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Insured and Non-insured Depressed Outpatients: How Do They Compare?

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Background. *The purpose of this study was to examine associations between clinical and demographic characteristics of depressed patients and source of payment for care. We attempted to confirm and extend findings from a previous study regarding the first 1500 participants enrolled in the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) study with 2541 participants enrolled in later stages of the trial.*
Methods. *Demographic, clinical, and presenting symptom features were compared among participants with public, private or no insurance.*
Results. *Compared to those having private or no insurance, participants with public insurance were older; more likely to be women, Hispanic, widowed or divorced, unemployed, and less educated; were more frequently seen in primary care; had greater medical comorbidity and functional impairment, and a later age of depression onset. The publicly insured also had a longer current episode, but fewer episodes over their lifetime. Both the publicly insured and the uninsured had poorer life satisfaction compared to those with private insurance. Participants without insurance were intermediate between those with public and private insurance regarding several demographic characteristics and measures of severity.*
Conclusions. *Depressed outpatients with public insurance demonstrated greater functional impairment, though they did not have a more severe depression per se. Participants without insurance seemed to be a heterogeneous group with a presentation intermediate between those with public and private insurance. Those with public insurance were*

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overrepresented in primary care clinics; therefore, clinicians in these settings need to be particularly vigilant in recognizing depression and offering appropriate treatments.

Keywords   Depression, Public clinics, Private clinics, Primary care, Outpatients, Clinical features, Demographic features

INTRODUCTION

There is a wide disparity in the source of payment for health care leading to differences in what kind of psychiatric treatment a depressed patient will seek and where the patient will seek it. It is well known that those with public insurance and those without insurance underutilize mental health services, despite showing a greater prevalence of mental or substance abuse disorders (1–4). Less is known about the characteristics of patients who seek care and the nature of depression among those who have differing sources of payment. An increased understanding of these factors could lead to more appropriate strategies for recognizing depression and, ultimately, to more timely or effective interventions.

Several studies have investigated the prevalence of depression in community populations, and the severity and presentation of depression in clinical populations. They have found that socioeconomic factors are important variables in the assessment of observed differences (5–8). Most of these studies have examined community samples; therefore, there is a dearth of information regarding socioeconomic factors across a range of patients who seek treatment for depression. In this study, we will examine the socioeconomic factor of insurance status in a population of treatment-seeking outpatients with major depressive disorder (MDD) to determine whether associations exist between patient clinical and demographic characteristics and source of payment for treatment.

To address this issue, we previously conducted a preliminary study using data from the first 1500 participants in the Sequenced Treatment Alternatives to Relieve Depression (STAR*D) study, a large-scale depression treatment protocol (www.star-d.org). We divided participants into groups based upon whether they had private insurance, public insurance or no insurance. Those with public insurance had the greatest number and severity of comorbid medical conditions and were more likely to attend primary care clinics as compared to participants with private or no insurance. Participants with public insurance had the longest duration of their current MDD followed by those with no insurance and by those with private insurance. Compared to participants with private insurance, those with public or no insurance were more likely to be unmarried, unemployed, less educated, and a member of an ethnic minority. Participants with public or no insurance had more previous suicide attempts and, in general, had greater depression severity, more comorbid psychiatric symptoms, lower life satisfaction scores, and greater functional impairment than those with private insurance—findings that remained significant after adjusting for gender, employment, medical comorbidity, race, and length of illness (9).

The goal of the present study was to determine whether the findings of the preliminary study could be replicated with a larger sample recruited in the latter stages of the STAR*D trial. This is a unique opportunity to not only utilize a very large sample (compared to others' previous work), but also attempt to replicate findings in the same clinics from where the original population was recruited. In addition, changes in recruitment strategies after the initial 1500 enrollees led to increased numbers of participants who were members of ethnic minorities and were seen in primary care. Based upon the findings of the preliminary report, we hypothesized that participants with public insurance or with no insurance would have a more severe and chronic course of depression, including more medical and psychiatric comorbidity.

METHODS

A complete description of the background, population and methods of the STAR*D study have been presented elsewhere (10,11). A brief summary of the study design, population, and outcome measures is presented below.

