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Impairments in Life Quality among Clients in Geriatric Home Care: Associations with Depressive and Anxiety Symptoms

Gretchen J. Diefenbach, Ph.D.^{*}, David F. Tolin, Ph.D., and Christina M. Gilliam, Ph.D.
Anxiety Disorders Center The Institute of Living/Hartford Hospital 200 Retreat Avenue Hartford, CT 06106

Abstract

Objective—The aim of this study was to determine the independent contributions of depressive and anxiety symptoms to quality of life among older adults who were receiving services through a home care program.

Methods—The study sample consisted of 66 community-dwelling older adults (ages 65 and older), who were experiencing chronic medical illness and concomitant functional disability necessitating home care. Participants completed self-report measures of depression, anxiety, and health-related quality of life. Additional data on cognitive, health, and functional status were collected to be used as covariates.

Results—The associations of depressive symptoms with quality of life impairments in home care were substantial and pervasive. Depressive symptoms were significantly associated with quality of life impairments in nearly all domains. After controlling for depressive symptoms, anxiety symptoms accounted for additional and statistically significant variance in impaired life quality in the domains of Mental Health, Role Emotional Functioning, and Bodily Pain.

Conclusions—These results indicate that depressive and anxiety symptoms demonstrate negative associations with life quality among older adults in home care, and highlight the importance of developing community-based programs to assess and treat depressive and anxiety symptoms among home care clients.

Keywords

anxiety; depression; geriatric; quality of life; home care

Introduction

Home care services (e.g., nursing, meal delivery, house cleaning) allow functionally disabled elderly persons to continue living in the community, which helps to maximize quality of life (QOL) relative to individuals living in nursing homes (Karakaya et al., 2009, Gueldner et al., 2001). However, because this population is characterized by chronic medical illness and functional limitations, individuals in geriatric home care remain at high risk for impaired life quality.

^{*} Corresponding Author: Gretchen J. Diefenbach, Ph.D., Anxiety Disorders Center, The Institute of Living/Hartford Hospital, 200 Retreat Avenue, Hartford, CT 06106, Phone: (860) 545-7685, Fax: (860) 545-7156, gdiefen@harthosp.org..

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Depression compounds the impact of illness and disability on QOL among older adults (Gallegos-Carrillo et al., 2009, Lenze et al., 2001). As many as 13.5% of newly admitted geriatric clients into home care are diagnosed with major depression (Bruce et al., 2002), and substantially more clients report clinically significant, but subthreshold depressive symptoms (Morrow-Howell et al., 2008, Charlson et al., 2008). Despite the risk posed by depression in this frail population, mental health services are not routinely provided in home care settings (Zeltzer and Kohn, 2006) and when provided, depression is often inadequately treated (Bruce et al., 2002). Failing to identify and treat depression in home care may impact long-term QOL outcomes. For example, in a prospective study completing assessments over the course of one year, geriatric home care clients who were diagnosed with depression reported lower life satisfaction than did those without depression consistently across at all assessment time points (Hasche et al., 2010). Severity of depressive symptoms was also predictive of QOL deterioration over 6 months in another study in geriatric home care (Charlson et al., 2008).

Anxiety symptoms and disorders also negatively impact QOL among older adults (Diefenbach et al., 2004, Porensky et al., 2009). However, the association between anxiety symptoms and QOL among home care clients has not specifically been determined, despite the fact that anxiety disorders are more common than are depressive disorders in home care settings (Préville et al., 2004). Anxiety symptoms are associated with risk of cognitive and functional decline (Brenes et al., 2005, Sinoff and Werner, 2003), as well as nursing home placements (Gibbons et al., 2002). Anxiety also frequently co-occurs with depression (King-Kallimanis et al., 2009), and the combination of anxiety and depression is associated with higher risk of morbidity and mortality (Diefenbach and Goethe, 2006). Thus, assessing the associations between anxiety symptoms and QOL is particularly salient in this frail elderly population.

While there have been recent advances in research investigating programs designed to integrate depression screenings and treatment into community home care programs (Quijano et al., 2007, Gellis et al., 2007, Bruce et al., 2007, Kiosses et al., 2010), only limited preliminary work in the area of anxiety has been conducted (Diefenbach et al., 2008, Diefenbach et al., 2009). Examination of the role of anxiety on QOL in home care would help to clarify the need for mental health services targeting anxiety symptoms for this population. Therefore, the aim of the present study was to determine the extent to which depressive and anxiety symptoms are associated with QOL impairments among older adults receiving home care. Given the overlap of late-life depression and anxiety, it is important to determine the independent associations of anxiety to QOL impairments. Thus, the present study determined the association of depressive symptoms and QOL impairments in this sample, and further determined whether anxiety symptoms were associated with QOL impairments when controlling for depressive symptoms. It was predicted that depressive symptoms would be associated with impaired QOL, and that anxiety symptoms would be associated with impaired QOL even after controlling for depressive symptoms.

