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MENTAL DISTRESS AND SERVICE UTILIZATION AMONG HELP-SEEKING, COMMUNITY-DWELLING OLDER ADULTS

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Abstract

Background—To characterize healthcare and human services utilization among mentally distressed and non-distressed clients receiving in-home care management assessment by aging services provider network (ASPN) agencies in the United States.

Methods—A 2-hour research interview was administered to 378 English-speaking ASPN clients aged 60+ in Monroe County, NY. A modified Cornell Services Index measured service utilization for the 90 days prior to the ASPN assessment. Clients with clinically significant anxiety or depressive symptoms were considered distressed.

Results—ASPN clients utilized a mean of 2.93 healthcare and 1.54 human services. The 42% of subjects who were distressed accessed more healthcare services (e.g., mental health, intensive medical services) and had more outpatient visits and days hospitalized than the non-distressed group. Contrary to expectations, distressed clients did not receive more human services. Among those who were distressed, over half had discussed their mental health with a medical professional in the past year, and half were currently taking a medication for their emotional state. A far smaller proportion had seen a mental health professional.

Conclusions—In the U.S. aging services providers serve a population with high medical illness burden and medical service utilization. Many clients also suffer from anxiety and depression, which they often have discussed with a medical professional and for which they are receiving medications. Few, however, have seen a mental health specialist preceding intake by the ASPN agency. Optimal

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Conflict of Interest

None.

Description of Authors' Roles

A. Simning conducted the data analyses and wrote the article. T. Richardson participated in the design of the study, collected data, and assisted with writing the article. B. Friedman, C. Podgorski, and L. Boyle assisted with the research questions and writing of the article. Y. Conwell designed the study, supervised data collection, and helped write the article.

care for this vulnerable, service intensive group would integrate primary medical and mental healthcare with delivery of community-based social services for seniors.

Keywords

case management; home and community-based care and services; anxiety; depression

Introduction

In the United States social services for older adults who reside in the community are provided by thousands of agencies to millions of elderly clients and many of their informal caregivers annually. Referred to here as the Aging Services Provider Network (ASPN), this mix of agencies aims to deliver non-medical services to community-dwelling older adults for the purpose of maintaining or enhancing their independence, well-being, and quality of life. Non-medical services include those traditionally funded through the Older Americans Act (OAA) (O'Shaughnessy, 2008), the Area Agencies on Aging and their affiliated providers, as well as local departments of human services. Older adults can access aging services through self-referral or be referred by informal (e.g., family members, caregivers) or formal providers (e.g., primary care physicians) to receive assistance. Available services include, but are not limited to information and referral, advocacy, transportation, congregate or home-delivered meals, and care management.

ASPN clients can be complex as many suffer from a combination of social, psychiatric, and medical issues. Functional impairment and medical illness are highly prevalent among older adults receiving case management with 47% and 79% of them having at least one activity of daily living and instrumental activity of daily living impairment, respectively (Quijano *et al.*, 2007); social services (e.g., transportation, meal assistance) frequently strive to ameliorate such impairments. Furthermore, due to the association of late-life anxiety and depression with many psychosocial and medical stressors (Vink *et al.*, 2008), we would expect clients to have elevated levels of emotional distress as well. Indeed, evidence indicates that prevalence of mental illness among ASPN clients is high. In a sample of homebound older adults receiving home-based aging services, 11.7% and 11.9% met criteria for an anxiety or depressive disorder, respectively (Gum *et al.*, 2009), and 52% of older adults receiving case management services in the United States screened positive for depression symptoms (Quijano *et al.*, 2007). The Kent Community Care Project, a British social services demonstration program that included case management for elderly persons receiving home care, reported that 49% of their community care (intervention) group had depressed mood. Depressed mood was defined as having moderate or severe mood disturbance using Hamilton's 1960 criteria or having a depressive disorder under treatment. Nearly all (87%) of these depressed people exhibited "an evident degree of anxiety" (Davies and Challis, 1986).

