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Prevalence of Depressive Symptoms and Associated Factors in Older Adult Public Housing Residents

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Abstract

The purpose of this pilot study was to identify the prevalence of and risk factors associated with depressive symptoms among older adult residents of a public housing apartment. Self-reported depressive symptoms were measured with the Center for Epidemiologic Studies Depression Scale (CES-D) 8. A self-report questionnaire was used to collect data on risk factors of sociodemographic information, cardiovascular health history, and history of depression. Fifty-eight of 171 residents responded, and 31% of residents met the CES-D 8 criterion for depression (total score >7). Sequential multiple regression models identified age, loss of loved ones in the past year, and financial worries as significant predictors of CES-D 8 scores. These study results have implications for future studies of depressive symptoms in older adults, suggesting that grief and financial assistance programs may help reduce risks associated with depressive symptoms among community-dwelling older adults living in public housing.

Older adults with depressive symptoms represent an often unrecognized and underserved population. Depressive symptoms are common in older adults (i.e., late life depression) and are associated with the reduction in quality of life and life expectancy (Ellison, Kyomen, & Harper, 2012; Reynolds, Haley, & Kozlenko, 2008), as well as a poor prognosis (Beekman et al., 2002). Community-dwelling older adults living in public housing may experience

social isolation and economic concerns; thus, they are vulnerable to depressive symptoms or diagnoses of depression.

Not all depressive symptoms result in a diagnosis of depression. Characteristics of depressive symptoms (e.g., number, length of time, severity) contribute to the diagnosis of depression disorders common in older adults. According to the *Diagnostic and Statistical Manual of Mental Disorders*, 5th edition (American Psychiatric Association [APA], 2013), *major depressive disorder* (MDD) is defined as five or more depressive symptoms presenting over a 2-week period, with at least one of the symptoms being either a depressed mood or loss of interest or pleasure. Less severe, but still common in older adults, is *subsyndromal depression*, defined as any two or more symptoms of depression present for most or all of the time for at least 2 weeks, and it is also associated with social dysfunction (APA, 2013). Clinically significant depressive symptoms affect approximately 15% of community-dwelling older adults (Blazer, 2003). Depressive symptoms may be diagnostic for depression disorders; however, depressive symptoms are often not identified among older adults living in public housing (Simning, van Wijngaarden, Fisher, Richardson, & Conwell, 2012).

Nurses caring for older adult populations must be knowledgeable about the risk factors associated with depressive symptoms to provide quality care. Risk factors for depressive symptoms among older adults may be organized as *demographic*, *social*, and *health-related* risk factors. Social risk factors for depressive symptoms include early childhood life events and stressful life events (Fiske, Wetherell, & Gatz, 2009; Kamiya, Doyle, Henretta, & Timonen, 2013). Poor stress and emotion regulation are also reported as robust and consistent predictors of depression among older adults in the United States (Magai, Kerns, Consedine, & Fyffe, 2003). Health-related risk factors for depressive symptoms include age-associated cognitive, cardiovascular, and neurobiological changes, as well as genetic dispositions (Fiske et al., 2009).

Older adults living in public housing have unique risk factors for depressive symptoms, including age within the “young-old” range, recent major life events, social distress, maladaptive coping, and medical comorbidity (Robison et al., 2009; Simning, van Wijngaarden, & Conwell, 2011). Financial strain has also been reported as a social risk factor for depressive symptoms among older adults (Cohen et al., 2010) and may be associated with depressive symptoms among older adult women living in public housing.

The nurse researchers of the current study were approached in 2012 by a community group concerned about unidentified depressive symptoms among older adults living in an urban public housing apartment (PHA). No studies on depressive symptoms among older adults living in urban PHAs had been conducted in the state. Existing studies did not represent the demographic characteristics of the PHA population. The current pilot study was conducted to estimate the prevalence of and identify risk factors for depressive symptoms among older adults living in an urban PHA.

RESEARCH QUESTIONS

The following research questions were explored in the current study:

- What is the prevalence of self-reported depressive symptoms in older adult residents of an urban PHA?
- What is the relationship among demographic, social, and health-related variables and self-reported depressive symptoms in older adult residents of an urban PHA?