Methods

Participants

Participants were 66 adults ($n = 55$, 83.3 % female) aged 65 and older (age $M = 76.64$, $SD = 7.04$, range = 65 to 92) who enrolled in a study on assessment of anxiety in home care (Diefenbach et al., 2009). The majority of participants were White ($n = 49$, 72.4%), retired ($n = 49$, 74.2%) and either widowed or divorced/separated ($n = 48$, 72.8%). The sample reported an average of 11.93 years of education ($SD = 2.89$). Participants were clients of a home care program that serves low-income and functionally-disabled elderly persons. Review of case manager records indicated that the typical participant was experiencing four

chronic physical health problems ($M = 3.86$, $SD = 1.94$) and required assistance with two activities of daily living ($M = 1.98$, $SD = 1.67$) and four instrumental activities of daily living ($M = 4.33$, $SD = 1.44$). Data on monthly income was available on a subset of participants ($n = 17$, 25.7%), showing a mean monthly income of \$843. Twenty-three participants (34.8%) were diagnosed with one or more depressive and/or anxiety disorders as assessed using the Anxiety Disorders Interview Schedule for DSM-IV (Brown et al., 1994). Depressive and anxiety disorders were represented in the sample as follows: generalized anxiety disorder (GAD) $n = 10$ (15.1%), anxiety disorder NOS $n = 7$ (10.6%), depressive disorder NOS $n = 7$ (10.6%), major depressive disorder (MDD) or MDD in partial remission $n = 6$ (9.1%), panic disorder with agoraphobia $n = 2$ (3.0%), and posttraumatic stress disorder $n = 1$ (1.5%). Thirty-eight participants (57.6%) were currently prescribed psychotropic medication.

Exclusion criteria were severe visual or hearing loss, inability to complete assessment without an interpreter, substance abuse, considered at risk for suicidality or aggressive/assaultive behavior (i.e., these symptoms rated as moderate or more severe problems by their care managers), and gross cognitive impairment as assessed by either care managers (i.e., scoring 8 or below on the Mental Status Questionnaire) or during the study interview (i.e., scoring 20 or below on the Mini-Mental State Exam). The mean Mini-Mental State Exam (MMSE, Folstein et al., 1975) score in the current study sample was 26.50 ($SD = 2.06$).

Eligible participants were selected using a random sampling procedure stratified for problems with worry/anxiety. The final sample consisted of 55% who screened positive and 45% who screened negative for moderate or more severe anxiety/worry as rated by their care managers. Two hundred and fifty clients were invited to participate and 75 (30%) enrolled in the study. The most common reasons for declining were “health problems” ($n = 36$; 20.6% of declining participants) and concerns about the nature or confidentiality of the interview ($n = 21$, 12% of declining participants). All remaining reasons for declining (e.g., family advising against participation or feeling that the study would take too much time) were reported by 5% of participants. Data from nine participants were excluded due to failing to meet inclusion criteria ($n = 2$) or failure to complete all study measures ($n = 7$), resulting in a final sample of 66.

Measures

Anxiety Disorder Interview Schedule for DSM-IV—Diagnostic status was determined using the Anxiety Disorders Interview Schedule for DSM-IV (ADIS-IV, Brown et al., 1994). The GAD, major depressive disorder, substance abuse, and psychosis sections of the ADIS-IV were administered to all participants with additional diagnostic sections administered only to participants who reported features of other anxiety disorders (e.g., the presence of panic attacks, history of trauma). Interrater agreement was good for anxiety disorder diagnosis ($\kappa = .846$), and there was perfect agreement for diagnosis of depressive disorders ($\kappa = 1.0$) in the current sample (Diefenbach et al., 2009).

Geriatric Depression Scale (GDS-15)—The GDS (Yesavage and Brink, 1983) is a self-report measure of depressive symptoms developed specifically for geriatric patients. The GDS has demonstrated adequate psychometric properties (Snyder et al., 2000, Yesavage, 1988), including good divergent validity with measures of anxiety (Snyder et al., 2000). The 15-item GDS was administered verbally and demonstrated strong reliability in the current sample ($\alpha = 0.81$, test-retest $r = 0.70$, interrater reliability $r = 0.99$).

Penn State Worry Questionnaire (PSWQ)—The PSWQ (Meyer et al., 1990) is a self-report measure of trait worry with good psychometric properties (Stanley et al., 2001). The PSWQ assesses primarily cognitive experiences, which reduces confounding with medical symptoms common among older adults. Thus, the PSWQ was selected for the current study given its superior divergent validity relative to other anxiety self-report measures among older adults (Stanley et al., 2001, Beck et al., 1995). The scoring for an abbreviated version of the PSWQ (PSWQ-A), which had been validated specifically with older adults (Hopko et al., 2003), was used in the current study. The PSWQ-A was administered verbally and demonstrated strong reliability in the current sample ($\alpha = 0.88$, test-retest $r = 0.76$, interrater reliability $r = 1.00$) (Diefenbach et al., 2009).