Prospective studies have shown that the majority of community-dwelling older adults with depression or an anxiety disorder at baseline continued to suffer from depression or anxiety symptoms up to six years later (Beekman *et al.*, 2002; Schuurmans *et al.*, 2005), the consequences of which can be severe. Late-life depression is also associated with increased healthcare utilization and expenditures (Luppa *et al.*, 2008), and anxiety and depression result in large financial burdens to the individual as well as society (Greenberg *et al.*, 2003; Greenberg *et al.*, 1999). A minority of depressed patients, however, receive adequate depression treatment (Unutzer *et al.*, 2000; Wang *et al.*, 2005), and anxiety is also inadequately identified (Kessler *et al.*, 1999) and insufficiently treated (Wang *et al.*, 2005) in primary care settings.

Anxiety and depression are likely under-recognized and poorly treated among clients of aging services providers as well. While there has been movement towards integrating primary care

and social services providers in the United Kingdom (Rummery and Coleman, 2003), social and health services are poorly integrated in the United States. Yet social service providers have the expertise to address social and environmental stressors that may partly underlie healthcare utilization and outcomes. Therefore, understanding the contribution that the aging services sector makes to the health and well-being of older adults who seek its services is important. For example, characterizing how community-dwelling older adults seeking help from ASPN agencies engage the healthcare system may aid in identifying targets for future partnerships and interventions. The health services utilization patterns of clients with and without mental distress receiving in-home social work care management assessments have yet to be examined.

Our analytic objectives are to: 1) characterize healthcare and human services utilization among community-dwelling older adults receiving an in-home care management assessment; 2) examine the association between anxiety and/or depression (referred to here as “distress”) and frequency of service utilization and, among those who used services, the amount of utilization; and 3) estimate the proportion of distressed elders who have received mental health treatment, discussed mental health issues with healthcare professionals in the past year, and/or were currently taking a prescribed psychotropic medication. More specifically, we hypothesize that: 1) most of this help-seeking older adult population is utilizing healthcare and human services; 2) being distressed is associated with greater likelihood of using healthcare and human services than being not distressed, as well as with greater amount of use among those who utilize services; and 3) the majority of distressed ASPN clients has not received mental healthcare from a medical professional or mental health specialist for their mental illness.

Methods

Setting and Participants

Eldersource is an aging services agency that provides assistance to older adults and their informal care providers in Monroe County (Rochester and environs), NY. In addition to serving as the single point of access for aging services in the county, its staff addresses a wide range of needs, from providing information and referral for aging-related issues to ongoing care management for homebound seniors. The majority of clients has issues related to functional disability, finances, housing, and/or legal problems. The agency does not provide home healthcare, although referral to a home healthcare agency may be one outcome of the care management assessment. Clients need not be disabled to access Eldersource services, although functional impairments are the norm. Eldersource is supported by OAA funds administered through government contracts, the United Way, and, to a smaller extent, other philanthropies, grants, and contracts. The care management service is without cost to clients, although donations are encouraged in accordance with OAA guidelines.

From September 2005 to August 2007 Eldersource clients who received an in-home care management assessment were invited to participate in the study presented here. For study inclusion, clients had to be aged 60 years or older, English-speaking, and have capacity to provide informed consent. During the initial assessment Eldersource care managers introduced the study and referred interested clients to study personnel for an in-home research interview. The University of Rochester human subjects review board approved the study.

During the study period care managers conducted intake assessments on 1,090 clients, of which they referred 643 (59.0%) to study personnel. Some clients were not referred because during their initial in-home assessments they indicated no further interest in Eldersource services and care managers chose not to pursue the research option. Others were not referred to the research team due to fluctuations in agency resources during the course of the study that caused variable referral rates. For example, turnover in care management staff resulted in larger caseloads for remaining staffers and a lag in the rate of referrals. At other times when staffing was full and

agency leadership encouraged active participation of care managers in the research agenda, referrals surged. Of the 643 referred clients, study personnel did not attempt to call 63 clients because study resources could not keep pace with care management referrals. We were unable to reach 47 clients and 24 had moved, died, or were ineligible based on language or age criteria. Of the remaining 509 eligible subjects, 131 (25.7%) declined participation and 378 provided written informed consent and enrolled in the study. One participant did not have information on anxiety or depression and was not included in the following analyses, yielding a final sample of 377. Analyses of Eldersource administrative data did not show any statistically significant differences in age, gender, income, marital status, and race between study participants and non-participants.