METHOD

Design

The current pilot study employed a descriptive, cross-sectional design and occurred during January and February 2013. The study protocol was approved by a university's institutional review board (IRB) and the board of directors of the PHA.

Sample and Setting

The target sample was all 171 residents of an urban PHA. The only inclusion criterion was residency in the PHA. Convenience sampling was employed. This particular PHA was selected because the administrator of the nonprofit organization that operates the PHA requested an assessment of the mental health needs of residents. The PHA is a U.S. Department of Housing and Urban Development section 236 (n.d.), high-rise apartment building for low- to moderate-income adults aged 62 and older in Delaware. Many supportive services existed for residents, including access to an onsite clinic with an RN, exercise therapy, computer training, food service with three meals per day, transportation, prescriptive assistance, support and exercise groups, and cultural and recreational activities. However, despite the breadth of services available to residents, the PHA staff identified a gap in mental health screening services.

Procedures

Recruitment began with a presentation by researchers at a resident community meeting, during which the study was explained and questions were answered. Study flyers were also placed in the main lobby and in individual mailboxes. All recruitment materials were printed in 14-point font or larger. Residents were informed that data collection could occur in their apartments or in other private locations and that they would be provided a \$10 gift card in appreciation for their time. Residents were provided several options for making appointments to discuss enrollment. They were provided a telephone number to call and schedule an appointment, they could inform one of the social workers in the building to make an appointment for them, or if researchers were on site, they could have a walk-in appointment. Various days and times, including weekends, were available for residents to schedule an appointment for enrollment.

All residents who attended enrollment appointments and chose to enroll received a standardized explanation of the study in a private location. Data were collected anonymously, so no consent documents were used. Research participants used paper and pens to complete the three questionnaires. A questionnaire administration script was used to ensure the uniformity of data collection. The interrater reliability among the investigators was verified on site. Researchers helped participants as needed in reading questions and

marking their answer choices. After completion of the interview, participants received the \$10 gift card.

Because of the nature of the study, an IRB-approved safety procedure was developed for participants whose responses suggested that their health was potentially at immediate risk. Participants whose responses suggested that their health was at immediate risk (i.e., suicide ideation, chest pain), as determined by one of the researchers, were referred to the RN employed by the PHA administrator.

Measures

The first instrument was developed by the current study's researchers based on the literature. The questionnaire included demographic, social, and health-related items. Demographic variables were age, sex, race/ethnicity, marital status, and years of education. Social variables were defined as stressful factors/events and included years of residency in the PHA, loss of loved ones in the past year, and level of financial worries. Answers regarding financial worries were scored from 1 to 5, with 1 representing *never worried about finances* and 5 representing *always worried about finances*. Health-related variables were defined as self-reported cardiovascular (CV) risk factors. The CV questions asked for a yes/no self-report response about seven risk factors, including Type I and II diabetes, prediabetes, hypertriglyceridemia, hypercholesterolemia, hypertension, obesity, and history of and treatment for depression and alcohol or drug abuse.

The second instrument was the Center for Epidemiologic Studies Depression Scale (CES-D) 8, a brief 8-item questionnaire that measures the presence and frequency of depressive symptoms. The CES-D 8 was selected for this study because it is a self-report scale that measures depressive symptomatology in the general population (Radloff, 1977). Validity of the CES-D with an older adult population has been established (Lee & Chokkanathan, 2008). Scores range from 0 to 24, with higher scores indicating more depressive symptoms. It has high internal consistency ($\alpha = 0.85$ to 0.90 across studies), acceptable test-retest stability ($r = 0.40$), excellent concurrent validity by clinical and self-report criteria, and substantial evidence of construct validity (Radloff, 1977). A cutoff score of 7 or greater on the CES-D 8 indicates the presence of depressive symptoms. Moderate reliability of the CES-D 8 was observed in the current study ($\alpha = 0.81$).

The third instrument was the Short Portable Mental Status Questionnaire (SPMSQ), a 10-item instrument used to detect the presence of cognitive impairment (Pfeiffer, 1975). The SPMSQ was constructed and validated with both community and institutional samples of older adults. Scores range from 0 to 10, with a score of 10 representing no errors. Degree of cognitive impairment is determined based on the number of errors: 0 to 2 errors represent normal mental functioning, 3 to 4 errors represent mild cognitive impairment, 5 to 7 errors represent moderate cognitive impairment, and 8 or more errors represent severe cognitive impairment. Test-retest correlations for SPMSQ administration at 4-week intervals for two groups of older adults were moderately high in the original construction and validation study ($r = 0.82$ and $r = 0.82$, respectively) (Pfeiffer, 1975).

