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Sixteen-month evaluation of depressive symptomatology in older adults

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Abstract

We examined the prevalence of depressive symptoms over time in a sample of community-residing older adults at baseline, two months, six months, and fourteen months. The nonprobability sample (N = 222), was 90% female, 87% Caucasian, 15% Hispanic, and 12% African-American with an average age of 75 years. If depressive symptoms had been measured at only one time, 19% of the sample would have scored above the cutoff, versus 39% scoring above the cutoff when measured at all four time periods. The findings provide evidence that depressive symptoms in older adults are variable and fluctuate over time. The significance of this research was the longitudinal evaluation of depressive symptoms in community-residing elders.

Keywords

Depressive symptomatology; community-residing elderly; longitudinal

Gerontologists and geropsychiatric nurses are interested in older adults' depressive symptomatology and various hypotheses have been put forward to explain the extent or frequency of its occurrence in this population. Sadavoy (2009) stated that the five elements of psychogeriatrics include complexity, chronicity, comorbidity, continuity, and context. The incidence of receiving a depression diagnosis in Medicare beneficiaries who were followed over 12 years doubled from 3.2% to 6.3%, with rates increasing substantially across all demographic subgroups (Akincigi, Olfson, Walkup, Siegel, Kala et al, 2011).

Depression is the second most common chronic disorder seen by primary care physicians (PCPs) with a prevalence rate of approximately 14–22% (Datto, Thompson, Knott, & Katz, 2006; Federal Interagency Forum on Aging Related Statistics, 2009; Fischer, Wei, Solberg, Rush, & Heinrich, 2003; Sharpe & Lipskey, 2002). Along with multiple comorbidities, depression is the most treatable psychiatric disorder in late life and is easily managed in 80% of cases (Blixen, McDougall, & Suen, 1997; NIMH, 2007).

A relationship has been found between cognitive impairment and depression as a result of elevated levels of cortisol, which damages the hippocampus (O'Brien, Lloyd, McKeith,

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Golkar & Ferrier, 2004). Cortisol levels, depression, and memory impairment in human population studies have been associated. Bremmer, Deeg, Beekman, Penninx, Lips, Hoogendijk (2007) identified that the association between cortisol and major depression was U-shaped. Hypocortisolemic depression (lower cortisol tertile) was associated with female sex, joint diseases, and smoking. Hypercortisolemic (upper cortisol tertile) depression was associated with older age, male sex, cardiovascular diseases, nonsteroidal antiinflammatory use, and (borderline significant) cognitive impairment. In a different publication, the Amsterdam group found that higher levels of cortisol were not associated with cognitive decline in older adults (N= 1,154) over a period of 6 years (Comijs, Gerritsen, Penninx, Bremmer, Deeg, Geerlings, 2010). Salivary cortisol was measured in 40 healthy elderly subjects, 31 individuals with amnesic mild cognitive impairment (MCI), and 40 subjects with mild probable AD. Higher cortisol levels were associated with better memory performance in healthy elderly, while higher cortisol levels were correlated with poorer memory performance in MCI subjects (Souza-Talarico, Chaves, Lupien, Nitrini, Caramelli, 2010). This relationship may be mediated by chronic stress. Peavy, Salmon, Jacobson, Herve, Gamst et al. (2009) followed fifty-two individuals for almost three years. Of those tested, there were forty-one older adults with MCI and sixty-one cognitive normals. They excluded a diagnosis of dementia, significant medical or psychiatric conditions, and medication use (e.g., corticosteroids). Over time, higher event-based stress ratings were associated with faster cognitive decline in subjects with MCI but not in cognitively normal subjects. In contrast, higher cortisol levels were associated with slower cognitive decline in subjects with MCI but not in cognitively normal subjects.