Measures

Anxiety—We used a nine-item, yes/no instrument, the Goldberg Anxiety Scale (GS-A) (Goldberg *et al.*, 1988), to determine the presence of clinically relevant levels of anxiety in ASPN clients. Participants answered the first four questions; if two or more of these were positively endorsed, the remaining five questions were administered. Subjects responding “yes” to six or more of the nine questions were considered to have clinically significant anxiety. The GS-A has adequate psychometric properties with a sensitivity of 82% and specificity of 91% for detecting generalized anxiety disorder when applying a threshold score of 6 (Goldberg *et al.*, 1988).

Depression—The Patient Health Questionnaire (PHQ-9) assessed depressive symptoms. The PHQ-9 is a nine-item scale with items scored from 0 (“not at all”) to 3 (“nearly everyday”); total scores range from 0 to 27, with a score of 10 or more considered to represent at least a moderate degree of depression severity (Kroenke *et al.*, 2001). A PHQ-9 score of 10 or more has a sensitivity and specificity of 88% for detecting major depression (Kroenke *et al.*, 2001).

Utilization—To examine healthcare and human services utilization we combined items from the Cornell Services Index (CSI), which evaluates the quantity and characteristics of health services use (Sirey *et al.*, 2005), and a list of human and healthcare services used previously by Toseland and colleagues (e.g., senior center, legal services) (Toseland *et al.*, 1999). Specifically, participants were asked if and/or how much they used each service listed in the modified CSI in the 90 days prior to the care manager visit. The modified CSI characterized the utilization of 12 healthcare and 11 human services. Overall healthcare and human services scores represent the number of service types used and range from 0 to 12 and 0 to 11, respectively. We divided healthcare services into two broad categories. *Mental health services* consists of outpatient mental health visits, alcohol or substance abuse treatment, and inpatient mental health services. *Medical services* consists of *outpatient* (office visits, laboratory tests, X-rays, other tests), *intensive medical* (emergency room visits, visiting nurse, hospitalization, emergency response, nursing home use), and *other health services* (home health aide and physical, occupational, or speech therapy). Human services has four categories: *in-home* (homemaker, home meal delivery), *community-based* (senior center, adult day care), *cognitive/supportive* (church pastoral care, Alzheimer’s Association), and *other services* (home energy assistance, financial assistance, transportation, legal assistance, other human services).

Mental Health Treatment—All participants were asked whether they: 1) had talked with a doctor or healthcare professional about depression, anxiety, or stress in the previous year, 2) were currently under the treatment of a mental health professional (i.e., psychiatrist, psychologist, therapist, mental health social worker) or had seen a mental health professional in the previous year, and 3) were currently taking a prescription medication for mental health problems such as depression, anxiety, or stress (i.e., psychotropic medication).

Other Variables—Self-report data on age, gender, race, education, marital status, living arrangement, household income, number of chronic conditions, referral source, whether the subject had a primary care provider, and enrollment in Medicare or Medicaid (public insurance programs) were collected. The Six-Item Screener (SIS) is derived from the Mini-Mental Status Examination (Callahan *et al.*, 2002) and was administered in the second half of this study to 236 participants (235 of which had information on anxiety and depression). The SIS score ranges from 0 to 6 and a cutoff of 2 or more errors for a positive screen of cognitive impairment has a sensitivity and specificity of 74.2% and 80.2% in community samples (Callahan *et al.*, 2002).

Data Analysis

Subjects were dichotomized into mentally “distressed” (either a GS-A score of at least 6 or PHQ-9 score of at least 10 or both) and “non-distressed” (GS-A score less than 6 and PHQ-9 score less than 10) groups. Bivariate analyses characterized the sociodemographic and other characteristics of the two mental health groupings; differences between the two groups were examined using the Pearson chi-square test. Basic descriptive statistics characterized the overall level of healthcare and human services utilization in our sample. In addition to means, median values and interquartiles were reported due to non-normal data distribution. To test for differences between the distressed and non-distressed groups, we used the Wilcoxon Rank Sum test for non-normal data. With regard to the clients’ reported use of primary care physicians, mental health professionals, and prescription medication, we compared groups with Pearson chi-square statistics for each health characteristic variable. Poisson regressions were performed with the dependent variable being the total number of healthcare or human services used during the past 90 days for residents with healthcare or human services use, respectively; sample characteristics that varied by distress grouping with a $p < 0.20$ were included in the regression analyses. In all analyses a p -value of 0.05 or less indicated statistical significance. Data analyses were conducted with SAS statistical software version 9.2 (SAS Institute, Inc., Cary, NC).