Data Analysis

Descriptive statistics described participant characteristics and prevalence of depressive symptoms. A series of *t* tests and chi-squared tests were used to describe differences in demographic and health scores between participants who had CES-D 8 cutoff scores higher than 7 (i.e., criterion for depression) and those who had scores of 7 or below. Pearson correlations identified correlates of depressive symptoms. Sequential multiple regression models were used to identify potential predictors of CES-D 8 scores, with variables selected based on literature review and bivariate correlations. There were no missing data. Level of significance was set at $p < 0.05$ for descriptive tests and $p < 0.10$ for regression. A significance level of $p < 0.1$ was used for the sequential regression model, as it was in a pilot study. The 0.1 is the equivalent to 0.05 for a one-tailed test.

RESULTS

Characteristics of Participants

Fifty-eight of 171 residents enrolled in the current study (Table 1). Participants were mostly white (79%), female (74%), and unmarried (86.2%). The mean age of participants was approximately 76.2 ($SD = 11.89$ years), and the mean years of education was 13.71 ($SD = 3.02$ years). The mean years of residence in the PHA was 3.7 ($SD = 3.96$ years). Approximately 40% of participants reported loss of loved ones in the past year. The mean level of financial worries was 2.91 ($SD = 1.23$) of 5.

The mean number of self-reported CV risk factors was 2.07 ($SD = 1.40$) of 7. One quarter of participants indicated that they were currently being treated for depression, and 43.1% had received previous depression treatment. The mean SPMSQ score was 8.69 ($SD = 1.38$), indicating that a majority of participants had normal cognitive function. Fifty-one participants (88%) had a perfect SPMSQ score.

Prevalence of Depressive Symptoms

The mean CES-D 8 score was 5.24 ($SD = 4.87$, range = 0 to 22). Eighteen participants (31%) had CES-D 8 scores greater than or equal to 7, which represents clinically significant symptomatology (mean = 11.0, $SD = 4.34$). In contrast, 69% of participants did not meet the criteria for being clinically depressed and had CES-D 8 scores less than 7 (mean = 2.65, $SD = 2.06$). Participants who met the CES-D 8 criteria for depression were, on average, 7 years younger than their counterparts (Table 2). They were also more likely to have experienced a loss and have higher levels of financial worries compared with those who had lower CES-D 8 scores. No statistically significant differences existed between groups in regard to sex, years of education, years of residency in the PHA, sum of CV risk factors, and cognitive scores.

Correlates of Depressive Symptoms

In bivariate correlations, age was the only demographic variable that was significantly negatively related to CES-D 8 scores ($r = -0.37$, $p = 0.004$). Loss of loved ones in the past year was significantly positively related to CES-D 8 scores ($r = 0.38$, $p = 0.002$). Financial worry was significantly positively related to CES-D 8 scores ($r = 0.35$, $p = 0.007$). However,

years of education, years of residency in the PHA, and sum of CV risk factors were not significantly correlated to CES-D 8 scores (all $p > 0.05$). Notably, participants' cognitive scores showed no significant relationship to their CES-D 8 scores ($r = 0.06$, $p = 0.68$).

In the regression model, age, sex, years of education, and sum of self-reported CV risk factors were entered in the first block as covariates. The second block included the social variables of years of residency in the PHA, loss in the past year, and financial worries. Three significant predictors of CES-D 8 scores were identified. Age was negatively related to CES-D 8 scores ($b = -0.10$, $p = 0.086$). Having lost loved ones in the past year was positively related to CES-D 8 scores. Financial worry was positively related to CES-D 8 scores (Table 3). However, years of residency in the PHA and the sum of self-reported CV risk factors were not associated with depressive symptom scores.