Study Design

STAR*D aimed to define prospectively which of several treatments are most effective for outpatients with nonpsychotic MDD, particularly those who do not respond to a first-line treatment. After providing written informed consent, participants were enrolled into the first level of treatment, a 12-week open trial with citalopram, a selective serotonin reuptake inhibitor. Those with an adequate clinical response could then enter a 12-month naturalistic follow-up phase. Those who did not experience remission of their symptoms or had unacceptable side effects could enter a series of subsequent levels of randomized treatments including medications and/or cognitive therapy switch or augmenting strategies (10,11). Enrollment for the study began in July 2001 and ended in April 2004.

Each of 14 Regional Centers (RCs) across the United States oversaw the implementation of the protocol at clinical sites that provided primary (n=18) or psychiatric (n=23) care in settings that included private care, public clinics, and Veterans Administration facilities.

Participants were grouped according to self-reported insurance status: private, public, or none. The public insurance category included participants with Medicaid and/or Medicare. Participants with private insurance in addition to Medicaid and/or Medicare were classified in the private insurance group.

No attempt was made to ascertain the reasons participants had a particular kind (or lack) of insurance.

Study Population

The study protocol was developed according to the principles of the Declaration of Helsinki. All risks, benefits, and adverse events associated with protocol treatments were explained to study participants, who provided written informed consent (in English or Spanish) prior to study participation.

A sample representative of treatment-seeking outpatients with nonpsychotic MDD was generated using the following inclusion criteria: 1) outpatients, aged 18–75 years, for whom the treating clinician felt antidepressant medication was appropriate; 2) a DSM-IV diagnosis of nonpsychotic MDD; and 3) a score of >14 on the 17-item Hamilton Rating Scale for Depression (HRSD$_{17}$) (12,13). Participants with suicidal ideation were eligible, as long as outpatient treatment was deemed safe by the treating clinician. Participants with currently active substance abuse were eligible as long as they did not require inpatient detoxification prior to study entry.

The study used the following limited exclusion criteria: 1) presence of general medical illnesses or concomitant medications that contraindicated a STAR*D treatment; 2) lifetime diagnosis of MDD with psychotic features, schizophrenia, schizoaffective disorder, or bipolar disorder; 3) current primary diagnosis of an eating disorder or obsessive-compulsive disorder; 4) well-documented history of non-response or intolerability in the current major depressive episode (MDE) to study treatments offered in the first two treatment steps of the protocol; 5) need for concomitant psychotropic medication (excluding anxiolytic or hypnotic medication); 6) currently engaged in evidence-based psychotherapy for depression (e.g., cognitive/behavioral, interpersonal); and 7) pregnancy or intent to conceive within the six to nine months subsequent to enrollment.

Assessments

At the screening/baseline visit, a clinical research coordinator (CRC) collected demographic and clinical information. Participants completed a modified paper and pencil version of the Psychiatric Diagnostic Screening Questionnaire (PDSQ) (14) to assess symptoms of 11 concurrent DSM-IV Axis I disorders in five areas. For the purpose of this manuscript, cut-off scores were used for each category to determine whether threshold levels for corresponding disorders indicated presence or absence of the disorder (14). The CRC administered the HRSD$_{17}$ to assess depression symptom severity and the Cumulative Illness Rating Scale (CIRS) (15–17) to assess the level of general medical conditions. Three scores are generated from the CIRS: Categories Endorsed indicate the number of 14 domains with a comorbid general medical condition (GMC), the Severity Index (0 to 4) indicates the average severity score of the domains endorsed, and Total Severity combines the number of domains with the severity scores.

