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ANXIETY AND ITS CORRELATES AMONG OLDER ADULTS ACCESSING AGING SERVICES

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Abstract

Objectives—To assess the characteristics of anxiety in aging services network (ASN) clients.

Methods—Interviews were conducted as part of an academic-community partnership for studying the mental health needs of community-dwelling older adults. Participants consisted of ASN clients in Monroe County, NY, that were aged 60 years and older and received an in-home assessment for care management services. The Goldberg Anxiety Scale screened for anxiety symptoms, and instruments covering the domains of associated mental health, physical health and disability, social support, negative life events, and other areas relevant to delivery of aging services were administered.

Results—Of 378 subjects enrolled, 27% had clinically significant levels of anxiety. In bivariate analyses anxiety was associated with having a current major depressive episode (MDE), five or more medical conditions, pain, younger age, less income, and negative life events. After controlling for MDE in multivariate analyses, medical conditions, pain, negative life events, and younger age were significant correlates of anxiety in ASN clients.

Conclusions—Anxiety was common among ASN clients who received in-home care management services. These anxious clients suffered from a combination of mental, medical, and social issues that suggests the need for multidisciplinary care. Because aging services providers work with their clients to ameliorate conditions that are highly correlated with anxiety, the ASN represents a promising venue for detecting, managing, and preventing anxiety among older adults.

Keywords

Anxiety; comorbidity; depression; geriatric assessment; prevalence; social services

INTRODUCTION

Late-life anxiety is a significant public health burden. Epidemiologic data suggest that approximately one in ten older adults has an anxiety disorder (Beekman *et al.*, 1998) that

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can lead to years of suffering (Schuermans *et al.*, 2005). Millions more struggle with anxiety symptoms. Late-life anxiety is associated with diminished well-being and increased disability (de Beurs *et al.*, 1999), male mortality (van Hout *et al.*, 2004), depression (Lenze *et al.*, 2000), and utilization of health services (de Beurs *et al.*, 1999). Although anxiety is common and may have serious consequences, older adults suffering from anxiety often do not receive appropriate care (de Beurs *et al.*, 1999). In the U.S., the economic cost of anxiety disorders is estimated to be \$42 billion annually (Greenberg *et al.*, 1999).

The correlates of late-life anxiety have been less studied than those of depression (Vink *et al.*, 2008). The available research, however, suggests that many late-life anxiety correlates are potentially modifiable within the larger domains of associated mental illness, physical health and disability, social support, and stressful life events (Smit *et al.*, 2007; Vink *et al.*, 2008).

In addition to socio-demographic characteristics of younger age, female gender, and lower income (Vink *et al.*, 2008), a number of mental illnesses are associated with late-life anxiety. Depression is a common co-morbid psychiatric condition; in community-dwelling older adults, 23.0–47.5% of those with major depression also satisfy criteria for an anxiety disorder, and 25.1–31.0% of elders with an anxiety disorder meet criteria for major depression (Beekman *et al.*, 2000; Cairney *et al.*, 2008a). Anxious and depressed individuals suffer from a more severe and unremitting course than occurs when anxiety and depression present independently (Rapaport, 2001; Andreescu *et al.*, 2007). Late-life mental illness frequently persists for years (Schuermans *et al.*, 2005; Beekman *et al.*, 2002), and those who are both anxious and depressed tend to be resistant to treatment efforts (Andreescu *et al.*, 2007). Late-life anxiety may also be associated with cognitive impairment (Mantella *et al.*, 2007; Rozzini *et al.*, 2008). Although at-risk alcohol use is common among older adults (Blazer and Wu, 2009), its association with late-life anxiety is unclear.

Physical health, social support, socio-demographic, and recent stressful life events are additional domains relevant to the anxiety state of older adults. Chronic physical illness (Smit *et al.*, 2007) and disability (de Beurs *et al.*, 1999) have been linked to late-life anxiety, although a longitudinal study did not find that chronic disease or functional limitation contributed to anxiety outcome (Schuermans *et al.*, 2005). Higher ratings of perceived social support have been associated with a modestly decreased risk (Cairney *et al.*, 2008b), and recent life events may contribute to an elevated risk, of late-life anxiety disorders (Beekman *et al.*, 2000).