DISCUSSION

The current pilot study found that depressive symptoms were common (31%) in the sample of mostly Caucasian women in their mid-70s living alone in one Delaware urban PHA. This finding is higher than previous findings (26% and 21%, respectively) in urban public housing (Robison et al., 2009; Simning et al., 2011). Differences between prevalence rates may be due to racial/ethnic characteristics of participants. Therefore, the sample characteristics of the current study differed from previous studies' sample characteristics. However, the sample characteristics and reported rates of depressive symptoms in this study were similar to other data reported for Delaware. U.S. Census Bureau (2014) data on Delaware in 2010 reported that 68.9% of the population was Caucasian and that poverty levels had increased by 20% since 2006. According to the *State of Delaware Community Health Status Assessment* (Delaware Health and Social Services Department, 2013), 26.7% of adults living in Delaware reported 1 to 5 days of feeling sad, "blue," or depressed during the past 30 days, and 12.5% reported feeling this way for 6 days or more. Thus, the findings in the current study are consistent with state findings for the prevalence of depression in the adult population. No data for older adult reports were located.

In the regression analysis, age, loss, and financial worries were significantly related to depressive symptoms. In general, depressive symptoms decreased in frequency with age after controlling for sex, education, physical illness, and bereavement (Fiske et al., 2009). Younger participants were more likely to have more depressive symptoms in the current study, which is in line with findings of other studies conducted in public housing (Robison et al., 2009; Simning et al., 2011). One explanation suggested in a previous study was that younger residents in public housing may have more health-related issues or disability (Robison et al., 2009), which is consistent with the eligibility criteria for public housing.

A social risk factor (i.e., the loss of loved ones in the past year) was a significant correlate of depressive symptoms in this study. This finding is in agreement with Adams, Sanders, and Auth (2004), who reported that grieving a recent loss was one of the predictors of depression among older adults ages 60 to 98 residing in two age-segregated independent living facilities. Loneliness, which was also predicted by grieving a recent loss, was an independent risk factor for depressive symptoms (Adams et al., 2004; Cacioppo, Hughes,

Waite, Hawkey, & Thisted, 2006). The findings in this study support the assessment of recent losses when screening older adults for depression. In this study, the item on loss was answered *yes* or *no* and served as an adequate screening question. In clinical practice, a positive response to the question could trigger a more detailed evaluation of the loss.

The risk factor (i.e., level of financial worry) may have also influenced higher rates of depressive symptoms in this study. Two thirds of participants reported financial worries either *sometimes*, *very often*, or *all the time*, despite the reduced financial burden that public housing can provide. Recent economic and financial market issues have been especially burdensome to low-income older adults who may have insufficient time to rebuild their depleted retirement savings because of sharp declines in financial markets and home equity; in addition, they may experience increased medical costs (U.S. Government Accountability Office, 2011).

Financial strain is one of the social risk factors of depression in older adults, and a robust association between lower income and the occurrence of suicidal ideation in a primary care cohort of older adults over 1 year has been reported (Cohen et al., 2010). The relationship between financial worries and depressive symptoms is in line with findings of previous studies (Kamiya et al., 2013; Rautio et al., 2013). This finding supports the assessment of financial worries as part of depression screening for older adults.

The strengths of this pilot study include community-based sampling and measures that were brief with established psychometric properties. However, generalization of study findings is limited because of data collection from a single site, a small convenience sample, and a lack of racial/ethnic diversity. Participants of the current study were self-selected, and no information exists about residents who did not participate in the study. Other limitations are that the small sample size likely limited the power of the regression analyses and that no adjustments were made for multiple testing.

IMPLICATIONS FOR PRACTICE

The results of this pilot study were communicated to the community of interest (i.e., older adults living in an urban PHA in Delaware), and programs were developed by PHA staff to address risk factors. The results also have implications for nurses working with community-dwelling older adults. Community-based nurses must be aware that older adults living in public housing may have an increased risk for depressive symptoms. Assessment may include screening with the CES-D 8, which has been found to correlate with a diagnosis of MDD (Irwin, Artin, & Oxman, 1999). Implications for future research includes longitudinal analysis of the relationship between depression and financial worries.

CONCLUSION

In summary, depressive symptoms were prevalent in older adult residents of an urban PHA. Younger residents, those who had experienced a recent loss, and those who had financial worries were at risk for developing depressive symptoms. Providing grief support and financial assistance programs may reduce risks associated with depressive symptoms among older adults living in this and other urban public housing. Findings from the current pilot

study can provide other researchers with estimates on the prevalence and risk factors associated with depressive symptoms among older adults living in urban public housing.