Medical Outcomes Survey Short Form-12 (SF-12)—Given that home care recipients are characterized by ill health and functional disability, QOL was assessed using the Medical Outcomes Study-Short Form (SF-12, Ware et al., 1996). The SF-12 is a widely used and well-validated measure of health-related QOL (Ware et al., 1996). Two component subscales assessing QOL in physical (Physical Component Summary, PCS) and mental health (Mental Component Summary, MCS) domains are traditionally derived from the SF-12 for analysis. However, because detailed information is lost in the component summary scores in medically ill samples (Rubenach et al., 2002), we chose to conduct regression analyses on each of the eight individual subscales of the SF-12 in order to explore more specific associations between mental health symptoms and QOL. Similar subscale analyses have been conducted in previous research utilizing the SF-12 (Khafif et al., 2007, Comer et al., 2011). Subscales assess several aspects of QOL including perceived physical health (i.e., General Health, Bodily Pain), functional status (i.e., Physical Functioning), role impairments (i.e., Role Physical, Role Emotional, Social Functioning), and emotional well-being (i.e., Mental Health, Vitality). The SF-12 was administered verbally and demonstrated excellent interrater reliability in the current sample for all subscales ($r = 0.98$ for Physical Functioning; $r = 1.00$ for all remaining SF-12 subscales). Internal consistency was not determined given that the subscales are each comprised of one or two items. Test-retest reliability data were not collected on the SF-12.

Covariates—Health, cognitive, and functional status were included as covariates in regression analyses. Health status was operationalized as the number of chronic medical conditions documented in case management records. Gross cognitive status was assessed using the MMSE (Folstein et al., 1975), which was administered during the study interview. The MMSE is a commonly used and well-validated measure of cognitive screening among older adults (MacKenzie et al., 1996). Functional status was determined through a review of case management records and operationalized using two variables: 1) the number of activities of daily living (ADL) requiring assistance and 2) the number of instrumental activities of daily living (IADL) requiring assistance.

Procedure

Procedures were approved by Hartford Hospital's Institutional Review Board (# 126132) and recruited individuals gave written informed consent for study participation. Data from care manager assessments were obtained with participants' written consent. Study assessments were completed in participants' homes by either a licensed clinical psychologist or a post-doctoral fellow under supervision of a licensed clinical psychologist. Self-report questionnaires were administered verbally along with large print visual scales for participants to refer to when making response choices.

Data Analytic Plan

Scores from the SF-12 were converted to T-scores ($M = 50$, $SD = 10$) based on published scale population-based norms (Ware et al., 2005). Descriptive statistics were conducted, and SF-12 subscale scores were interpreted by comparing to population-based norms for adults ages 65 and older (Ware et al., 2005). Bivariate associations between depressive symptoms, anxiety symptoms, and QOL domains were conducted. Hierarchical regression analyses were conducted to determine the extent to which symptoms of depression and anxiety were associated with QOL impairments after controlling for health, functional and cognitive status. The Variance Inflation Factor (VIF) and Tolerance statistics both indicated acceptable levels of multicollinearity ($VIF < 10$, $Tolerance > 0.2$), justifying use of all included variables in the analysis. Step 1 was comprised of the following covariates: number of chronic health conditions, number of ADLs requiring assistance, number of IADLs requiring assistance, and MMSE total score. Depressive symptoms (as measured by the GDS-15) were entered at Step 2. Finally, anxiety symptoms (as measured by the PSWQ-A) were entered at Step 3 to determine the unique associations of anxiety symptoms with QOL impairments after controlling for shared variance with depressive symptoms.

Results

Descriptive Statistics

The sample as a whole reported a mean score of 4.01 on the GDS-15 ($SD = 3.31$) and 18.81 on the PSWQ-A ($SD = 8.43$). Descriptive statistics for the SF-12 subscales were as follows: Physical Functioning ($M = 28.09$, $SD = 7.97$), Role Physical ($M = 34.77$, $SD = 9.10$), Role-Emotional ($M = 43.87$, $SD = 12.75$), Mental Health ($M = 48.83$, $SD = 11.96$), Bodily Pain ($M = 38.76$, $SD = 13.91$), General Health ($M = 35.04$, $SD = 10.90$), Vitality ($M = 44.70$, $SD = 10.44$), and Social Functioning ($M = 40.72$, $SD = 13.13$). These data indicate that the sample reported low QOL (below the 50th percentile) in each of the individual SF-12 subscale domains compared with US general population of adults ages 65 and older (Ware et al., 2005).

Bivariate Analyses

Table 1 displays correlations between depressive symptoms, anxiety symptoms, and the SF-12 subscales. Symptoms of depression correlated significantly ($p < .05$) with all subscales of the SF-12 except the Physical Functioning subscale, which just missed statistical significance ($p = .053$) (r range = $-.239$ to $.663$). Symptoms of anxiety correlated significantly with all but the Role Physical and Physical Functioning subscales (r range = $-.007$ to $-.599$). Symptoms of depression and anxiety were moderately correlated ($r = .439$, $p < .001$).

Regressions Predicting Quality of Life

Table 2 displays results from the hierarchical regression analyses predicting the SF-12 subscales from depressive and anxiety symptoms. As shown in Table 2, the amount of variance in QOL accounted for by depressive symptoms ranged from 3.2% for Physical Functioning to 39.4% for Role/Emotional Functioning. After controlling for depressive symptoms, anxiety symptoms contributed significant variance to impaired life quality in the domains of Mental Health (12.2% of variance), Role Emotional Functioning (12.8% of variance) and Bodily Pain (5.6% of variance).

