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## Depressive Symptoms and Antidepressant Use in a Random Community Sample of Ethnically Diverse, Urban Elder Persons

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### Abstract

**BACKGROUND**—There are limited data on depressive symptoms and antidepressant use in ethnically diverse, urban elderly.

**METHODS**—Analysis of depressive symptom and antidepressant use data from an epidemiological survey of dementia in an ethnically diverse, urban, elderly community.

**RESULTS**—21.5% (N=566) reported clinically significant depressive symptoms. Severity was inversely associated with socioeconomic status. 7.5% (N=194) reported antidepressant medication use. Multiple logistic regression analysis adjusting for severity and other covariates showed that men and African Americans had nearly half the odds of using antidepressants. Antidepressant use was more frequent among Hispanics, those with more severe depression and more medical illness.

**LIMITATIONS**—Combined sample; CES-D not validated in Hispanics and inner-city African Americans; depressive symptoms assessed at one time-point; lack of complete income data; geographically restricted.

**CONCLUSIONS**—In this elder sample, taking into account depressive symptom severity and other confounds, antidepressant use is nearly half as likely among men and African Americans.

### Keywords

Depressive symptoms; antidepressant use; epidemiology; ethnicity; gender; help-seeking

### INTRODUCTION

Depressive symptom rates in elderly community samples range from 15 to 19% (Blazer et al., 1980; Frerichs et al., 1981) and among other factors are associated with female sex (Blazer and Williams, 1980) and lower socioeconomic status (Sachs-Ericsson et al., 2005). Depressive

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Dr. Oquendo: contributed to interpretation of data analyses and editing of multiple manuscript drafts.

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All authors contributed to and have approved the final manuscript.

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symptoms raise mortality for older men (Penninx et al., 1999) and are associated with suicide, which is more frequent among elderly men (Grunebaum et al., 2004).

Lower depression treatment rates are found among African Americans (Blazer et al., 2000; Brown et al., 1995), Hispanics (Unutzer et al., 2003) and men (Brown, Salive, Guralnik, Pahor, Chapman, and Blazer, 1995).

We used data from an epidemiological dementia survey to study depressive symptoms and antidepressant use in a random sample of ethnically diverse, urban elderly. We hypothesized that men would report lower rates of antidepressant use taking into account depression severity.

## METHOD

### Subjects

Participants were surveyed in the Washington Heights-Inwood Columbia Aging Project, a community-based, epidemiological study of dementia in an ethnically diverse area of New York City. Bilingual (English/Spanish) recruitment letters were used to contact a stratified random sample of 50% of persons older than 65 years obtained from the Health Care Finance Administration (Center for Medicare Services).

The sample (N=2,629) combines 550 (21%) recruited in 1992 and 2,079 (79%) recruited 1999–2001. The sample had a mean age of 78.0 years (SD = 7.1, range 66 – 104 yrs), a mean of 9.9 years of education (SD = 4.9, range 0 – 20 yrs), median monthly income of \$751–1,000 and was 68% female, 40% Hispanic, 32% non-Hispanic African American and 28% non-Hispanic white. Hispanic origins were 56% Dominican, 18% Cuban, 13% Puerto Rican and 13% “other.” 30% were married and 48% lived alone. After description of the study to participants, written informed consent approved by the hospital’s institutional review board was obtained.

### Measures

**General Procedures**—Interview instruments were translated into Spanish by a committee of Spanish speakers and back-translated for validity. Visits were conducted in participants’ best language, mostly in the subject’s home.

**Socio-demographic variables**—Race/ethnicity was classified as non-Hispanic white, non-Hispanic African American, Hispanic (of any race), and other (i.e., non-Hispanic and “other” race). Education years were summed (0 to 20). Participants’ primary occupation was classified: housewife, housewife and other occupation, unskilled/semi-skilled, skilled trade/craft, clerical/office worker, manager business/government, professional/technical. Household income for the past month was assessed, but was missing for 632 (24%) subjects: 463 refused, 157 did not know, 12 were not asked.

**Activities of daily living**—A scale (Gurland et al., 1977) assessed activities of daily living (ADL: bathing, toileting, dressing, brushing hair, and feeding oneself) and instrumental activities of daily living (IADL: using the telephone, preparing meals, handling money, and completing chores).