There are established relationships between depression and various chronic conditions, such as cardiovascular disease, diabetes, and cerebrovascular accidents (Fischer, Wei, Solberg, Rush, & Heinrich, 2003; Sharpe and Lipsky, 2002). Depression exacerbates a disability, increases the risk of institutionalization, and hastens death (Dearman, Waheed, Nathoo, & Baldwin, 2006; Okura, Plassman, Steffens, Llewellyn, Potter, & Langa, 2011; Sirey, Raue, & Alexopoulos, 2007). Heart failure, a leading cause of mortality in older adults is a useful illustration for examining depressive symptomatology (Centers for Disease Control and Prevention, 2011). In a review of sixteen heart failure (HF) studies, Delville & McDougall (2008) found the use of screening instruments resulted in higher frequencies of depression/depressive symptoms (21–60%) than did diagnostic interviews (14–39%). Screening instruments established prior to the 1987 diagnostic guidelines may not reflect the current definition of depression. Depression screening instruments appear to overestimate the incidence of depression in older adults with HF. A complete diagnostic interview for depression should be performed prior to the treatment of older adults with HF.

Depression in older adults is a phenomenon with enduring or episodic characteristics (Davey, Halverson, Zonderman, & Costa, 2004); linked to functional disability (Gallo et al., 2003; Lenze, Schulz, Martire, Zdaniuk, Glass, Kop, Jackson, & Reynolds, 2005; Schillerstrom, Royall, & Palmer, 2008); gender and ethnicity (Killian, Turner, & Cain, 2005); living arrangements (Choi & McDougall, 2007), and memory complaints (Crane, Bogner, Brown, & Gallo, 2007; McDougall, 1995). This study examined the prevalence of depressive symptoms over time in a sample of community-residing older adults at baseline, two months, six months, and fourteen months.

Methods

Design

Data on the prevalence for depression were drawn from larger intervention study testing the impact of cognitive training. The cognitive training and data on depression were drawn from a Phase III randomized clinical trial.

Memory Training—The Cognitive-Behavioral Model of Everyday Memory (CBMEM), based on Bandura's Self-Efficacy Theory, served as the basis for the memory-enhancing intervention designed to improve, maintain, or prevent decline in the everyday and episodic verbal memory of older adults at-risk for memory loss. The intervention consisted of four components: stress inoculation, health promotion, memory self-efficacy, and memory strategy training. Each memory training session began with a twenty-minute relaxation exercise and emphasized the integration of the learned memory strategies into everyday life while focusing on the practical concerns of maintaining instrumental activities for daily function. The facilitator of the memory training was a septuagenarian female licensed psychologist and was a role model for the participants.

Health Training—The health training intervention emphasized learning strategies for successful aging. Topics included: Exercise, Spirituality and Health, Alternative Medicine, Weight Management, Getting the Most from Your Doctor Visit, Caring for the Caretaker, Healing Foods, Drug Interactions, Osteoporosis, Maintaining Relationships, Health Myths, Consumer Fraud, Nutrition, Leisure Activities, Writing Family Stories, Health Monitoring Tests for Home Use, and Buying Drugs in Foreign Countries.

Participants: A total of 346 independent adults were recruited from a metropolitan area in Central Texas via print and television media, as well as through direct recruitment at city-run senior activity centers, churches, health fairs, and festivals. A total of 81 individuals were excluded; 21 did not meet inclusion criteria, 38 declined, and 22 were couples, of which the female spouse was excluded from the testing so that adequate numbers of males would be represented in the sample. After randomization to treatment conditions, the intervention sample at baseline was 265 older adults; health training ($n = 130$) and memory training ($n = 135$). The final sample ($N=222$) was 72% Non-Hispanic White, 17% Hispanic, and 11% African American. The average age was 75. The majority of the participants were female (77%). Table 1 describes the demographics of the participants in each group. The University of Texas' Institutional Review Board approved the study.

Screening and Eligibility: This battery was a composite score of either pass or fail the entire set of questions. Sensory loss was determined either over the telephone or in person by a self-report evaluation of hearing and vision. Visual and hearing acuity were subsequently evaluated at the "in-person" eligibility screening by evaluator observation and by a self-report checklist developed for this study. Communication was assessed using a seven-item checklist designed for this study, and completed by a member of the research team at the initial screening. Other eligibility criteria included age (≥ 65), ability to speak and understood English, and willingness to participate in the study for twenty-four months. Diagnoses that precluded people from participating in the study included: Alzheimer's disease or other dementia, Hodgkin's disease, neuroblastoma, or cancer of the liver, lung, or brain. Medical eligibility was assessed verbally at the screening phase using a Health Status checklist designed for this project. Before testing began, the university Institutional Review Board approved the study.