Results

Sample Characteristics

Table 1 lists the characteristics of the entire sample ($n = 377$) and its distressed ($n = 160$; 42.4%) and non-distressed ($n = 217$; 57.6%) subgroups. Participants had a mean age of 77.0 years (standard deviation = 9.1; range = 60–102), one-third were male, and about 15% were nonwhite. Nearly one-third had not graduated from high school, about 60% were unmarried, 45% lived alone, and about 70% had a household income less than or equal to \$2,000 per month. Distressed and non-distressed subjects were similar with regard to age, gender, race, education, marital status, living arrangement, cognitive impairment status, referral source, having a regular primary care physician, and health insurance status. However, distressed clients were significantly more likely to have household income less than or equal to \$2,000/month and had more medical illnesses.

Healthcare and Human Services Utilization

As depicted in Table 2, over 90% of Eldersource clients had utilized at least one healthcare service within the 90 days prior to care management assessment, most commonly outpatient clinic visits and diagnostic tests. More than 1 in 5 clients had an emergency room visit, and 12.2–16.5% of agency clients were hospitalized or had used visiting nurses, emergency response services, outpatient mental health services, or physical, occupational, or speech therapy. However, while almost 98% of clients reported having a regular primary care provider, less than 6% of the sample was referred to Eldersource by their primary care provider; 80% either sought out services themselves or were referred by a family caregiver, friend, or neighbor.

(Table 1). Substance abuse treatment and inpatient mental health hospitalizations were uncommon.

In contrast to their use of healthcare services, Eldersource clients accessed relatively few human services in the 90 days prior to their intake assessment by the agency; slightly over half had utilized none. Of the human services, clients most often used home energy and financial assistance (17.0% and 13.5%, respectively) in the previous 90 days (Table 2).

There were no differences between distressed and non-distressed clients in the proportion using any healthcare, medical, outpatient medical, human services, or sub-type of human services (Table 2). However, distressed clients were significantly more likely to utilize mental health (17.6% versus 9.3%; $p = 0.017$), intensive medical (44.7% versus 23.1%; $p < 0.001$), and other health (24.5% versus 15.7%; $p = 0.034$) services.

Amount of utilization by those who reported using a service in the preceding 90 days is described in Table 3. There were no significant differences between the distressed and non-distressed groups in mean number of outpatient mental health visits, emergency room visits, emergency responses, nursing home days, and types of human services accessed. However, distressed clients who did access healthcare services utilized more types of services than did non-distressed clients (3.40 versus 2.59; $p < 0.001$). Similarly, distressed subjects who utilized outpatient medical office visits made more visits (3.55 versus 2.85; $p = 0.002$), and those who were hospitalized for medical reasons had more than twice as many inpatient days than non-distressed group members who utilized those services (9.94 versus 4.47; $p = 0.025$) (Table 3).

A Poisson regression model for which the total number of healthcare services during the past 90 days served as the dependent variable showed that being distressed was associated with more healthcare services (regression coefficient = 0.212; $\chi^2 = 9.68$; $p = 0.002$) after accounting for age, gender, household income, and number of medical conditions. On the other hand, being distressed was not a statistically significant predictor (regression coefficient = -0.040; $\chi^2 = 0.10$; $p = 0.754$) in a Poisson model for which number of human services was the dependent variable. Adding cognitive impairment to the model did not change the association of healthcare and human service with distress status (healthcare regression coefficient = 0.220 [$\chi^2 = 6.20$; $p = 0.013$]; human services regression coefficient = -0.035 [$\chi^2 = 0.04$; $p = 0.845$]).

Mental Healthcare

As shown in Table 4, substantial proportions in both groups reported having discussed their mental health with a medical professional in the past year (53.5% of distressed and 30.7% of non-distressed clients), and half of distressed subjects and almost a quarter of the non-distressed group were currently prescribed a psychotropic medication. In both instances the proportions were significantly greater for distressed than non-distressed clients ($p < 0.001$ for both differences).

In contrast, a small proportion of subjects in each group endorsed seeing a mental health professional either currently or in the past year (18.1% and 27.7% respectively for distressed clients; 10.1% and 14.8% respectively for the non-distressed group). The likelihood of distressed clients receiving care from a mental health professional in either time frame was significantly greater than among the non-distressed subgroup ($p = 0.002$ for past year and $p = 0.025$ for current).