Targeted interventions are needed to improve identification and treatment of anxious older adults. Currently much anxiety treatment is provided by primary care providers. However, many barriers at the patient, provider, and service system levels contribute to inadequate recognition and treatment of mental disorders in the primary care setting (U.S. Department of Health and Human Services, 1999; Rost *et al.*, 2000; Wells *et al.*, 2002). To overcome these barriers, expert consensus has recommended exploration of other venues to improve the detection and treatment of late-life mental disorders (Steinman *et al.*, 2007). Because many anxiety correlates are social in nature, settings in which the social needs of older adults are addressed offer special promise.

The aging services network (ASN) represents a national system of approximately 30,000 local and state aging services agencies that provide human services to over ten million older adults and hundreds of thousands of caregivers annually (O'Shaughnessy, 2008). The ASN aims to help maintain the independence of older adults and enable them to age in place. To access the ASN for assistance with a wide array of social issues, clients can refer themselves or be referred by a family member, caregiver, or other professional. Services range from

providing information and referral to intensive care management. Older adults likely engage the ASN during periods of acute stress. Aging services professionals are therefore well positioned to interrupt a cycle of worsening emotional distress among this group of vulnerable community-dwelling older adults. Characterization of anxiety in this population may inform the design of collaborative care models for late-life anxiety analogous to such interventions developed for testing in primary care practice settings (Roy-Byrne *et al.*, 2001).

This study aims to 1) estimate the frequency of anxiety symptoms among aging services clients and 2) identify correlates of late-life anxiety within the domains of associated mental health (e.g., depression, alcohol abuse), physical health and disability, social support, stressful life events, and socio-demographic characteristics. We hypothesize that anxiety is common among older adults receiving care management services in the ASN. We also expect that anxiety in this setting frequently co-occurs with other mental and physical illnesses, domains pertinent to mental and general health providers, and is associated with social support and stressful life events, domains that are relevant to aging services professionals. Such multi-domain findings would support the need for collaborative care models in this setting. By describing anxiety and its correlates among ASN clients, our long-term goal is to inform interventions that aging services providers can make to detect, treat, and prevent anxiety syndromes in their clients.

METHODS

Service setting

In 2002, the University of Rochester and Eldersource, an agency that serves as the single point of entry for community-based aging services for Monroe County, NY, began a community-academic research partnership the goal of which is to develop innovative, collaborative approaches to the delivery of mental health care to the agency's older adult clients. Eldersource provides a range of services to help seniors and their families achieve or maintain optimal social, physical, and psychological functioning such as providing information and referral for aging-related issues and in-home care management for homebound clients. Most clients suffer from a combination of functional disability, financial difficulty, housing issues, and/or legal problems.

Sample

Clients entering the Monroe County ASN who received an initial home assessment from Eldersource care managers between September 2005 and August 2007 were recruited into this study. The clients had to be aged 60 years or older and speak English to participate in a single in-person research interview. Care managers (CMs) introduced the study to their clients during the initial in-home care management assessment, and clients who verbally consented were referred to study personnel. The University of Rochester's Research Subjects Review Board approved the study, and written informed consent was obtained in person prior to the research interview.

CMs conducted intake assessments on 1,090 clients during the study period, 643 of whom (59%) were referred to study personnel. Most of the remaining clients were not referred because during their initial in-home assessments the CM determined that care management was not indicated. In other instances agency resource limitations precluded full adherence with referral guidelines (e.g., turnover in CM staff). Of the 643 referred clients, study personnel did not attempt to call 63 clients because study resources could not keep pace with CM referrals. We were unable to reach 47 clients and 24 had moved, passed away, or were ineligible based on language or age criteria. Of the remaining 509 eligible subjects, 131

declined participation and 378 clients (378/509; 74.3%) provided informed consent and were enrolled in the study. Using available administrative data, we found no statistically significant differences in age, race, gender, income, or marital status between the study sample and other clients who received care management intake assessments during the study period.