The Mini-Mental State Examination (MMSE) (Folstein, Folstein, & McHugh, 1975) was used to screen for cognitive impairment. The MMSE was also used to monitor potential cognitive decline throughout the longitudinal study. Only those subjects with scores >23 , indicating no cognitive impairment were allowed to participate in the study. However, the eligibility score was changed to ≥ 20 to recruit Hispanics with low education at one senior center. Four females and one male were included in this adjusted screening protocol. In addition, the Controlled Oral Word Association Test (COWAT) from the Multilingual Aphasia Examination (Sumerall, Timmons, James, Ewing, & Oehlert, 1997) and The Trail-

Making Test (Reitan, 1958) were administered. Participants were required to pass Trails A and/or Trails B at or above the 10th percentile for their age group for inclusion in the study.

Data Collection

All the cognitive and self-report measures were administered at each of the following measurement occasions: First at baseline, following the screening and eligibility; next, at post-class (two months after baseline); again at post-booster (six months); and at post-classroom follow-up. Data was collected at seven different senior sites in the community.

It is possible that practice effects were sometimes greater for Blacks and Hispanics. In this mixed ethnic sample, cultural norms were vastly different in the two ethnic groups. The recruitment and retention of minority participants into clinical trials is a complex phenomenon and requires separate and distinct protocols to insure a representative sample (Austin-Wells, McDougall, & Becker, 2006). However, as this study demonstrates, it is important to make the effort to recruit a diverse sample, because their pattern of results may be quite different. Testing with the Hispanic elders often occurred over many days to accommodate their literacy skills and their level of frustration with the complex battery of measures.

Cognitive screening was tested with the Mini-Mental State Examination (MMSE) (Folstein, Folstein, & McHugh, 1975). The MMSE was used as a global measure of cognition to monitor potential cognitive decline throughout the longitudinal study.

The Centers for Epidemiologic Studies Scale (CES-D) 20-item scale evaluated depressive symptoms (Radloff & Teri, 1986). A cutoff score above 16 was used to indicate depressive symptoms. Somatic complaints are emphasized on this measure to which individuals respond on a four-point Likert scale. Reliability coefficients from .85 to .91 have been obtained when the CES-D was used with older adults. Alpha reliability was .78.

Results

With CES-D scores treated as continuous variables (i.e., without regard to the threshold score of 16), a repeated measures ANOVA was performed to examine CES-D scores over the four time points as a function of both gender and treatment group. Scores on the CES-D did not change over time (Wilks' Lambda = .994, $F(3, 216) = .416$, $p = .741$), in interaction with treatment group (Wilks' Lambda = .995, $F(3, 216) = .339$, $p = .797$), in interaction with gender (Wilks' Lambda = .984, $F(3, 216) = 1.178$, $p = .319$), or in interaction with both treatment and gender simultaneously (Wilks' Lambda = .995, $F(3, 216) = .392$, $p = .759$). Tests of between-subjects effects showed that CES-D scores differed overall by gender with men having lower scores, $F(1, 218) = 4.158$, $p = .043$, but did not differ overall by treatment group, $F(1, 218) = 1.562$, $p = .213$, or the treatment group by gender interaction, $F(1, 218) = .878$, $p = .350$.

At baseline, Cronbach alphas were calculated for all study variables. Values ranged from .73 to .95. Using a cutoff score of ≥ 16 , 35% of the sample moved at least once from being depressed to being non depressed or vice versa one time (Table 1). The overall frequency of depressive symptoms was variable with 60.81% ($n = 135$) never depressed, 19.36% ($n = 43$) depressed on one occasion, 9% ($n = 20$) depressed on two occasions, 6.75% ($n = 15$) depressed on three occasions, and 4.05% ($n = 9$) depressed on four occasions (Table 2). If depression were measured at Time 1, 19% of the sample would have scored above the cutoff, versus the 39% that scored above the cutoff when measured at four time points. If someone was previously depressed, then the likelihood that they would remain depressed at the next time period increased. For example, 18% of the sample was depressed at Time 1. At

Time 2, 51% of these participants remained depressed. Of these participants depressed at both Time 1 and Time 2, 57% were depressed at Time 3. 75% of these participants depressed at Times 1, 2, and 3 were still depressed at Time 4.