Discussion

Depressive symptoms were significantly associated with impaired QOL in nearly all domains. These results are consistent with previous research documenting the negative

impact of depressive symptoms on QOL for older adults assessed in a variety of settings (Maddux et al., 2003), and contribute to a growing literature outlining a cyclical interaction between depression and disability in geriatric samples (Bruce, 2001). In the current study, depressive symptoms were associated with role impairments, even after accounting for variance contributed by medical illness, functional limitations, and cognitive status. Data from this cross-sectional study cannot inform whether depressive symptoms are a contributing factor and/or consequence of disability. However, previous longitudinal studies suggest that late-life depressive symptoms are a risk factor for increasing disability over time (Barry et al., 2009, Li and Conwell, 2009), and that improvements in depression can protect against functional disability in home care (Li and Conwell, 2009).

This study also found an independent association between anxiety symptoms and QOL in mental health-related symptoms and impairments, as well as functional impairments due to pain. Chronic pain is a common problem among geriatric clients in home care, with prevalence ranging from 48%-60% (Maxwell et al., 2008, Onder et al., 2005), and pain is also often poorly managed in this setting (Maxwell et al., 2008, Bos et al., 2007). Results from the present study are consistent with recent findings showing an association between anxiety symptoms and pain severity in home healthcare patients (Richardson et al., 2011). It is notable that neither depressive nor anxiety symptoms predicted limitations in physical activities attributed to health problems (i.e., the Physical Functioning subscale of the SF-12) in the current sample. This lack of association is consistent with previous research conducted with geriatric clients in home health care (Charlson et al., 2008), and is likely attributable to restriction of range given that the population was selected for chronic medical illness and functional disability.

Overall the findings highlight the importance of attending to psychiatric symptoms within geriatric home care assessments. Home care also presents unique opportunities for geriatric mental health care intervention. Utilization of home care programs is expected to grow considerably in coming years (Mollica, 2003, Marek and Rantz, 2000, Zeltzer and Kohn, 2006). In addition, home care workers are often the first interface for needs assessment with this at-risk population, and they provide structured long-term follow-up (Morrow-Howell et al., 2008). However, there are also substantial client and system-oriented barriers complicating psychiatric intervention in home care (e.g., limited resources, time constraints, focus on stabilizing acute basic needs, stigma, lack of trained personnel, lack of specialty referral sources to provide treatment, complications with reimbursement) (Morrow-Howell et al., 2008, Munson et al., 2007). Despite these challenges, researchers are reporting success with implementing screening and treatment programs for depression within this setting (Quijano et al., 2007, Brown et al., 2010, Bruce et al., 2007, Ciechanowski et al., 2004, Gellis et al., 2007, Kiosses et al., 2010). Far less attention has been focused on identifying and treating anxiety symptoms in home care (Diefenbach et al., 2008, Diefenbach et al., 2009).

As home health care evolves to meet increasing demands for mental health services in the coming years, it will be important to incorporate standardized anxiety screening questions into routine assessments. The Patient Health Questionnaire (PHQ) (Spitzer et al., 1994) 2-item screening for GAD is brief, easy to administer, and demonstrates good sensitivity in identifying geriatric clients with anxiety disorders in home care (Diefenbach et al., 2009). Given that the PHQ does not provide adequate specificity (Diefenbach et al., 2009) it will be important to use follow-up assessments to identify and triage those patients with highest needs for anxiety care. It is also recommended that researchers incorporate standardized anxiety measures into depression assessment and treatment programs. Preliminary data suggest that depression interventions may not be sufficient to treat anxiety symptoms in a

home care population (Gellis and Bruce, 2010); however, additional research is needed to determine which modifications or adjunctive interventions are needed.

The current study contributes important new data regarding the associations of psychiatric symptoms with QOL impairment in geriatric home care. However, results need to be interpreted with respect to study limitations. The SF-12 was chosen for this study in order to decrease participant burden. However, the SF-12 subscales contain 1 or 2 items each, and are not as reliable as the same scales measured using the 36-item version (Schofield and Mishra, 1998). It will be important for future research to assess QOL using more detailed measures. In addition, data on internal consistency (because of the low number of items on each scale) and test-retest reliability were not available for the SF-12 subscales in the current sample. Generalizability of findings may also be limited to older adults in the home care settings, and by the sampling procedure (Diefenbach et al., 2009). It is also possible that a high refusal rate may have affected the representativeness of the sample. The refusal rate was higher for those participants who screened positive for anxiety. In addition, health problems were the most common reason for study refusal, suggesting that the most severely ill clients may not be fully represented in the sample. There are many challenges recruiting older adults into research studies (Mody et al., 2008), and perhaps especially among elderly persons in home care (e.g., due to high medical burden, functional disability, competing demands for home care personnel). While the refusal rate was high, the recruitment rate in the current study was similar to other published reports of geriatric patients in home care (Hasche et al., 2010). It will be important for future research to integrate data collection into the routine assessments whenever possible to provide the most representative data possible for clients in home care.