Within 72 hours of the baseline visit, the Research Outcome Assessor (ROA) used a telephone interview to complete the HRSD$_{17}$, the 30-item Inventory of Depressive Symptomatology—Clinician-Rated (IDS-C$_{30}$) (18–21), and the 5-item Income and Public Assistance Questionnaire (IPAQ). An Interactive Voice Response system (IVR) collected information from the 16-item Quick Inventory of Depressive Symptomatology—Self-Report (QIDS-SR$_{16}$) (18,19) to assess depression symptom severity, the 12-item Short-Form Health Survey (SF-12) (22) to measure physical and mental health perceptions (higher scores indicating better functioning) and several quality of life measures including the 5-item Work and Social Adjustment Scale (WSAS) (23) (higher scores indicate worse functioning), and the 16-item Quality of Life Enjoyment and Satisfaction Questionnaire (Q-LES-Q) (24) (higher scores indicate better quality of life).

Data Analyses

For the comparison across insurance categories, percentages are presented for categorical socio-demographic variables within each group, along with the p-values based on a chi-square test that compared the rates across groups. Means and standard deviations are presented for continuous socio-demographic measures, general medical conditions, measures of psychiatric comorbid symptoms, and measures of severity of depression. Parametric and nonparametric one-way analysis of variance models were used to compare differences among insurance status groups.

Simple linear regression models, with insurance type as an independent variable, were used to assess the relationship of insurance status with measures of depressive severity, function and quality of life. Multiple regression methods were used to determine the independent effect of insurance status after controlling for the effect of gender, race, employment, length of illness and CIRS total score.

The association between insurance status and presence (a score >1) or absence of specific depressive symptoms as measured by individual IDS-C$_{30}$ items was assessed using a logistic regression model. Multiple variable logistic regression models were used to adjust for the effect of gender, race, employment, length of current illness, and CIRS total score when assessing the relationship between insurance status and the presence of each symptom.

The statistical significance for all tests was set at p < .01. When significant differences were detected, pairwise post-hoc tests were conducted with a Bonferroni correction.

RESULTS

The demographics of the 2541 participants are shown in Table 1. Participants were more likely to be women (63%),

Table 1 Baseline Characteristics (N=2541)

	N	%
Setting		
Primary Care	1063	42
Specialty Care	1478	58
Race		
White	1917	75
Black or African-American	436	17
Other	188	8
Ethnicity – Hispanic	369	15
Gender – Female	1589	63
Marital status		
Never married	778	31
Married	1035	41
Divorced	635	25
Widowed	87	3
Employment status		
Employed	1427	56
Unemployed	969	38
Retired	139	6
Family History of Depression	1353	54

	Mean	SD	Median	Obs. Range
Age	40.5	13.3	40	18–75
Education (years of schooling)	13.3	3.2	13	0–26
Income (dollars)[a]	2402	3311	1500	0–50000
Age at onset of 1st MDE	25.6	14.6	21	2–74
Number of MDE episodes	6.0	12.5	3	1–99
Length of current MDE episode (months)	24.0	50.2	8	0–586
Length of illness (years)	14.9	13.1	11	0.5–63
$HRSD_{17}$	19.6	6.5	20	1–38
$IDS\text{-}C_{30}$	35.4	11.4	35	3–70
$QIDS\text{-}SR_{16}$	15.5	4.4	16	2–27

MDE=Major depressive episode; $HRSD_{17}$ =17-item Hamilton Rating Scale for Depression; $IDS\text{-}C_{30}$=30-item Inventory of Depressive Symptomatology – Clinician Rated; $QIDS\text{-}SR_{16}$=16-item Quick Inventory of Depressive Symptomatology – Self-Rated.

[a]Monthly household Income

White (75%), employed (56%), and attending psychiatric (58%) as opposed to primary care clinics. Approximately 15% of participants were of Hispanic origin. The mean age was 40.5 + 13.3 years and the mean educational level attained was 13.3 + 3.2 years. The average length of time from illness onset was 14.9 + 13.1 years, and the average length of the present depressive episode was 24 + 50.2 months (median=8 months).

Compared with the initial sample of 1500 participants reported previously (9), this cohort had more participants with either no insurance or with public insurance (36% vs. 31% and 15% vs. 12% respectively; p < .0001); more participants of Hispanic background (15% vs. 9%; p < .0001); more participants seen in primary care settings (42% vs. 34%; p < .0001); and lower annual incomes ($28,824 vs $29,080; p < .001). The current group also scored lower on the $HRSD_{17}$ administered by the ROA; however, this difference, though statistically significant (p < .0001), was less than one point and is, therefore,

unlikely to have clinical significance. The two groups were comparable on all other demographic variables.