Discussion

This study had a number of strengths. First, although the sample was recruited through convenience methods in the community, the volunteers were highly motivated and maintained their interest in the study as evidenced by a 79% retention rate for the entire tri-ethnic sample. Second, our participants were followed longitudinally. Third, we evaluated change over time in depressive symptomatology, a high cost phenomenon to an older adult population.

Depressive symptoms, a precursor to major depression, are identified as symptoms that last two or more weeks with associated loss of pleasure in usual activities as well as three or more of the following: sleep problems, appetite problems, inability to concentrate, excessive feelings of guilt or worthlessness, thoughts of suicide, fatigue/loss of energy, and extreme restlessness (NIMH, 2007). If depressive symptoms had been measured at only one time, 19% of the sample would have scored above the cutoff, versus 39% scoring above the cutoff when measured at all four time periods. The findings provide evidence that depressive symptoms in older adults are variable and fluctuate over time.

Depression tends to last longer in elderly adults, and women are affected twice as much as men (Szanto et al., 2002). Our results supported that conclusion, women had significantly higher scores on the CES-D. However, depression is not a normal part of aging (Crystal, Sambamoorthi, Walkup, & Akincigil, 2003; ; Salzman, 2006). Four barriers contribute to the disparity of the treatment of depression. Although the lack of diagnosis by a patient's provider is the most-cited reason, lack of treatment for depression, stigma of having depression, and ageism have also impacted this health concern. In addition, the findings of this longitudinal study have identified another potential barrier: Patients should be assessed for depression more than once.

Inadequate training of health care professionals to identify signs of depression is the most discussed barrier to treatment in the literature (Dearman, Waheed, Nathoo, & Baldwin, 2006; Saltzman, 2006; Twedell, 2007). Recognizing late-life depression in the older adult can be challenging in the primary care setting because the symptoms of depression are similar to those of most chronic medical conditions. In addition, the level of a patient's cognitive ability, as well as visual impairments, compounds the difficulty (Sharpe & Lipskey, 2002). In situations where depression is associated with other co-morbidities, health care providers believe that the depression is secondary and that treating the primary illness will improve the secondary illness (Crystal, Sambamoorthi, Walkup, & Akincigil, 2003). Unfortunately, untreated depression actually delays and can even worsen the outcomes of other illnesses. Studies indicate that over 70 % of older suicide victims visited their PCP within one month prior to committing suicide (NIMH, 2007) and 39% within one week prior (Salzman, 2006). The data also indicate that many of those victims had depressive illness that went undetected or undertreated. Laks and Engelhardt (2010) argue that symptom clusters and treatment outcomes must be expanded to include the variability in the aging brain. The symptom clusters would include the complexity and comorbidities including geriatric depression, dysexecutive syndrome, and late-onset depression.

In primary care practices, physicians were more likely to mention depression with younger patients, provide more written information about the illness to younger adults with depression, and were three times more likely to refer younger adult patients to mental health

specialists (Fischer et al., 2003). These providers were less likely to ask older adults about suicidal thoughts. Van Etten (2006) found that psychotherapists were often reluctant to work with older adults because of the assumption that their interventions, which focused on changing thoughts, behaviors and actions, would not help someone who is old.

Several ideas for increasing the knowledge of PCPs are included. A depression scale on routine visits to assess a patient's level of depression is a priority (Antai-Otong, 2006; Fischer et al., 2003; Sharp & Lipsky, 2002; (Walsh, Currier, Shah, Lyness, & Friedman, 2009). Others encourage educating PCPs on the subtle signs and symptoms of depression in the older adult and spending more time identifying social support and additional background.