**Medical and neuropsychological evaluation**—Research physicians performed neurological and physical examinations. Technicians administered neuropsychological measures. Physicians and neuropsychologists reached a consensus on the diagnosis of dementia. Medical burden summed the number of non-psychiatric medical diagnoses.

**Depressive symptoms and antidepressant medication**—Depressive symptoms and antidepressant use were assessed by the same research team 1999–2001. Depressive symptoms were assessed using a short version of the Center for Epidemiological Studies-Depression Scale (CES-D)(Radloff, 1977), a self-report measure used in community studies. This 10-item “Boston Form” was developed for the EPESE study (Kohout et al., 1993). A field test found a Cronbach’s alpha of 0.80 (actual Boston data) and factor analysis showed loadings similar to the full CES-D (Kohout, Berkman, Evans, and Cornoni-Huntley, 1993). 16 or greater on the full CES-D is an accepted cutoff for clinically significant depressive symptoms (Kohout, Berkman, Evans, and Cornoni-Huntley, 1993; Mulrow et al., 1995), defined as requiring further evaluation and possible treatment. This corresponds to a score of 4 on the version used here. This cut-point had acceptable sensitivity and specificity in screening for major depressive disorder in older adults (Irwin et al., 1999).

Research physicians asked subjects if they had sought “help or treatment” for past depressive symptoms. The physician asked whether they currently took antidepressant medication. When possible, medication bottles were examined. Subjects who were too demented to provide adequate information were not assessed for depression-related data, thus were not included in this analysis.

### Statistical Analysis

Tests were performed using SPSS (SPSS Inc., Chicago, IL). CES-D score was not normally distributed and was analyzed using non-parametric tests. Correlates of sex were analyzed using Mann-Whitney, t, or chi-square tests as appropriate. We used multiple logistic regression analysis of antidepressant use to study its relationship to sex. Independent variables entered simultaneously were sex and factors associated with sex on bivariate tests: age, education, occupation level, marital status, living alone status, CES-D score, ADL and IADL impairment and medical burden. We also included Hispanic ethnicity (yes/no) and race (African American/white) as independent variables. We did not include income in the primary model as data were missing for 632 (24%) subjects, as noted. We tested exploratory models adding cohort (1992 vs. 1999) to the primary model and substituting high/low income group (median split) in place of occupational level.

## RESULTS

### Comparison of 1992 and 1999 cohorts

The 1992 cohort was older (mean age=82y (SD 5.2) vs. 77y (SD 7.1);  $t=20.1$ ;  $df=1151.8$ ;  $p<0.001$ ) and more female (73% vs. 67%;  $\chi^2=8.0$ ;  $df=1$ ;  $p=0.005$ ). Depressive symptom severity did not differ between the cohorts ( $Z=-0.23$ ;  $p=0.82$ ) nor did the proportion with clinically significant depressive symptoms ( $\chi^2=1.83$ ;  $df=1$ ;  $p=0.18$ ). Further analyses were done on the combined sample. Regression models adjusted for age and sex.

### Depressive Symptoms and Antidepressant Use

21.5% (N=566) of the combined sample had clinically significant depressive symptoms and 7.5% (N=194) reported current use of antidepressant medication. The mean CES-D score for the sample (N=2,629) was 1.9 (SD 2.1, range 0–10) and was 3.6 (SD 2.7) for those reporting antidepressant use.

### Variables Associated with Depressive Symptoms

Depressive symptoms were associated with age, ADL and IADL complaints, living alone, and number of general medical problems (Table 1). Severity was inversely associated with income,

education, and occupational level (Table 1). Married subjects and men had fewer symptoms (Table 1).

Hispanics reported more symptoms than non-Hispanics (Table 1) and antidepressant use was more frequent with Hispanic ethnicity (9.9% vs. 6.0%;  $\chi^2=13.59$ ,  $df=1$ ,  $p<0.001$ ) and female sex (9.3% vs. 3.8%;  $\chi^2=24.29$ ,  $df=1$ ,  $p<0.001$ ). There were no differences in depressive symptom severity between the different Hispanic subgroups (Kruskal-Wallis  $\chi^2=5.44$ ,  $df=3$ ,  $p=0.14$ ). Whites were more depressed than non-Hispanic African Americans (Table 1).