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References

- Barry LC, Allore HG, Bruce ML, Gill TM. Longitudinal association between depressive symptoms and disability burden among older persons. *J. Gerontol. A. Biol. Sci. Med. Sci.* 2009; 64:1325–1332. DOI: 10.1093/gerona/glp135. [PubMed: 19776217]
- Beck JG, Stanley MA, Zebb BJ. Psychometric properties of the Penn State Worry Questionnaire in older adults. *Journal of Clinical Geropsychology.* 1995; 1:33–42.
- Bos JT, Frijters DH, Wagner C, Carpenter GI, Finne-Soveri H, Topinkova E, Garms-Homolova V, Henrard JC, Jonsson PV, Sorbye L, Ljunggren G, Schroll M, Gambassi G, Bernabei R. Variations in quality of home care between sites across Europe, as measured by home care quality indicators. *Aging Clin Exp Research.* 2007; 19:323–329.
- Brenes GA, Guralnik JM, Williamson JD, Fried LP, Simpson C, Simonsick EM, Penninx BW. The influence of anxiety on the progression of disability. *J. Am. Geriatr. Soc.* 2005; 53:34–39. DOI: 10.1111/j.1532-5415.2005.53007.x. [PubMed: 15667373]
- Brown EL, Raue PJ, Roos BA, Sheeran T, Bruce ML. Training nursing staff to recognize depression in home healthcare. *J. Am. Geriatr. Soc.* 2010; 58:122–128. DOI: 10.1111/j.1532-5415.2009.02626.x. [PubMed: 20002507]
- Brown, TA.; Dinaro, PA.; Barlow, DH. Anxiety Disorders Interview Schedule for DSM-IV. The Psychological Corporation; San Antonio, TX: 1994.
- Bruce ML. Depression and disability in late life: Directions for future research. *Am. J. Geriatr. Psychiatry.* 2001; 9:102–112. DOI: 10.1176/appi.ajgp.9.2.102. [PubMed: 11316615]
- Bruce ML, Brown EL, Raue PJ, Mlodzianowski AE, Meyers BS, Leon AC, Heo M, Byers AL, Greenberg RL, Rinder S, Katt W, Nassisi P. A randomized trial of depression assessment

- intervention in home health care. *J. Am. Geriatr. Soc.* 2007; 55:1793–1800. DOI: 10.1111/j/1532-5415.2007.01419.x. [PubMed: 17916119]
- Bruce ML, McAvay GJ, Raue PJ, Brown EL, Meyers BS, Keohane DJ, Jagoda DR, Weber C. Major depression in elderly home health care patients. *A. J. Psychiatry.* 2002; 159:1367–1374. DOI: 10.1176/appi.ajp.159.8.1367.
- Charlson ME, Peterson JC, Syat BL, Briggs WM, Kline R, Dodd M, Murad V, Dionne W. Outcomes of community-based social service interventions in homebound elders. *Int. J. Geriatr. Psychiatry.* 2008; 23:427–432. DOI: 10.1002/gps.1898. [PubMed: 17918183]
- Ciechanowski P, Wagner E, Schmalting K, Schwartz S, Williams B, Diehr P, Kulzer J, Gray S, Collier C, LoGerfo J. Community-integrated home-based depression treatment in older adults: A randomized controlled trial. *JAMA.* 2004; 291:1569–1577. DOI: 10.1001/jama.291.13.1569. [PubMed: 15069044]
- Comer JS, Blanco C, Hasin DS, Liu S, Grant BF, Turner JB, Olfson M. Health-related quality of life across anxiety disorders: Results from the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *J. Clin. Psychiatry.* 2011; 72:43–50. DOI: 10.4088/JCP.09m05094blu. [PubMed: 20816036]
- Diefenbach GJ, Goethe J. Clinical interventions for late-life anxious depression. *Clin Interv Aging.* 2006; 1:41–50. DOI: 10.2147/cia.2006.1.1.41. [PubMed: 18047256]
- Diefenbach GJ, Robison JT, Tolin DF, Blank K. Late-life anxiety disorders among Puerto Rican primary care patients: Impact on well-being, functioning, and service utilization. *J. Anxiety Disord.* 2004; 18:841–858. DOI: 10.1016/j.janxdis.2003.10.005. [PubMed: 15474856]
- Diefenbach GJ, Tolin DF, Gilliam CM, Meunier SA. Extending cognitive-behavioral therapy for late-life anxiety to home care: Program development and case examples. *Behav. Modif.* 2008; 32:595–610. DOI: 10.1177/0145445508314269. [PubMed: 18270284]
- Diefenbach GJ, Tolin DF, Meunier SA, Gilliam CM. Assessment of anxiety in older home care recipients. *Gerontologist.* 2009; 49:141–153. DOI: 10.1093/geront/gnp019. [PubMed: 19363010]
- Folstein MF, Folstein SE, McHugh PR. Mini-mental state: A practical method for grading the cognitive state of patients for clinicians. *J. Psychiatr. Res.* 1975; 12:189–198. DOI: 10.1016/0022-3956(75)90026-6. [PubMed: 1202204]
- Gallegos-Carrillo K, Garcia-Pena C, Mudgal J, Romero X, Duran-Arenas L, Salmeron J. Role of depressive symptoms and comorbid chronic disease on health-related quality of life among community-dwelling older adults. *J. Psychosom. Res.* 2009; 66:127–135. DOI: 10.1016/j.jpsychores.2008.07.007. [PubMed: 19154855]
- Gellis ZD, Bruce ML. Problem-solving therapy for subthreshold depression in home healthcare patients with cardiovascular disease. *Am. J. Geriatr. Psychiatry.* 2010; 18:464–474. [PubMed: 20871804]
- Gellis ZD, McGinty J, Horowitz A, Bruce ML, Misener E. Problem-solving therapy for late-life depression in home care: A randomized field trial. *Am. J. Geriatr. Psychiatry.* 2007; 15:968–978. DOI: 10.1097/JGP.0b013e3180cc2bd7. [PubMed: 17846101]
- Gibbons LE, Teri L, Logsdon R, McCurry SM, Kukull W, Bowen J, McCormick W, Larson E. Anxiety symptoms as predictors of nursing home placement in patients with Alzheimer's disease. *Journal of Clinical Geropsychology.* 2002; 8:335–342. DOI: 10.1023/A:1019635525375.
- Guelndner SH, Loeb S, Morris D, Penrod J, Bramlett M, Johnston L, Schlotzhauer P. A comparison of life satisfaction and mood in nursing home residents and community-dwelling elders. *Arch. Psychiatr. Nurs.* 2001; 15:232–240. DOI: 10.1053/apnu.2001.27020. [PubMed: 11584352]
- Hasche LK, Morrow-Howell N, Proctor EK. Quality of life outcomes for depressed and nondepressed older adults in community long-term care. *Am. J. Geriatr. Psychiatry.* 2010; 18:544–553. [PubMed: 20220587]
- Hopko DR, Stanley MA, Reas DL, Wetherell JL, Beck JG, Novy DM, Averill PM. Assessing worry in older adults: Confirmatory factor analysis of the Penn State Worry Questionnaire and psychometric properties of an abbreviated model. *Psychol Assess.* 2003; 15:173–183. DOI: 10.1037/1040-3590.15.2.173. [PubMed: 12847777]