Treatment

There are misconceptions that antidepressants are not safe for the older adult (Crystal et al., 2003). Antidepressants have improved over the last decade and there are a number of studies indicating their safety for use in the elderly population (Antai-Otong, 2006; Crystal et al.). Antidepressant therapy is the primary medical treatment for depression with treatment follow-up just as important. Standard clinical guidelines recommend follow-up within two weeks for patients with depression to assess for side effects, drug interactions, and worsening of depressive symptoms (Frayne, Skinner, Lin, Ash, Freund, 2004; Unutzer, 2007). A study conducted by Frayne et al., (2004) discovered that even when PCP's identified depression in the elder patient (which was 50% of the time), only 19% recommended treatment. Additionally, the study found that of those 19% who received treatment, only 12% were actually treated with an antidepressant and only half of those patients were provided appropriate follow up.

When drug intolerance is a concern, a psychosocial intervention highly effective for older adults is life review and reminiscence therapy. Older adults discharged for their medical and psychiatric problems with prescription medications participated in home-based life review therapy. They received follow-up at home by an advanced practice geropsychiatric nurse for short-term therapy that was reimbursed under Medicare Part B for home care. McDougall, Blixen, & Suen (1997) found that as life-review treatment progressed for 80 individuals, the number of total disempowerment themes such as anxiety, denial, despair, and isolation, significantly decreased over time. This study demonstrated that psychosocial treatments developed specifically for older adults have a positive impact on their overall well-being and quality of life.

Stigma

Sirey et al., (2007) discovered that a patient's concern about the stigma could result in denial of depression even after the primary provider has diagnosed it. The shame leads to discontinuation of medication and ultimately a downward spiral in associated co-morbidities. The number of suicides in the elderly population is proportionately linked to the under diagnosis and lack of treatment for depression (NIMH, 2007). In 2004, individuals over 64 years of age made up 12 % of the U.S. population but accounted for 16 % of deaths from suicide. These numbers are higher than the suicide rate for the general population (NIMH). Non-Hispanic white men 85 years and older made up the highest percentage most likely to die by suicide with a rate of 49.8 % per 100,000 persons (NIMH). Unfortunately, there is a common misperception that younger populations have the highest suicide rates.

Many older adults resist treatment for depression because of the stigma associated with the illness. According to Barney, Griffiths, Jorm, and Christensen (2005), older Americans often view depression as a personality defect instead of a real medical illness. Family members,

friends, and neighbors who reinforce the notion that the illness is not socially acceptable share in the stigma. In a study on the impact of stigma with depression, Barney et al. (2005) identified self-stigma and perceived stigma as specific barriers to the treatment of depression. "Self stigma exists when people have negative attitudes about themselves as a result from internalizing stigmatizing ideas held by society" (p. 51) and perceived stigma refers to the "belief that other people hold stigmatizing ideas" (p. 52). Unfortunately, depressed elders are not only concerned about what other friends and family members think, but also what their own health care professionals will think. Some authors claim that the negative experience elders have about depression is from the influence of mass media and popular culture, with television and movie portrayals of characters labeled as mentally ill often presented as violent and frightening (Robinson). Suggestions for the media to produce dramas depicting people coping with their feelings of depression and anxiety could help change the perspective of depression in the older population.

Ageism

Although there is very little discussion of ageism as a barrier to the diagnosis and treatment of depression, the undertones are present in many articles and studies on depression in the older adult. Ageism is inherent in western medicine and can be traced back to Freud's assertion that people over age 50 are incapable of change and cannot be taught (Van Etten, 2006). Ageism is defined as a systematic stereotyping and discrimination against people because they are old and may influence adherence to treatment. Observational data from a large health plan using medical and pharmacy claims of antidepressants indicated that younger age, comorbid alcohol or other substance abuse, comorbid cardiovascular/metabolic conditions, use of older generation antidepressants, and residence in lower-income neighborhoods were associated with lower acute-phase adherence (Akincigil, Bowblis, Levin, Walkup, Jan, & Crystal, 2007).

Health care organizations perpetuate ageism by denying or limiting services to older adults and by not including training materials or education offerings to the staff at medical facilities where a significant number of their patients are elderly. Medical and nursing schools support ageism by not requiring geriatric training even though older adults comprise a significant portion of the American population. The government contributes to ageism by the continued budgetary cuts to the Medicare program with physicians and other providers continuing to receive less reimbursement for elderly patients (Crystal et al., 2003).