Discussion

Our first hypothesis, that most older adult social services clients receiving in-home care management assessments are utilizing healthcare and human services, was partially confirmed.

As expected in older adults with high levels of physical illness and functional impairment, nearly all (91%) Eldersource clients reported using healthcare services in the 90 days prior to care management assessment. However, only about half (47%) indicated human services utilization. Furthermore, the average user of healthcare services reported using almost 3 services while the average user of human services indicated using only about half as many, 1.5 services. Although fewer clients accessed human services, utilization would likely increase following agency intervention as care managers initiate supportive services for their clients.

Our second hypothesis, that being distressed is associated with greater likelihood of using healthcare and human services than being non-distressed, as well as with greater amount of use among service users, was also partially verified. The proportion of clients with any healthcare use was virtually the same for the distressed and the non-distressed (91.3% versus 90.8%). The percentage of clients who had used human services was higher for the distressed in comparison to the non-distressed subjects (51.3% versus 44.0%), but this difference was not statistically significant. Consistent with our hypothesis and with prior research on older adults in primary care (Luber *et al.*, 2001), distressed social service agency clients utilized more types of healthcare services (e.g., mental health, intensive medical, and other health services) than did the non-distressed clients. Among clients with any healthcare use, those who were distressed reported using an average of about 30% more healthcare services than the non-distressed, while among those with any human service use there was no difference in the intensity of human services utilization. Although distressed clients did not utilize more formal human services, it is possible that distressed clients may have relied more heavily on informal sources of support (e.g., spouses, caregivers) than non-distressed clients. The high rates of healthcare service use among the mentally distressed ASPN clients suggest that interventions to reduce clients' psychological distress could help contain healthcare costs.

Our third hypothesis, that the majority of distressed ASPN clients have not received mental healthcare from a medical professional or mental health specialist for their mental illness, was partially confirmed as well. Relatively few distressed clients reported accessing mental health services, but over half reported discussing their mental health with a medical professional in the past year. These findings are congruent with research suggesting that older adults infrequently access specialty mental healthcare and are more willing to address their mental health concerns to a primary care doctor (Crabb and Hunsley, 2006). Consistent with the high levels of distress among agency clients (42% had clinically significant anxiety and/or depression), a third of all clients and half of those classified as distressed were prescribed a psychotropic medication, presumably by their primary care providers in most cases. Yet clients remained symptomatic, suggesting, consistent with research conducted in primary care (Unutzer *et al.*, 2000; Licht-Strunk *et al.*, 2009), that the intensity or type of treatment received prior to agency intake may have been inadequate. The ASPN, therefore, seems well situated to detect and facilitate more effective treatment for those depressed seniors who fall through the cracks of the primary care system.

In the United States close collaboration between the ASPN and primary care sectors in the care of their mutual patients should be possible, to the added benefit of the client. However, a very small proportion of clients (both distressed and non-distressed) was referred by a primary care provider to the social services agency. Exploration of how to integrate healthcare and human service delivery for these older adults in whom combined physical and social morbidities are the rule is indicated. Furthermore, to improve mental healthcare outcomes, some have advocated the development of collaborative care models that, in addition to linking primary and mental healthcare providers, incorporate community-based social services agencies as well (Alexopoulos and Bruce, 2009).

Collaborative care approaches to the treatment of depression (Unutzer *et al.*, 2002) and anxiety (Roy-Byrne *et al.*, 2001) that incorporate mental health expertise into primary care clinics have shown promise in improving mental illness treatment in a relatively cost-effective manner (Katon *et al.*, 2005; Unutzer *et al.*, 2008). Less work has been done in home health and community-based social service settings, however, and it is unclear what services in these settings would be most cost effective. There was enough evidence, however, for a national panel of community practitioners and mental health experts to strongly recommend in-home depression care management of older adults suffering from low levels of depression; social services programs could provide such care (Steinman *et al.*, 2007). Bruce and colleagues have shown that training of visiting nurses in assessment of depression increased referrals for diagnosis and treatment, leading to improved patient outcomes (Bruce *et al.*, 2007). Others have reduced depression severity among community-based social service agency clients with a multimodal intervention that included screening, patient education, and psychotherapy delivered by social services case managers (Quijano *et al.*, 2007).