- Karakaya MG, Bilgin SC, Ekici G, Kose N, Otman AS. Functional mobility, depressive symptoms, level of independence, and quality of life of the elderly living at home and in the nursing home. *J Am Med Dir Assoc.* 2009; 10:662–666. DOI: 10.1016/j.jamda.2009.06.002. [PubMed: 19883891]
- Khafif A, Posen J, Yagil Y, Beiser M, Gil Z, Ben-Yosef R, Landsberg R, Fliss DM. Quality of life in patients older than 75 years following major head and neck. *Head Neck.* 2007; 29:932–939. DOI: 10.1002/hed.20635. [PubMed: 17615568]
- King-Kallimanis B, Gum AM, Kohn R. Comorbidity of depressive and anxiety disorders for older Americans in the National Comorbidity Survey-Replication. *Am. J. Geriatr. Psychiatry.* 2009; 17:782–792. DOI: 10.1097/JGP.0b013e3181ad4d17. [PubMed: 19700950]
- Kiosses DN, Areal PA, Teri L, Alexopoulos GS. Home-delivered problem adaptation therapy (PATH) for depressed, cognitively impaired, disabled elders: A preliminary study. *Am. J. Geriatr. Psychiatry.* 2010; 18:988–998. DOI: 10.1097/JGP.0b013e3181d6947d. [PubMed: 20808092]
- Lenze EJ, Rogers JC, Martire LM, Mulsant BH, Rollman BL, Dew MA, Schulz R, Reynolds CF. The association of late-life depression and anxiety with physical disability: A review of the literature and prospectus for future research. *Am. J. Geriatr. Psychiatry.* 2001; 9:113–135. DOI: 10.1176/appi.ajgp.9.2.113. [PubMed: 11316616]
- Li LW, Conwell Y. Effects of changes in depressive symptoms and cognitive functioning on physical disability in home care elders. *J. Gerontol. A. Biol. Sci. Med. Sci.* 2009; 64A:230–236. DOI: 10.1093/gerona/gln023. [PubMed: 19196904]
- MacKenzie DM, Copp P, Shaw RJ, Goodwin GM. Brief cognitive screening of the elderly: A comparison of the Mini-Mental State Examination (MMSE), Abbreviated Mental Test (AMT) and Mental Status Questionnaire (MSQ). *Psychol. Med.* 1996; 26:427–30. DOI: 10.1017/S0033291700034826. [PubMed: 8685299]
- Maddux RE, Delrahim KK, Rapaport MH. Quality of life in geriatric patients with mood and anxiety disorders. *CNS Spectr.* 2003; 8(Suppl 3):35–47. [PubMed: 14978462]
- Marek KD, Rantz MJ. Aging in place: A new model for long-term care. *Nursing Administration Quarterly.* 2000; 24:1–11. [PubMed: 10986927]
- Maxwell CJ, Dalby DM, Slater M, Patten SB, Hogan DB, Eliasziw M, Hirdes JP. The prevalence and management of current daily pain among older home care clients. *Pain.* 2008; 138:208–216. DOI: 10.1016/j.pain.2008.04.007. [PubMed: 18513871]
- Meyer TJ, Miller ML, Metzger RL, Borkovec TD. Development and validity of the Penn State Worry Questionnaire. *Behav. Res. Ther.* 1990; 28:487–495. DOI: 10.1016/00005-7967(90)90135-6. [PubMed: 2076086]
- Mody L, Miller DK, McGloin JM, Freeman M, Marcantonio ER, Magaziner J, Studenski S. Recruitment and retention of older adults in aging research. *J. Am. Geriatr. Soc.* 2008; 56:165–188. DOI: 10.1111/j.1532-5415.2008.02015.x.
- Mollica R. Coordinating services across the continuum of health, housing, and supportive services. *J. Aging Health.* 2003; 15:165–188. DOI: 10.1177/0898264302239022. [PubMed: 12611413]
- Morrow-Howell N, Proctor EK, Choi S, Lawrence L, Brooks A, Hasche L, Dore P, Blinne W. Depression in public community long-term care: Implications for intervention development. *J. Behav. Health Serv. Res.* 2008; 35:37–51. DOI: 10.1007/s1414-007-9098-7. [PubMed: 18158624]
- Munson M, Proctor E, Morrow-Howell N, Fedoravicius N, Ware N. Case managers speak out: Responding to depression in community long-term care. *Psychiatr. Serv.* 2007; 58:1124–1127. DOI: 10.1176/appi.ps.58.8.1124. [PubMed: 17664526]
- Onder G, Landi F, Gambassi G, Liperoti R, Soldato M, Catananti C, Finne-Soveri H, Katona C, Carpenter I, Bernadbei R. Association between pain and depression among older adults in Europe: Results from the Aged in Home Care (AdHOC) project: A cross-sectional study. *J. Clin. Psychiatry.* 2005; 982–988. DOI: 10.4088/JCP.v66n0804. [PubMed: 16086612]
- Porensky EK, Dew MA, Karp JF, Skidmore E, Rollman BL, Shear MK, Lenze EJ. The burden of late-life generalized anxiety disorder: Effects on disability, health-related quality of life, and healthcare utilization. *Am. J. Geriatr. Psychiatry.* 2009; 17:473–482. DOI: 10.1097/JGP.0b013e31819b87b2. [PubMed: 19472438]