Measures

Anxiety—The Goldberg Anxiety Scale (GS-A) determined the presence of clinically significant anxiety symptoms. This instrument has nine yes/no questions and can be used as a brief screening tool for anxiety disorders (Goldberg *et al.*, 1988). All subjects answered the first four questions, and if at least two were positively endorsed, the remaining five questions were asked. Subjects endorsing six or more of the nine questions were considered to have a clinically significant level of anxiety symptoms. The GS-A has exhibited good psychometric properties for detecting generalized anxiety disorder at this cut-point with a sensitivity of 82% and specificity of 91% (Goldberg *et al.*, 1988); the GS-A has been used to characterize anxiety among Spanish-speaking older adults (Olivera *et al.*, 2008). One of the 378 interviewed clients did not complete the GS-A, yielding a sample of 377 for the analyses presented here.

Socio-demographic variables—Age (determined from reported date of birth), race, gender, household income, education, marital status, and living arrangement were assessed.

Associated mental disorders—We used the mood disorders module of the Structured Clinical Interview for DSM-IV (SCID) (First *et al.*, 2002) to determine the presence of a current major depressive episode (MDE). A diagnosis of MDE was determined using all available information and by consensus of the interviewers and a geriatric psychiatrist (YC). As we did not have access to clients' medical records or other objective measures of health status, we did not attempt to distinguish the source of the MDE (e.g., secondary, substance-induced, etc.). The AUDIT-C screened for alcohol abuse and/or dependence and is scored from 0 to 12. We considered a score of 6 or more to be positive, which has a sensitivity of 62% and specificity of 85% for detecting alcohol abuse or dependence (Bush *et al.*, 1998). The Six-Item Screener (Callahan *et al.*, 2002) (SIS; derived from the Mini-Mental Status Examination) was administered to 236 participants in the second half of this study. The SIS is scored from 0–6 and, using a cutoff of ≥ 2 errors to indicate a positive screen for cognitive impairment has a sensitivity and specificity of 74.2% and 80.2% in community samples (Callahan *et al.*, 2002).

Physical health and disability—A checklist of self-reported medical conditions adapted from the Minimum Data Set Version 2.0 examined physical health (Centers for Medicare & Medicaid Services, 2000), and pain was determined from a single-item question from the SF-12 (Ware *et al.*, 1996). We assessed functional status by clients' self-reports of ability to perform activities of daily living (ADLs; substituted continence with ability to walk) (Katz *et al.*, 1963) and instrumental activities of daily living (IADLs) (Lawton and Brody, 1969).

Social support—The 10-item Lubben Social Network Scale (LSNS) (Lubben, 1988) objectively assessed social support received; LSNS scores range from 0 to 50 with higher scores corresponding to greater social support. The 12-item Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet *et al.*, 1988) measured the clients' perceived social support; MSPSS scores range from 12 to 84 with higher values indicating higher levels of perceived support.

Stressful life events—The Louisville Older Persons Events Scale (LOPES) (Murrell *et al.*, 1984) was modified to examine the occurrence of forty negative life events within the three months preceding the initial CM visit. The subjective impact of the worst event was also assessed by asking three additional questions regarding: 1) the “amount of change” attributed to the event, 2) “how bad the event was”, and 3) “how much the event has been on your mind.” This summary score ranges from 0-9 with a higher score signifying a greater impact of the event.

Statistical analysis

We applied basic descriptive analyses to estimate the frequency of clinically significant anxiety symptoms. Next, we conducted bivariate analyses to compare characteristics of anxious participants to non-anxious participants. Characteristics included variables within the associated mental disorders, physical health and disability, social support, stressful life events, and socio-demographic domains, as well as other factors such as referral source. Our bivariate analyses used a combination of the chi-square test of proportions and the t-test (or the Wilcoxon test for non-normal data) for significance testing; we considered variables with a p-value of ≤ 0.05 or less to be statistically significant. Finally, we included independent variables with a p-value 0.20 based on the bivariate analyses in a logistic regression model; we applied a p-value cutoff of 0.20 because a lower probability cutoff may not identify late-life anxiety correlates that could be important in a logistic regression model (e.g., some variables weakly associated with anxiety may become significant after accounting for other variables in multivariate analyses). Data analyses were conducted with SAS statistical software version 9.2 (SAS Institute, Inc. Cary, NC).