Because they routinely deliver care in the home, social work care managers are well positioned to detect possible mental illness in their elderly clients, facilitate communications, contribute to the diagnostic assessment, and actively collaborate with primary care and mental health partners by supporting the clients' adherence to prescribed care, delivering psychosocial components of care, and monitoring side effects and response to treatment. Their expertise and access to resources to address comorbid social factors may well boost response rates beyond those seen in more traditional collaborations between primary and mental healthcare sectors only (Bruce *et al.*, 2004; Unutzer *et al.*, 2002). One such example is the Program to Encourage Active, Rewarding Lives for Seniors (PEARLS) in which community agency social workers were trained in behavioral activation and problem-solving therapy to treat minor depression and dysthymia in older adults, resulting in a significant reduction in depressive symptom severity relative to care as usual (Ciechanowski *et al.*, 2004).

Our findings have a number of limitations to consider. First, this study's measure of service utilization is by self-report unverified by clinical or administrative records. Second, limiting our discussion of psychiatric treatment received is that we did not examine use of psychotherapy specifically or prescription medication class and dosage; we also do not know what proportion of clients who reported using services received evidence-based treatment. Third, we examined associations rather than cause and effect relationships. Fourth, we did not adjust for multiple comparisons because such adjustments can be overly conservative, inflate the risk of type II errors, and have a number of other limitations (Perneger, 1998). Consequently, we risk spurious findings and the results should be cautiously interpreted in that light. Last, our research was conducted within a single aging services agency. Access to both healthcare and human services varies considerably by location, and there is a wide diversity of services and settings present in the ASPN. The patterns and correlates of service utilization by ASPN clients would likely differ in other regions and agencies. Our findings best generalize to social service agencies that have a gatekeeper function in that they first evaluate and then refer community-dwelling older adults to a set of services and programs suited to the clients' unique circumstances and needs.

In summary, our findings suggest: 1) clients entering the ASPN have used multiple healthcare but few human services, 2) a large proportion of older adults receiving in-home care manager assessments are mentally distressed (i.e., anxious and/or depressed), 3) the distressed aging service clients utilize more healthcare services than the non-distressed group, and 4) the majority of the distressed clients have discussed their mental health with a medical provider and half received prescription medication for it, although few have seen a mental health professional. Innovative approaches that link the delivery of social services to primary and mental healthcare are needed to reduce the burden of mental illness among aging services

agency clients. Further research is warranted to understand the longitudinal course of anxiety and depression in these seniors, the impact that ASPN services have on anxiety and depression, and the most effective and sustainable means by which the social service providers may partner with primary and mental health sector providers in the coordinated care of their older adult clients with mental illnesses.

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Table 1

Characteristics of mentally distressed and non-distressed aging services clients

Characteristics	All Clients		Distressed Clients		Non-Distressed Clients		p ^a
	N = 377		N = 160		N = 217		
	N	%	N	%	N	%	
Age							0.087
60–74 years	153	40.6	73	45.6	80	36.9	
≥ 75 years	224	59.4	87	54.4	137	63.1	
Gender							0.145
Female	258	68.4	116	72.5	142	65.4	
Male	119	31.6	44	27.5	75	34.6	
Race							0.559
White	318	84.4	137	85.6	181	83.4	
Non-White	59	15.6	23	14.4	36	16.6	
Education							0.489
< Grade 12	113	30.0	51	31.9	62	28.6	
≥ Grade 12	264	70.0	109	68.1	155	71.4	
Marital Status							0.960
Married	149	39.5	63	39.4	86	39.6	
Not Married	228	60.5	97	60.6	131	60.4	
Lives Alone							0.385
Yes	170	45.1	68	42.5	102	47.0	
No	207	54.9	92	57.5	115	53.0	
Household Income							0.015
≤ \$2,000/month	267	71.6	125	78.1	142	66.7	
> \$2,000/month	106	28.4	35	21.9	71	33.3	
≥ 5 Medical Conditions ^b							<0.001
Yes	214	56.8	116	72.5	98	45.2	
No	163	43.2	44	27.5	119	54.8	
Cognitive Impairment ^c							0.114
Yes	36	15.3	19	19.8	17	12.2	