### Variables Associated with Sex

Males attended more years of school ( $t=2.27$ ,  $df=1548.9$ ,  $p=0.02$ ) and had lower likelihood of low income ( $\chi^2=64.79$ ,  $df=1$ ,  $p<0.001$ ) and low occupational ( $\chi^2=11.95$ ,  $df=1$ ,  $p=0.001$ ) levels. Males were younger ( $t=-5.57$ ,  $df=2627$ ,  $p<0.001$ ), more likely to be married ( $\chi^2=307.33$ ,  $df=1$ ,  $p<0.001$ ) and less likely to live alone ( $\chi^2=76.98$ ,  $df=1$ ,  $p<0.001$ ). Males reported less functional impairment (any ADL complaints:  $\chi^2=47.76$ ,  $df=1$ ,  $p<0.001$ ; any IADL complaints:  $\chi^2=15.18$ ,  $df=1$ ,  $p<0.001$ ) and fewer non-psychiatric medical diagnoses ( $t=-6.54$ ,  $df=2627$ ,  $p<0.001$ ). Dementia rate did not differ between males and females ( $\chi^2=2.11$ ,  $df=1$ ,  $p=0.15$ ).

### Logistic Regression Analysis of Antidepressant Use

Table 2 summarizes results of the primary logistic regression model. Antidepressant use was independently associated with female sex, white race, Hispanic ethnicity, greater CES-D score and more medical problems. The model including cohort as a predictor variable showed similar results (available on request). The model substituting occupational level with high vs. low income (median split;  $N=1,941$ ) also showed similar results (available on request).

### Help-Seeking for Depressive Symptoms

Of those reporting past depressive symptoms, 58% ( $N=333$ ) reported seeking help, mostly medication (56.8%) and psychotherapy (34.8%). Help-seeking was associated with female sex (61% vs. 49%;  $\chi^2=5.69$ ,  $df=1$ ,  $p=0.017$ ), but not with African American race (52% vs. 60%;  $\chi^2=2.59$ ,  $df=1$ ,  $p=0.11$ ) or Hispanic ethnicity (61% vs. 56%;  $\chi^2=1.38$ ,  $df=1$ ,  $p=0.24$ ).

## DISCUSSION

This community survey of ethnically diverse, urban elderly found after adjusting for severity, antidepressant use was about half as frequent among men and African Americans and more common among Hispanics. 21.5% of the sample had clinically significant depressive symptoms. This is consistent with other surveys (Blazer and Williams, 1980; Falcon et al., 2000; Frerichs, Aneshensel, and Clark, 1981; Potter et al., 1995). Our results were adjusted for multiple confounds and extend the EPESE study (Blazer, Hybel, Simonsick, and Hanlon, 2000; Brown, Salive, Guralnik, Pahor, Chapman, and Blazer, 1995) and Medicaid claims analyses (Strothers et al., 2005) to an independent, ethnically diverse, urban sample.

A national telephone survey of primary care patients found “African Americans are less likely than white persons to find antidepressant medication acceptable” (Cooper et al., 2003). Research is needed on elders’ beliefs about depression treatment.

In our cohort, 49% of elderly men reported having sought help for depressive symptoms compared to 61% of women. This may contribute to the difference in antidepressant use. Men are less likely to recognize emotional problems (Kessler et al., 1981) and to seek help (Moller-Leimkuhler, 2002), perhaps due to stigmatization of depression as a “female disease” (Moller-Leimkuhler, 2002).

Depressive symptoms may be under-recognized in elderly males as one study found (Stoppe et al., 1999) and may involve more aggression, which could contribute to under-recognition and higher rates of elderly male suicide (Rutz, 2001). A review of medication adherence in the elderly found inconsistent associations with sex, making this an unlikely explanation (Balkrishnan, 1998).

The explanation for greater use of antidepressants among Hispanics is unclear. There is debate whether the CES-D is an adequate screening instrument in Hispanics (Falcon and Tucker, 2000) and whether a lower (Robison et al., 2002) or higher (Cho et al., 1993) CES-D cut-point is preferable. Different depression rates between Hispanic subgroups are reported (Oquendo et al., 2001), but little is known about antidepressant use among Dominicans, who made up 56% of our Hispanic sample.

Our study has a number of limitations. The survey did not include a “gold standard” diagnostic interview. Assessment of depressive symptoms at one time-point is a limitation, but is unlikely to explain the race and gender disparities.