RESULTS

Anxiety prevalence and correlates

Among the 377 participants, 103 (27.3%) had clinically significant symptoms of anxiety (GS-A ≥ 6). Bivariate analyses compared the anxious to non-anxious participants across multiple domains: Table 1 shows ASN clients' socio-demographics and Table 2 contains associated mental health, physical health and disability, and social support and life events domains. Participants had a mean age of 77.0 years (standard deviation = 9.1; range = 60–102), and anxious older adult ASN clients were more often younger (i.e., 60–74 years) and had lower household incomes than non-anxious clients (Table 1). In the associated mental health domain, cognitive impairment and alcohol abuse were not related to anxiety state. However, current MDE was highly associated with anxiety -- 54% of anxious participants suffered from major depression and only 16% of non-anxious clients had a current MDE. With regard to physical health and functioning, having five or more medical conditions and higher levels of pain were significantly more common in anxious clients, but functional impairment (i.e., ADL and IADL) was not. Anxious and non-anxious ASN clients had similar levels of perceived and received social support, while recent stressful events were more severe in anxious adults (Table 2).

Multivariate analyses

The multivariate model accounted for variables that had a p-value of 0.20 or less in bivariate analyses and included age, education, gender, income, current MDE, having ≥ 5 medical conditions, pain, perceived social support, and recent life events. The number of medical conditions, pain, stressful life events, and young-old age remained significantly associated with anxiety in the multivariate analyses after accounting for the presence of current MDE (Table 3).

DISCUSSION

These findings have implications for the delivery of health and human services to older adults. First, anxiety was present in over 27% of ASN care management clients at a level that warrants further assessment and, potentially, treatment. In a comparable sample of older adults receiving home-based aging services, Gum and colleagues reported that 11.7% met criteria for an anxiety disorder diagnosis, and approximately 15% of subjects identified their anxiety as a serious problem (Gum *et al.*, 2009). These levels of anxiety in aging services clients are higher than those observed in other groups of community-dwelling older adults (Cohen *et al.*, 2006).

Of course, the ASN is designed and equipped to manage acute and chronic stressors that threaten seniors' ability to manage independently in the community. Such stressors are commonly associated with anxiety. These older adults were referred to Eldersource because of their need for such services. The high prevalence of anxiety we observed, therefore, is unsurprising, as is the significant association between the presence of anxiety and a greater number of stressful events in the lives of these care management clients. The findings thus reinforce the potentially important role that this service setting may play in the detection and management of clinically significant anxiety in older adults.

In many cases anxiety is likely a response to the acute and chronic life stressors that led the subjects or their caregivers to contact Eldersource. In other instances, anxiety disorders may have predisposed clients to the development of social stressors or rendered their coping responses less effective. Social services interventions may mitigate the impact of late-life anxiety on quality of life, health outcomes, and excess services utilization by resolving stressors, improving coping, and thereby reducing anxiety symptoms. However, just as anxiety is associated with poor health outcomes in older adults (de Beurs *et al.*, 1999; van Hout *et al.*, 2004), it may interfere with the effectiveness of social service interventions delivered by ASN providers.

Few studies have examined these questions. Enguidanos and Jamison (2006) reported a statistically significant, but clinically questionable reduction in depressive symptoms after 12 months of a nurse-enhanced geriatric case management intervention. We are unaware of studies that examined the effectiveness of social work interventions more specifically, and none has focused on anxiety. Given its prevalence in the population, however, routine screening for clinically significant levels of anxiety among ASN clients who fail to respond to standard social care management seems warranted (Diefenbach *et al.*, 2009). Routine screening could be coupled with education of ASN providers regarding anxiety disorders, as well as provide them with capacity to treat their clients or to refer them for further evaluation and care to primary and specialty mental health care settings as indicated.