- Préville M, Côté G, Boyer R, Hébert R. Detection of depression and anxiety disorders by home care nurses. *Aging Ment Health*. 2004; 8:400–409. DOI: 10.1080/13607860410001725009. [PubMed: 15511738]
- Quijano LM, Stanley MA, Peterson NJ, Casado BL, Steinberg EH, Cully JA, Wilson NL. Healthy I.D.E.A.S.: A depression intervention delivered by community-based case managers serving older adults. *J. Appl. Gerontol*. 2007; 26:139–156. DOI: 10.1177/0733464807299354.
- Richardson TM, Simning A, He H, Conwell Y. Anxiety and its correlates among older adults accessing aging services. *Int. J. Geriatr. Psychiatry*. 2011; 26:31–38. DOI: 10.1002/gps.2474. [PubMed: 20066684]
- Rubenach S, Shadbolt B, McCallum J, Nakamura T. Assessing health-related quality of life following myocardial infarction: Is the SF-12 useful? *J. Clin. Epidemiol*. 2002; 55:306–309. DOI: 10.1016/S0895-4356(01)00426-7. [PubMed: 11864802]
- Schofield MJ, Mishra G. Validity of the SF-12 compared with the SF-36 Health Survey in pilot studies of the Australian longitudinal study on women's health. *J. Health Psychol*. 1998; 3:259–271. DOI: 10.1177/135910539800300209. [PubMed: 22021364]
- Sinoff G, Werner P. Anxiety disorder and accompanying subjective memory loss in the elderly as a predictor of future cognitive decline. *Int. J. Geriatr. Psychiatry*. 2003; 18:951–959. DOI: 10.1002/gps.1004. [PubMed: 14533128]
- Snyder AG, Stanley MA, Novy DM, Averill PM, Beck JG. Measures of depression in older adults with generalized anxiety disorder: A psychometric evaluation. *Depress. Anxiety*. 2000; 11:114–120. DOI: 10.1002/(SICI)1520-6394(2000)11:3<114::AID-DA5>3.0.CO;2-C. [PubMed: 10875052]
- Spitzer RL, Williams JB, Kroenke K, Linzer M, deGruy FV, Hahn SR, Brody D, Johnson JG. Utility of a new procedure for diagnosing mental disorders in primary care: The PRIME-MD 1000 study. *JAMA*. 1994; 272:1749–1756. DOI: 10.1001/jama.272.22.1749. [PubMed: 7966923]
- Stanley MA, Novy DM, Bourland SL, Beck JG, Averill PM. Assessing older adults with generalized anxiety: A replication and extension. *Behav. Res. Ther*. 2001; 39:221–235. DOI: 10.1016/S0005-7967(00)00030-9. [PubMed: 11153975]
- Ware J, Kosinski M, Keller SD. A 12-item short form health survey: Construction of scales and preliminary tests of reliability and validity. *Med. Care*. 1996; 34:220–233. DOI: 10.1097/00005650-199603000-00003. [PubMed: 8628042]
- Ware, JE.; Kosinski, M.; Turner-Bowker, DM.; Gandek, B. How to Score Version 2 of the SF-12® Health Survey (With a Supplement Documenting Version 1). Quality Metric; Lincoln, RI: 2005.
- Yesavage JA. Geriatric Depression Scale. *Psychopharmacol. Bull*. 1988; 24:709–711. [PubMed: 3249773]
- Yesavage JA, Brink TL. Development and validation of a Geriatric Depression Screening Scale: A preliminary report. *J. Psychiatr. Res*. 1983; 17:37–49. DOI: 10.1016/0022-3956(82)90033-4. [PubMed: 7183759]
- Zeltzer BB, Kohn R. Mental health services for homebound elders from home health nursing agencies and home care agencies. *Psychiatr. Serv*. 2006; 57:567–569. DOI: 10.1176/appi.ps.57.4.567. [PubMed: 16603756]