Decreasing Disparity

We included a triethnic sample in our study to decrease a bias in our findings. One approach is to consider adapting successful treatment models used in other countries. Australia, New Zealand, and Canada are three countries with a similar disparity in the face of a growing number of elders (Minas, Klimidis, & Kokanovic, 2007). Gibson and Redfoot (2007) have employed this approach by examining long-term care systems in Germany and comparing them to the United States for opportunities to address similar problems. Perhaps joint efforts between Australia, New Zealand, or Canada could provide significant findings to decrease the disparity of depression in this older population. Since the media is such an influential factor, schools of journalism whose graduates will have significant power in shaping public perception and opinion should have some minimal education in gerontology. The bottom line is that the United States government must take more proactive steps and put actions behind their words. The government should be held accountable for its contradictory practices in acknowledging America's needs for more health care providers trained in gerontology, but then failing to contribute to funding medical or nursing schools while cutting reimbursement for those who serve the older adult. Specific policy recommendations by grassroots organizations suggest legislation for mandatory education on depression in the

older adult for health care professionals that serve a large elderly population (Roe, Dopheide, Wincor, 2002).

Conclusion

The number of adults aged 65 and over suffering from depression is increasing because of barriers to diagnosis and treatment. Lack of knowledge about depression in the older adult, coupled with the stigma associated with a mental illness contributes significantly to this disparity. Health care insurance places an additional barrier to the treatment of depression by requiring higher copayments and limiting the number of visits paid for mental health services. Unfortunately, the underpinning to each of these barriers is the influence of ageism. Considering suggestions from grassroots organizations of older adults and through the experiences from other countries with similar disparities, America could identify several options to remove these barriers. If depressive symptoms had been measured at only one time, 19% of the sample would have scored above the cutoff, versus 39% scoring above the cutoff when measured at all four time periods. The findings provide evidence that depressive symptoms in older adults are variable and fluctuate over time.

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Table 1

Demographics and Screening Measures at Baseline

Variables		Health Training N=130	Memory Training N=135
		Score Range	
		Mean $\pm$ SD N (%)	Mean $\pm$ SD N (%)
Age	65–94	74.83 $\pm$ 6.22	74.69 $\pm$ 5.74
Education	0–22	13.81 $\pm$ 3.71	13.39 $\pm$ 3.9
Number of people in house	1–6	1.65 $\pm$ 1.42	1.53 $\pm$.8
Cognition	0–30	27.98 $\pm$ 2.22	28.05 $\pm$ 2.06
Depression	0–60	9.47 $\pm$ 6.87	9.13 $\pm$ 6.71
Gender			
Male		30 (23.1)	30 (22.2)
Female		100 (76.9)	105 (77.8)
Race			
White		93 (71.5)	96 (71.1)
Black		15 (11.5)	15 (11.1)
Hispanic		22 (16.9)	24 (17.8)
Marital Status			
Married		37 (28.5)	45 (33.8)
Never Married		3 (2.3)	5 (3.8)
Divorced		26 (20)	25 (18.8)
Widowed		64 (49.2)	58 (43.6)

Table 2

Frequency (N) of Depressive Symptoms at Four Data Collection Periods

Increased Depressive Symptoms	Number of Individuals
Time 1 only	11
Time 1 & 2	5
Time 1 & 3	4
Time 1, 2, & 3	3
Time 1 & 4	2
Time 1, 2 & 4	4
Time 1, 3 & 4	3
Time 2 only	10
Time 2 and 3	3
Time 2, 3 & 4	8
Time 2 & 4	3
Time 3 only	10
Time 3 & 4	5
Time 4 only	12
All time periods	16
Never Depressed	166

All the cognitive and self-report measures were administered at each of the following measurement occasions: First at baseline, following the screening and eligibility; next, at post-class (two months after baseline); again at post-booster (six months; and at post-classroom follow-up (14 months). Frequency refers to N. A cutoff score above 16 was used to indicate depressive symptoms.