Characteristics	All Clients		Distressed Clients		Non-Distressed Clients		p ^a
	N = 377		N = 160		N = 217		
	N	%	N	%	N	%	
No	199	84.7	77	80.2	122	87.8	0.224
Referral Source ^d							
Self	143	40.4	54	35.8	89	43.8	
Spouse or Primary Caregiver	26	7.3	11	7.3	15	7.4	
Other Family or Friend/Neighbor	112	31.6	47	31.1	65	32.0	0.571
Health Provider	20	5.6	9	6.0	11	5.4	
Other	53	15.0	30	19.9	23	11.3	
Regular Primary Care Provider							
Yes	367	97.6	157	98.1	210	97.2	0.364
No	9	2.4	3	1.9	6	2.8	
Medicaid Insurance							
Yes	54	14.7	26	16.7	28	13.3	
No	313	85.3	130	83.3	183	86.7	0.380
Medicare Insurance							
Yes	345	92.0	144	90.6	201	93.1	
No	30	8.0	15	9.4	15	6.9	

Notes: Mentally distressed clients have either a Goldberg Anxiety score of at least 6 or a PHQ-9 score of at least 10; non-mentally distressed clients have a Goldberg Anxiety score less than 6 and a PHQ-9 score less than 10.

^a P-value determined by Pearson chi-square test and compares the distressed and non-distressed groups.

^b Medical conditions use the median value as the cut-point.

^c We have complete cognitive impairment information on 235 participants.

^d Total percentage for all clients does not sum to 100 because of rounding.

Table 2

Any healthcare and human services utilization in the 90 days prior to the in-home care management visit

Type of Service	All Clients		Distressed Clients		Non-Distressed Clients		p ^a
	N = 377		N = 160		N = 217		
	N	%	N	%	N	%	
Any Healthcare or Human Services ^b	359	95.5	153	95.6	206	95.4	0.907
Healthcare Services	343	91.0	146	91.3	197	90.8	0.876
Mental Health ^c	48	12.8	28	17.6	20	9.3	0.017
Outpatient Visit ^b	46	12.2	26	16.4	20	9.2	
Alcohol or Substance Abuse Treatment ^b	2	0.5	2	1.3	0	0	
Inpatient Services	1	0.3	1	0.6	0	0	
Medical	342	90.7	145	90.6	197	90.8	0.958
Outpatient ^b	338	89.9	144	90.0	194	89.8	0.953
Office Visit ^d	321	86.1	137	86.7	184	85.6	
Laboratory Tests, X-Rays, or Other Tests ^b	287	76.3	130	81.3	157	72.7	
Intensive Medical ^c	121	32.3	71	44.7	50	23.1	<0.001
Emergency Room Visit	84	22.3	50	31.3	34	15.7	
Visiting Nurse ^b	62	16.5	39	24.4	23	10.6	
Hospitalization	53	14.1	31	19.4	22	10.1	
Emergency Response ^c	51	13.6	30	18.9	21	9.7	
Nursing Home ^b	14	3.7	8	5.0	6	2.8	
Other Health ^c	73	19.5	39	24.5	34	15.7	0.034
Physical, Occupational, or Speech Therapy ^b	52	13.8	29	18.1	23	10.6	
Home Health Aide ^c	35	9.3	19	11.9	16	7.4	
Human Services ^b	177	47.1	82	51.3	95	44.0	0.163
In-Home	42	11.1	20	12.5	22	10.1	0.471
Homemaker	27	7.2	12	7.5	15	6.9	
Home Meal Delivery	20	5.3	9	5.6	11	5.1	

Type of Service	All Clients			Distressed Clients			Non-Distressed Clients		
	N = 377			N = 160			N = 217		
	N	%		N	%		N	%	p ^a
Community-Based	27	7.2		13	8.1		14	6.5	0.533
Senior Center	24	6.4		12	7.5		12	5.5	
Adult Day Care	3	0.8		1	0.6		2	0.9	
Cognitive/Supportive	38	10.1		16	10.0		22	10.1	0.965
Church Pastoral Care	34	9.0		15	9.4		19	8.8	
Alzheimer's Association	4	1.1		1	0.6		3	1.4	
Other ^b	124	33.0		56	35.0		68	31.5	0.473
Home Energy Assistance ^b	64	17.0		29	18.1		35	16.2	
Financial Assistance	51	13.5		26	16.3		25	11.5	
Transportation	35	9.3		17	10.6		18	8.3	
Other Human Services	8	2.1		3	1.9		5	2.3	
Legal Assistance	3	0.8		2	1.3		1	0.5	

Notes: Mentally distressed clients have either a Goldberg Anxiety score of at least 6 or a PHQ-9 score of at least 10; non-mentally distressed clients have a Goldberg Anxiety score less than 6 and a PHQ-9 score less than 10.