That most care management clients with anxiety had complex medical and psychiatric comorbidities further highlights the need for coordinated medical/psychiatric and social care. The frequency of comorbid anxiety and depression is a concern because individuals with both disorders are more frequently resistant to mental health treatment and have a worse prognosis (Andreescu *et al.*, 2007). Comorbid anxiety and depression may also impact these clients' responses to care management interventions, and thereby accelerate the need for more intensive community-based services or institutional care. Similarly, anxiety is associated with chronic physical illness (Smit *et al.*, 2007), disability (de Beurs *et al.*, 1999), and mortality in elderly men (van Hout *et al.*, 2004), greater utilization of health services (de Beurs *et al.*, 1999), and reduced quality of life in medical patients (Mayou *et al.*, 2000), at great cost to the individual, family, and society (Greenberg *et al.*, 1999). If social stressors remain unresolved and anxiety persists, health outcomes may be further impaired.

Furthermore, young-old clients were more distressed than old-old clients, which suggest that ASN staff should be attentive to client demographics. This finding may be due to a cohort effect (e.g., younger generations have or express more anxiety symptoms) or a survivor effect (e.g., anxious individuals do not live as long). ASN-based detection and treatment of anxiety through mitigation of underlying, pathogenetic social factors may be a helpful, even necessary component of comprehensive care for these complex older adults with multiple medical, psychiatric, and social morbidities. Collaborative care models linking primary care and mental health care providers have been shown effective for reducing depression in older adults (Unutzer *et al.*, 2002; Bruce *et al.*, 2004). Further consideration should be given to adapting collaborative care models to the management of late-life anxiety (van't Veer-Tazelaar *et al.*, 2006), and to extending them to incorporate aging services providers as partners in care as well (Quijano *et al.*, 2007).

The study's limitations should be considered in interpreting the findings. The sampling frame included one aging services agency within one county's ASN. Access to and organization of social service delivery varies by setting. Also, subjects included only clients who were deemed in need of in-home care management assessment. Aging services staff in this study variably applied a qualitative triage system to select which service-seeking clients may benefit from a home visit. Many ASN clients were ineligible for this study because they either received telephone information and referral assistance or brief point-of-contact services in senior centers or public housing facilities. Indeed, complaints or signs of emotional distress during early telephone interactions with clients, caregivers, or referring professions may have stimulated a home visit, thus partially accounting for the high anxiety prevalence we found. Those clients receiving home visits also tend to be the frailest clients with multiple needs, and the home visit occurs when the subject is seeking help or is referred for assistance due to underlying physical, emotional, or social concerns. For these reasons, this sample of ASN clients' receiving in-home assessments is likely to be a high-risk group for mental disorders. The generalizability of these results thus depends on the characteristics of the clients and of the service providers.

We did not have access to health records and did not employ a structured interview with which to make anxiety disorder diagnoses (only the SCID mood disorders module was administered). It is important to consider whether these findings represent true psychiatric disorders or are rather temporary reactions to acute life stressors that may have precipitated the contact with the ASN. Future studies that more extensively evaluate the relationship between an ASN client's mental symptoms and medical history are needed, as are efforts to explore the trajectories of these symptoms over time, relating change to the social service interventions received.

CONCLUSIONS

Clinically significant anxiety is common among older adults receiving aging services care management. It is associated with comorbid social (greater impact of stressful life events), medical (pain and number of medical conditions), and psychiatric (depressive illness) factors, suggesting that effective treatment will require a multidisciplinary approach. The ASN is a promising site in which to identify seniors with anxiety disorders; additional research on how best to support screening, management and referral by ASN providers is needed. As well, the expertise and resources the ASN brings to the assessment and treatment of social factors central to the pathogenesis and course of anxiety disorders should be leveraged by its coordination with medical and mental health care sectors in the development of collaborative care approaches to the comprehensive management of late-life mental illness.

Key Points

1. Anxiety is very common in clients receiving in-home care management assessments.
2. Anxiety frequently co-occurs with other mental health, medical, and social issues in an aging services setting.
3. Due to the comorbidities present in many aging services clients, care models linking aging services with the behavioral health and primary care networks are needed.

