too much time or be inconvenient"	V02317	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
"Could not get an appointment"	V02318	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
"I was scared about being put in a hospital against my will"	V02319	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
"Was not satisfied with available services"	V02320	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care
Other reasons for delay	V02326	Categorical	Asked of respondents who perceived a need for care but waited at least 4 weeks before receiving care

REASONS FOR NOT SEEKING CARE			
"My health insurance would not cover this type of treatment"	V02361	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months
"Problem went away by itself, and I did not really need treatment"	V02362	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months
"Thought the problem would get better by itself"	V02363	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
"Was concerned about how much money it would cost"	V02364	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
"Was unsure about where to go or who to see"	V02365	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
"Didn't think treatment would work"	V02366	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
"Was concerned about what others might think if they found out I was in treatment"	V02367	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
"Thought it would take too much time or be inconvenient"	V02368	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
"Wanted to handle the problem on my own"	V02369	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
"Could not get an appointment"	V02370	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)

"Was scared about being put into a hospital against my will"	V02371	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
"Was not satisfied with available services"	V02372	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
"Received treatment before and it did not work"	V02373	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
"Problem didn't bother me very much"	V02374	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
"I had problems with things like transportation, childcare, or scheduling that would have made it hard to get to treatment"	V02375	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
Other reasons for not getting treatment	V02383	Categorical	Asked of respondents who perceived a need for care but did not receive mental health care in the past 12 months and whose problems did not go away on their own (V02362)
SOCIAL SUPPORT			
Indicator for quality of family interactions	Constructed from V05502, V05503, V06823, V06824	Categorical	1 = Negative 2 = Positive The questions on social support differ between the NSAL and the other two component surveys. The construction of this variable is discussed in the text.
Indicator for quality of interactions with friends	Constructed from V05508, V06831	Categorical	1 = Negative 2 = Positive The questions on social support differ between the NSAL and the other two component surveys. The construction of this variable is discussed in the text.
Number of people in household	V08249		

PREVALENCE AND SEVERITY OF DEPRESSION AND ANXIETY			
Indicator for Major Depressive Disorder (MDD) in past 12 months	V07659	Categorical	Derived from WHO Composite International Diagnostic Interview – Short Form
Indicator for Minor Depression in past 12 months	Constructed from variables V00858-V00859, V00861-V00868, V00871-V00874, V00876-V00878, V00880, V00882-V00884, V00887, V00889, V00893, V00896, V00898-V00899, V00901-V00902, V00905, V00948-V00949	Categorical	Derived from WHO Composite International Diagnostic Interview – Short Form. Construction is discussed in the text.
Number of depression symptoms	Constructed from V00863-V00868, V00871-V00874, V00876-V00878, V00880, V00882-V00884, V00887, V00889, V00893, V00896, V00898-V00899, V00901-V00902, V00905		Count of “yes” responses to questions. Construction is discussed in the text.
Indicator for Dysthymia in past 12 months	V07603	Categorical	Derived from WHO Composite International Diagnostic Interview – Short Form
Indicator for Generalized Anxiety Disorder (GAD) in past 12 months	V07613	Categorical	Derived from WHO Composite International Diagnostic Interview – Short Form
Number of GAD symptoms	Constructed from V01778, V01785-V01790		Count of “yes” responses to questions. Construction is discussed in the text.
Indicator for Subsyndromal GAD in past 12 months	Constructed from variables V01777-V01778, V01780, V01783, V01785-V01790, V01815-V01816, V01819, V01850-V01854, V01867, V01873-V01874, V07613	Categorical	Derived from WHO Composite International Diagnostic Interview – Short Form. Construction is discussed in the text.
Indicator for non-GAD anxiety disorder in past 12 months	Constructed from V07513, V07515, V07699, V07716, V07748	Categorical	Derived from WHO Composite International Diagnostic Interview – Short Form

Indicator for any anxiety disorder (GAD and non-GAD) in past 12 months	Constructed from V07513, V07515, V07613, V07699, V07716, V07748	Categorical	Derived from WHO Composite International Diagnostic Interview – Short Form
Indicator for any depression or anxiety disorder in past 12 months	Constructed from indicators for MDD, minor depression, dysthymia, GAD, subthreshold GAD, non-GAD anxiety disorders	Categorical	Derived from WHO Composite International Diagnostic Interview – Short Form
Indicator for self-reported psychotic episode in past 12 months	V04937	Categorical	1 = No 2 = Yes
Self-rated mental health	V00233	Categorical	1 = Excellent 2 = Very Good 3 = Good 4 = Fair 5 = Poor
PHYSICAL HEALTH & COGNITIVE FUNCTIONING			
Number of chronic physical conditions in lifetime	Will be constructed from V04051, V04057, V04060, V04052, V04053, V04055, V04056, V06695, V06673, V06675, V06677, V06679, V06687, V06689		These are conditions that a physician has ever told the respondent they have (heart disease, ulcers, cancer, high blood pressure, diabetes, asthma, and chronic lung disease)
WHO-DAS self-care score	V08812	Ratio	Range 0-100 (where higher scores indicate greater disability)
WHO-DAS cognitive score	V08813	Ratio	Range 0-100 (where higher scores indicate greater disability)
WHO-DAS mobility score	V08814	Ratio	Range 0-100 (where higher scores indicate greater disability)
Self-rated physical health	V00233	Categorical	1 = Excellent 2 = Very Good 3 = Good 4 = Fair 5 = Poor
ALCOHOL ABUSE			
Indicator for alcohol abuse in the past 12 months	V07517	Categorical	Derived from WHO Composite International Diagnostic Interview – Short Form