Table 2 compares clinical and demographic characteristics of participants with private insurance (49%), public insurance (16%), and no insurance (36%). Compared with participants having private or no insurance, those with public insurance were older (p < .0001); more likely to be female (p < .0001), Hispanic (p < .0001), widowed or divorced (p < .0001), unemployed (p < .0001), and to have less education (p < .0001); and were more often seen in primary care (p < .0001). They also had a later age of onset of the first MDE (p < .0001), fewer discrete episodes of depression (p < .0001), and a longer current episode of depression (p < .0001). Participants with public insurance were more likely to be African–American (p < .0001) compared to those with private insurance, but not those without insurance.

Privately insured participants had a lower rate of past suicide attempts compared to uninsured and publicly insured participants (p < .0001), but no differences were found in prevalence of current suicidal ideation. Privately insured and uninsured participants were seen in approximately equal numbers in primary and specialty care.

When compared to participants with private insurance, participants with no insurance were of similar age and were more likely to be male (p < .004), African–American (p <.0001), Hispanic (p < .001), widowed (p < .0001), unemployed (p < .0001), and have less education (p < .0001). They also had an increased length of the current episode of depression (p < .0001), but about equal numbers of past episodes.

Participants with public insurance had more general medical conditions than participants with private or no insurance (p < .0001), as is reflected in the CIRS categories endorsed, total score and severity index. Participants with no insurance had more general medical conditions than those with private insurance (p < .0001) based on the number of categories and the severity index (p < .003).

After adjusting for age, sex, race, employment and total CIRS score, we found no overall differences between the three groups on $IDS\text{-}C_{30}$. There was a significant difference on the $HRSD_{17}$ and $QIDS\text{-}SR_{16}$; participants who had private insurance showed a somewhat lower score than those of both other groups (p < .0017) (Table 3). Functional impairment secondary to physical symptoms (SF-12 physical scale) was more pronounced in participants with public insurance compared to those of both other groups (p < .0001). Participants with private insurance scored higher on the quality of life measure (Q-LES-Q) compared to those of both other groups, which had statistically equal scores (p < .0009).

We assessed whether there were any associations between insurance status and setting with regard to depression severity and scales of social and occupational function. The only significant association we found was in the SF-12 physical scale (p < .0006), which indicated somewhat worse self-rated physical functioning in participants with private and no insurance in primary care.

Table 2 Association of Socio-demographic Characteristics with Insurance Type

| | Insurance Type | | | | | | | Post-Hoc Tests p-value | | |
| | Private N=1203 (48.8%) | | Public N=384 (15.6%) | | None N=879 (35.6%) | | | | | |
Characteristic	n	%	n	%	n	%	p-value	Private vs. Public	Private vs. None	Public vs. None
Setting							**<.0001**	**<.0001**	0.3298	**<.0001**
Primary Care	459	38	264	69	317	36				
Specialty Care	744	62	120	31	562	64				
Race							**<.0001**	**<.0001**	<.0001	0.1211
White	981	82	257	67	622	71				
African-American	159	13	95	25	173	20				
Others	63	5	32	8	84	9				
Ethnicity-Hispanic							**<.0001**	**<.0001**	0.0010	**<.0001**
No	1078	90	283	74	746	85				
Yes	124	10	101	26	133	15				
Gender							**<.0001**	**<.0001**	0.0042	**<.0001**
Male	448	37	98	26	382	43				
Female	755	63	286	74	497	57				
Marital status							**<.0001**	**<.0001**	<.0001	**0.0002**
Never married	342	28	97	25	305	35				
Married	601	50	135	35	280	32				
Divorced	232	19	123	32	266	30				
Widowed	28	2	29	8	28	3				
Employment status							**<.0001**	**<.0001**	**<.0001**	**<.0001**
Employed	888	74	100	26	410	47				
Unemployed	242	20	240	63	450	51				
Retired	73	6	44	11	19	2				
Suicidality										
Attempted Suicide							**<.0001**	0.0205	**<.0001**	0.3474
No	1047	87	317	83	705	80				
Yes	153	13	67	17	173	20				
Present Suicide Risk							0.4260			
No	1163	97	377	98	853	97				
Yes	37	3	7	2	25	3				