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Table 1
Socio-demographic characteristics and aging services network referral source by anxiety grouping

	Anxious (GS-A > 6)		Not Anxious (GS-A < 6)		p-value
	n	%	n	%	
	103	27.3	274	72.7	
Age					0.0001
Young-Old < 75 years	58	56.3	95	34.7	
Old-Old ≥ 75 years	45	43.7	179	65.3	
Education					0.1222
< Grade 12	37	35.9	76	27.7	
≥ Grade 12	66	64.1	198	72.3	
Gender					0.0618
Female	78	75.7	180	65.7	
Male	25	24.3	94	34.3	
Income					0.0173
≤ \$2,000/month	83	80.6	184	68.1	
> \$2,000/month	20	19.4	86	31.9	
Lives Alone					0.9176
Yes	46	44.7	124	45.3	
No	57	55.3	150	54.7	
Marital Status					0.7601
Married	42	40.8	107	39.1	
Not Married	61	59.2	167	60.9	
Race					0.3210
White	90	87.4	228	83.2	
Non-White	13	12.6	46	16.8	
Referred Self					0.9205
Yes	40	40.8	103	40.2	
No	58	59.2	153	59.8	

GS-A = Goldberg Anxiety Scale.

p-values determined by Pearson chi-square test (if n is 5 or greater in each response category) or Fisher's exact test (if n is less than 5 in a response category).

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Table 2

Bivariate analyses of anxiety correlates

Domain	Anxious (GS-A \geq 6)		Not Anxious (GS-A < 6)		p-value
	n	%	n	%	
	103	27.3	274	72.7	
<i>Associated Mental Health</i>					
Alcohol Abuse					0.4553
Yes	1	1.0	7	2.6	
No	102	99.0	267	97.4	
Cognitive Impairment					0.2995
Yes	6	10.9	30	16.7	
No	49	89.1	150	83.3	
Current MDE					<0.0001
Yes	56	54.4	44	16.1	
No	47	45.6	230	83.9	
<i>Physical Health and Disability</i>					
\geq 1 ADLs					0.8975
Yes	56	54.4	151	55.1	
No	47	45.6	123	44.9	
\geq 2 IADLs					0.8647
Yes	55	53.4	149	54.4	
No	48	46.6	125	45.6	
\geq 5 Medical Conditions					0.0001
Yes	75	72.8	139	50.7	
No	28	27.2	135	49.3	
Pain \geq Moderate					<0.0001
Yes	69	67.0	102	37.2	
No	34	33.0	172	62.8	

<i>Social Support and Life Events</i>	n	Mean or median	Standard deviation or inter- quartile	n	Mean or median	Standard deviation or inter- quartile	p-value
Social Network Score	103	26.5	10.2	273	27.4	9.5	0.4250
Perceived Social Support Score	101	59	50 to 67	273	62	51 to 69	0.0763
Life Events Score	100	8	7 to 9	270	5	2 to 8	<0.0001

GS-A = Goldberg Anxiety Scale.

p-values determined by Pearson chi-square test (if n is 5 or greater in each response category) or Fisher's exact test (if n is less than 5 in a response category) for categorical variables and t-tests for normal (or the Wilcoxon test for non-normal) variables.

ADL, IADL, and medical conditions use the median value as the cut-point.

When data are not normally distributed based on the Shapiro-Wilk test for normality (p-value < 0.05) the median and inter-quartile range are reported.

Table 3

Multivariate logistic regression analysis of correlates associated with anxiety (GS-A \geq 6) in ASN clients (n = 365)

Domains	Odds Ratio	95% Confidence Intervals
<i>Associated Mental Health</i>		
Current MDE	3.63	2.01 – 6.57
<i>Physical Health and Disability</i>		
\geq 5 Medical Conditions	2.38	1.28 – 4.42
Pain \geq Moderate	2.26	1.27 – 4.01
<i>Social Support</i>		
Perceived Social Support Score	0.99	0.97 – 1.01
<i>Stressful Life Events</i>		
Life Events Score	1.36	1.20 – 1.54
<i>Socio-Demographic</i>		
Age: Young-Old	2.42	1.34 – 4.35
Education: <12 Grade	1.30	0.70 – 2.43
Gender: Female	1.43	0.74 – 2.74
Income: \$2,000 or Less	1.17	0.58 – 2.34

GS-A = Goldberg Anxiety Scale.

Only variables with a p-value \leq 0.20 (based on bivariate analyses) were included in the logistic regression model; all variables with a 95% CI that does not include one have a p-value of $<$ 0.01 based on the Wald chi-square test.