Indicator for alcohol dependence in the past 12 months	V07521	Categorical	Derived from WHO Composite International Diagnostic Interview – Short Form
Number of alcohol abuse symptoms	Constructed from V03298 – V03308, V03318		Count of “yes” responses to questions. Construction is discussed in the text.
INSURANCE STATUS			
Indicator for having private insurance	Constructed from V06739, V06742, V06744, V04306, V04331, V04333	Categorical	Includes insurance purchased through employer or family member’s employer, as well as Medigap and other insurance policies purchased directly from an insurance company
PERCEIVED NEED FOR MENTAL HEALTH CARE			
Indicator for perceived need for help for emotional problems in the past 12 months	Constructed from V02301 and V02355	Categorical	1 = No perceived need 2 = Perceived need Construction is discussed in text.
MENTAL HEALTH CARE UTILIZATION			
Indicator for receipt of mental health treatment from a non-medical or informal source in the past 12 months	Constructed from V02061, V02067, V02071, V02246, V02260	Categorical	2 = Care received from online support group, self-help group, hotline, healer, or spiritual advisor in the past 12 months 1 = No care received from any of these sources in the past 12 months
Number of times received care from a non-medical source in the past 12 months	Constructed from V02061, V02067, V02071, V02246, V02260,	Interval	
Indicator for receipt of mental health treatment from a mental health specialist in an outpatient setting in the past 12 months	Constructed from V02118, V02149, V02163, V02185, V02208	Categorical	2 = Care received from a psychiatrist, psychologist, social worker, counselor, or other mental health professional in the past 12 months 1 = No care received from any of these sources in the past 12 months

Number of times received care from an outpatient mental health provider in the past 12 months	Constructed from V02118, V02149, V02163, V02185, V02208	Interval	
Indicator for visit to a non-mental health medical provider for mental health treatment in the past 12 months	Constructed from V02136, V02227	Categorical	2 = Mental health care received from a primary care physician, nurse, occupational therapist, or other primary care provider in the past 12 months 1 = No mental health care received from any of these sources in the past 12 months
Number of visits to a primary care provider where the provider talked about emotional, mental health, alcohol or drug problems in the past 12 months	Constructed from V02136, V02227	Interval	
Indicator for receipt of formal mental health care in the past 12 months	Constructed from V02118, V02136, V02149, V02163, V02185, V02208, V02227		Includes mental health care from either a mental health specialist or non-mental health medical provider in the past 12 months
Number of formal mental health care visits in the past 12 months	Constructed from V02118, V02136, V02149, V02163, V02185, V02208, V02227		Number of mental health visits to mental health specialists and/or non-mental health medical providers in the past 12 months
Indicator for receipt of alternative therapies for emotions, nerves, or alcohol or substance abuse in the past 12 months	V02384		
Indicator for use of prescription drugs for emotions, nerves, or alcohol or substance abuse in the past 12 months	V02509		

SATISFACTION WITH MENTAL HEALTH CARE			
Satisfaction with formal mental health services in the past 12 months	Constructed from V02120, V02151, V02174, V02196, V02211, V02138, V02229	Ordinal	1=Very Satisfied 2=Satisfied 3=Neither Satisfied nor Dissatisfied 4=Dissatisfied 5=Very Dissatisfied Construction discussed in the text
Indicator for satisfaction with formal mental health services in the past 12 months	Constructed from V02120, V02151, V02174, V02196, V02211, V02138, V02229	Categorical	2 = Very Satisfied or Satisfied 1 = Neither Satisfied nor Dissatisfied, Dissatisfied, or Very Dissatisfied Construction discussed in the text
Indicator for satisfaction with mental health care from a primary care provider in the past 12 months	Constructed from V02138, V02229	Categorical	2 = Very Satisfied or Satisfied 1 = Neither Satisfied nor Dissatisfied, Dissatisfied, or Very Dissatisfied Construction discussed in the text
Indicator for satisfaction with mental health care from a specialist in the past 12 months	Constructed from V02120, V02151, V02174, V02196, V02211	Categorical	2 = Very Satisfied or Satisfied 1 = Neither Satisfied nor Dissatisfied, Dissatisfied, or Very Dissatisfied Construction discussed in the text

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