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TABLE 1Participant Characteristics ($N = 58$)

Characteristic	<i>n</i> (%)	Mean (<i>SD</i>)
Age (years)		76.15 (11.89)
Sex		
Female	43 (74)	
Male	15 (26)	
Race/ethnicity		
White	46 (79)	
African American	9 (15.5)	
Multiracial	3 (5.2)	
Marital status		
Married	8 (13.8)	
Unmarried	50 (86.2)	
Years of education		13.71 (3.02)
Years of residence in the PHA		3.7 (3.96)
Loss of loved ones in the past year	23 (39.7)	
Financial worries		2.91 (1.23)
Never	9 (15.5)	
Rarely	10 (17.2)	
Sometimes	25 (43.1)	
Very often	5 (8.6)	
Always	9 (15.5)	
Sum of self-reported CV risk factors ^a		2.07 (1.40)
Hypertension	40 (69)	
Hypercholesterolemia	29 (50)	
Obesity	18 (31)	
Type II diabetes	13 (22.4)	
Hypertriglyceridemia	9 (15.5)	
Prediabetes	7 (12.1)	
Type I diabetes	4 (6.9)	

Note. PHA = public housing apartment; CV = cardiovascular. Some values do not equal 100 due to rounding.

^a Some residents self-reported more than one risk factor.

TABLE 2

Characteristics of Participants by CES-D 8 Score ($N = 58$)

Variable	CES-D 8 7 ($n = 18$)		CES-D 8 <7 ($n = 40$)		Statistics	p Value
	n (%)	Mean (SD)	n (%)	Mean (SD)		
Depressive symptoms		11.0 (4.34)		2.65 (2.06)	$t(56) = -9.99$	<0.001
Demographic						
Age		71.3 (13.1)		78.3 (10.7)	$t(56) = 2.14$	0.040
Sex						
Female	12 (66.7)		31 (77.5)		$\chi^2(1, N = 56) = 0.76$	0.510
Years of education		12.9 (2.10)		14.05 (3.32)	$t(56) = 1.29$	0.200
Social						
Years of residency in the PHA		3.03 (2.74)		4.0 (4.39)	$t(56) = 0.87$	0.390
Loss of loved ones in the past year	11 (61.1)		12 (30)		$\chi^2(1, N = 56) = 5.02$	0.030
Financial worries		3.39 (1.42)		2.70 (1.09)	$t(56) = -2.02$	0.048
Health-related						
Sum of CV risk factors		2.44 (1.46)		1.90 (1.35)	$t(56) = -1.38$	0.170
Cognitive function		8.83 (1.15)		8.63 (1.48)	$t(56) = -0.53$	0.600

Note. CES-D 8 = Center for Epidemiological Studies Depression Scale 8; PHA = public housing apartment.

TABLE 3

Sequential Regression Model Predicting CES-D 8 ($N = 58$)

Covariate	<i>b</i>	<i>SE</i>	β	<i>p</i>	R^2	R^2 Change
Block 1						
Age	-0.15	0.05	-0.36	0.008	0.147	
Sex	0.35	1.43	0.03	0.809		
Years of education	0.03	0.20	0.02	0.884		
Sum of self-reported CV risk factors	0.30	0.45	0.09	0.502		
Block 2						
Age	-0.10	0.056	-0.25	0.086	0.278	0.132
Sex	1.37	1.40	0.12	0.333		
Years of education	0.23	0.20	0.14	0.264		
Sum of self-reported CV risk factors	0.13	0.44	0.04	0.771		
Years of residency in the PHA	0.15	0.17	0.13	0.364		
Loss of loved ones in the past year	2.95	1.28	0.30	0.025		
Financial worries	0.94	0.54	0.24	0.088		

Note. CES-D 8 = Center for Epidemiological Studies Depression Scale 8; CV = cardiovascular; PHA = public housing apartment. Variables with p values < 0.05 were included in the regression model.
 Block 1: $F(4, 54) = 2.32, p = 0.068, R^2 = 0.147$; Block 2: $F(7, 51) = 2.81, p = 0.015, R^2 = 0.278$.