The CES-D short form used was field-tested in a Caucasian sample (Kohout, Berkman, Evans, and Cornoni-Huntley, 1993) and is not fully validated in Hispanic and inner-city African American samples. Selection bias may have occurred in combining cohorts recruited at different times, but our comparison of cohorts suggests this did not significantly affect our main findings. Recruitment using government registries and the geographically restricted sample require that the findings, particularly in Hispanics, be interpreted with caution. We cannot verify medication adherence since self-report was used and subjects tend to under-report antidepressant use. The survey did not gather detailed data on health insurance or current use of psychotherapy. Relatively little has been reported about antidepressant use in ethnically diverse geriatric populations. The results suggest a need for further study.

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**Table 1**

Relationship of Center for Epidemiological Studies-Depression Scale (CES-D) Score to Socio-demographic and Clinical Variables (N=2,629)

Variable	N (%of sample)	CES-D Score Mean (SD)	Test Statistic (Z), [χ <sup>2</sup> ], rho	p value
Age	2629 (100)		0.06 <sup>†</sup>	0.004
Sex			(-6.61)	<0.001
Female	1790 (68.1)	2.15 (2.25)		
Male	839 (31.9)	1.50 (1.82)		
Race			(-4.95)	<0.001
White	737 (28)	1.88 (1.98)		
African American	846 (32.2)	1.48 (1.87)		
Ethnicity			(-6.94)	<0.001
Hispanic	1046 (39.8)	2.35 (2.37)		
Non-Hispanic	1583 (60.2)	1.67 (1.93)		
Education	2629		-0.11 <sup>†</sup>	<0.001
Income (median split)			(-6.79)	<0.001
Lower	942 (46.8)	2.29 (2.35)		
Higher	1071 (53.2)	1.57 (1.88)		
Occupational level		Low>Mid>High	[38.26] <sup>*</sup>	<0.001
Married			(-6.78)	<0.001
Yes	790 (30.2)	1.49 (1.87)		
No	1823 (69.8)	2.13 (2.22)		
Activities of daily living (ADL) <sup>1</sup>	2629 (100)		0.23 <sup>†</sup>	<0.001
Instrumental activities of daily living(IADL) <sup>1</sup>	2629 (100)		0.24 <sup>†</sup>	<0.001
Living alone			(-2.84)	0.005
Yes	1250 (48.1)	2.09 (2.23)		
No	1349 (51.9)	1.81 (2.05)		
Medical burden <sup>2</sup>	2629 (100)		0.14 <sup>†</sup>	<0.001

<sup>†</sup> Spearman correlation.

<sup>\*</sup> Kruskal-Wallis test for occupational level with df=2: low (unskilled, semi-skilled); mid (skilled, clerical); high (manager, professional).

<sup>1</sup> Total number of ADL and IADL complaints.

<sup>2</sup> Total number of non-psychiatric medical problems (hypertension, diabetes, cardiac, stroke, arthritis, pulmonary, thyroid, liver, renal, peptic ulcer, peripheral vascular, cancer, Parkinson's disease, multiple sclerosis, tremor).

**Table 2**  
Multiple Logistic Regression Analysis of Antidepressant Medication Use (N=2,469)

Independent variable	Wald Test	Odds Ratio	95% Confidence Interval	p value <sup>a</sup>
Female sex	6.42	1.74	1.13 – 2.67	.011
Age	0.35	1.01	0.98 – 1.03	.56
Education	1.16	1.03	0.98 – 1.07	.28
Low occupation level	0.97	0.81	0.52 – 1.24	0.33
Hispanic ethnicity	7.37	1.89	1.19 – 3.01	.007
White race	8.03	1.97	1.23 – 3.16	.005
Married	0.03	0.96	0.62 – 1.49	.86
Living alone	1.11	1.22	0.85 – 1.75	.29
ADL problem (yes/no)	2.47	1.39	0.92 – 2.09	.12
IADL problem (yes/no)	1.83	1.31	0.89 – 1.92	.18
CES-D score	44.26	1.25	1.17 – 1.33	<.001
Medical burden <sup>b</sup>	19.32	1.25	1.13 – 1.38	<.001

<sup>a</sup> p-values for Wald chi-square tests with df = 1.

<sup>b</sup> Total number of non-psychiatric medical problems (hypertension, diabetes, cardiac, stroke, arthritis, pulmonary, thyroid, liver, renal, peptic ulcer, peripheral vascular, cancer, Parkinson's disease, multiple sclerosis, tremor).