^aP-value determined by Pearson chi-square test and compares the distressed and non-distressed groups.

Some clients have missing information. The number of missing clients is:

- ^b 1.
- ^c 2.
- ^d 4.

Table 3
Amount of utilization by mentally distressed and non-mentally distressed groupings for users of the respective services

Characteristics	All Clients				Distressed Clients				Non-Distressed Clients				p ^a
	N = 377				N = 160				N = 217				
	N	Mean	Median	Interquartile Range	N	Mean	Median	Interquartile Range	N	Mean	Median	Interquartile Range	
Healthcare Services ^b	333	2.93	2	2 to 4	141	3.40	3	2 to 4	192	2.59	2	2 to 3	<0.001
Mental Health ^c													
Outpatient Visits	46	2.80	2	1 to 4	26	3.23	2	1 to 4	20	2.25	2	1 to 2.5	0.222
Medical													
Outpatient													
Office Visits	321	3.15	3	1 to 4	137	3.55	3	2 to 4	184	2.85	2	1 to 4	0.002
Intensive Medical													
Emergency Room Visits	84	1.19	1	1 to 1	50	1.22	1	1 to 1	34	1.15	1	1 to 1	0.647
Days Hospitalized	53	7.79	5	3 to 10	31	9.94	6	4 to 14	22	4.77	4.5	3 to 7	0.025
Emergency Response	51	1.20	1	1 to 1	30	1.17	1	1 to 1	21	1.24	1	1 to 1	0.250
Nursing Home Days	14	27.43	19	14 to 42	8	27.88	19	13.5 to 45.5	6	26.83	18	14 to 32	0.948
Human Services ^{b, d}	177	1.54	1	1 to 2	82	1.55	1	1 to 2	95	1.54	1	1 to 2	0.912

Notes: Mentally distressed clients have either a Goldberg Anxiety score of at least 6 or a PHQ-9 score of at least 10; non-mentally distressed clients have a Goldberg Anxiety score less than 6 and a PHQ-9 score less than 10.

^aThe Wilcoxon Rank Sum test calculated the two-sided p-values and compares the distressed and non-distressed groups.

^bHealthcare and human services are summary scores of all types of healthcare and human services, respectively, used in the 90 days prior to the care manager visit.

^cInpatient mental health and alcohol or substance abuse treatment were not included because they were endorsed by only 1 and 2 subjects, respectively.

^dNo human services subcategories were reported because no service use intensity information was recorded for such services.

Table 4

Mental health treatment characteristics by mental health grouping

Mental Health Treatment	All Clients		Distressed		Non-Distressed		p ^a
	N = 377		N = 160		N = 217		
	N	%	N	%	N	%	
Discussed Mental Health with Medical Professional (Past Year) ^b							<0.001
Yes	151	40.4	85	53.5	66	30.7	
No	223	59.6	74	46.5	149	69.3	
Psychotropic Medication (Current) ^c							<0.001
Yes	129	34.3	80	50.0	49	22.7	
No	247	65.7	80	50.0	167	77.3	
Mental Health Professional (Past Year) ^d							0.002
Yes	76	20.3	44	27.7	32	14.8	
No	299	79.7	115	72.3	184	85.2	
Mental Health Professional (Current) ^e							0.025
Yes	51	13.5	29	18.1	22	10.1	
No	326	86.5	131	81.9	195	89.9	

Notes: Mentally distressed clients have either a Goldberg Anxiety score of at least 6 or a PHQ-9 score of at least 10; non-mentally distressed clients have a Goldberg Anxiety score less than 6 and a PHQ-9 score less than 10.

^a P-value determined by Pearson chi-square test and compares the distressed and non-distressed groups.

^b Had talked with a doctor or healthcare professional about depression, anxiety, or stress in the past year.

^c Currently taking prescription medication for depression, anxiety, or stress.

^d Had seen a mental health professional in the past year (includes clients currently receiving mental health professional treatment); mental health professional consists of psychiatrists, psychologists, therapists, and mental health social workers.

^e Were currently under the treatment of a mental health professional; mental health professional includes psychiatrists, psychologists, therapists, and mental health social workers.