Key Points

Depressive and anxiety symptoms are associated with impaired life quality among clients receiving home care services. These associations are independent of cognitive, medical, and functional status. Interventions targeting depressive and anxiety symptoms may improve quality of life for individuals receiving home care services.

Table 1

Correlations of Depression and Anxiety Symptoms with Quality of Life Domains

SF-12 Subscale	GDS-15	PSWQ-A
Physical Functioning	-.239	-.007
Role Physical	-.382**	-.167
Role Emotional	-.663***	-.599***
Mental Health	-.637***	-.576***
Bodily Pain	-.369**	-.366**
General Health	-.320**	-.289*
Vitality	-.474***	-.291*
Social Functioning	-.409***	-.325**

Note: GDS-15 = 15-item Geriatric Depression Scale. PSWQ-A = Penn State Worry Questionnaire-Abbreviated Version.

*
 $p < .05$

**
 $p < .01$

 $p < .001$

Table 2

Hierarchical Regressions Predicting Quality of Life from Depressive and Anxiety Symptoms after Controlling for Health, Functional, and Cognitive Status

Predictor	ΔR^2	β	<i>t</i>	<i>p</i>
Physical Functioning				
Step 1 (covariates)	.117			
Step 2	.032			
GDS-15		-.186	-1.491	.141
Step 3	.011			
PSWQ-A		.117	.872	.387
Model $R^2 = .160$, $F(6, 59) = 1.870$, $p = .101$				
Role Physical				
Step 1 (covariates)	.130			
Step 2	.123			
GDS-15		-.369	-3.148	.003
Step 3	.000			
PSWQ-A		-.018	-.145	.885
Model $R^2 = .2154$, $F(6, 59) = 3.343$, $p = .007$				
Role Emotional				
Step 1 (covariates)	.054			
Step 2	.394			
GDS-15		-.659	-6.546	.000
Step 3	.128			
PSWQ-A		-.402	-4.221	.000
Model $R^2 = .576$, $F(6, 59) = 13.369$, $p < .001$				
Mental Health				
Step 1 (covariates)	.082			
Step 2	.343			
GDS-15		-.615	-5.980	.000
Step 3	.122			
PSWQ-A		-.393	-3.989	.000
Model $R^2 = .547$, $F(6, 59) = 11.877$, $p < .001$				
Bodily Pain				
Step 1 (covariates)	.102			
Step 2	.098			
GDS-15		-.329	-2.713	.009
Step 3	.056			
PSWQ-A		-.265	-2.099	.040
Model $R^2 = .256$, $F(6, 59) = 3.381$, $p = .006$				
General Health				
Step 1 (covariates)	.102			
Step 2	.069			

Predictor	ΔR^2	β	t	p
GDS-15		-.277	-2.244	.029
Step 3	.039			
PSWQ-A		-.223	-1.715	.092
Model $R^2 = .211$, $F(6, 59) = 2.634$, $p = .025$				
Vitality				
Step 1 (covariates)	.097			
Step 2	.203			
GDS-15		-.473	-4.168	.000
Step 3	.010			
PSWQ-A		-1.10	-.906	.369
Model $R^2 = .310$, $F(6, 59) = 4.408$, $p < .001$				
Social Functioning				
Step 1 (covariates)	.076			
Step 2	.124			
GDS-15		-.370	-3.050	.003
Step 3	.028			
PSWQ-A		-.187	-1.455	.151
Model $R^2 = .228$, $F(6, 59) = 2.900$, $p = .015$				

Note. Step 1 was comprised of the following covariates: number of chronic medical conditions, number of activities of daily living requiring assistance, number of instrumental activities of daily living requiring assistance, and Mini-Mental State Exam total score. GDS-15 = Geriatric Depression Scale – 15 item version. PSWQ-A = Penn State Worry Questionnaire-Abbreviated Version.