| | Insurance Type | | | | | | | Post-Hoc Tests p-value | | |
| | Private N=1203 (48.8%) | | Public N=384 (15.6%) | | None N=879 (35.6%) | | | | | |
Characteristic	N	Mean	SD	Mean	SD	Mean	SD	p-value	Private vs. Public	Private vs. None	Public vs. None
Age	2464	40.2	13.4	43.7	14.2	39.8	12.4	**<.0001**	**<.0001**	>.9998	**<.0001**
Education (years of schooling)	2461	14.3	3.0	11.5	3.2	12.9	3.1	**<.0001**	**<.0001**	**<.0001**	**<.0001**
Age at onset of 1st MDE	2435	25.6	14.2	29.3	16.8	24.3	13.9	**<.0001**	**<.001**	0.0304	**<.0001**
Number of MDE	2085	6.5	13.8	4.8	11.9	5.9	11.1	**<.0001**	**<.0001**	0.4608	**<.0001**
Length of current episode (months)	2440	19.8	44.0	28.5	49.3	27.0	54.2	**<.0001**	**<.0001**	**<.0001**	**0.0202**
Length of illness (years)	2433	14.7	13.0	14.7	13.6	15.5	12.9	0.0914			
GMC (CIRS)											
Categories Endorsed	2466	2.6	2.2	3.6	2.4	3.0	2.3	**<.0001**	**<.0001**	**<.0001**	**<.0001**
Total Score	2466	3.6	3.5	5.8	4.3	4.3	3.7	**<.0001**	**<.0001**	**<.0003**	**<.0001**
Severity Index	2466	1.1	0.6	1.4	0.7	1.2	0.6	**<.0001**	**<.0001**	**<.0034**	**<.0001**

GMC=General Medical Conditions; CIRS=Cumulative Illness Rating Scale; MDE=major depressive episode.

Table 3   Association of Insurance Type with Function and Depressive Symptom Severity

| | | Insurance Type | | | | | | | | Post-Hoc Tests p-value | | |
| | | Private N=1203 (48.8%) | | Public N=384 (15.6%) | | None N=879 (35.6%) | | | | | | |
Characteristic	N	Adj. Mean	SE	Adj. Mean	SE	Adj. Mean	SE	Unadj. p-value	Adj. p-value[a]	Private vs. Public	Private vs. None	Public vs. None
SF-12												
Physical	2242	49.5	0.50	45.4	0.65	48.9	0.52	**<.0001**	**<.0001**	**<.0001**	0.5226	**<.0001**
Mental	2242	28.1	0.43	29.0	0.56	27.6	0.45	**<.0001**	0.0457	0.3524	0.6926	0.0412
WSAS	2242	22.8	0.46	22.5	0.60	23.9	0.48	**<.0001**	0.0126	>.9914	0.0410	0.0460
Q-LES-Q	2242	44.3	0.75	40.7	0.97	41.6	0.78	**<.0001**	**<.0001**	**<.0009**	**<.0008**	>.9995
HRSD$_{17}$	2257	19.1	0.31	20.1	0.41	19.6	0.33	**<.0001**	0.0497	0.0626	0.3198	0.7752
IDS-C$_{30}$	2243	34.1	0.56	35.7	0.73	34.8	0.58	**<.0001**	0.0748			
QIDS-SR$_{16}$	2449	14.8	0.21	15.4	0.26	15.5	0.21	**<.0001**	**0.0017**	0.1220	**0.0015**	>.9850

[a]Adjusted for Age, Sex, Race, Employment Status, and CIRS Total Score.
SF-12=12-item Short Form Health Survey; WSAS=Work and Social Adjustment Scale; Q-LES-Q=16-item Quality of Life Enjoyment and Satisfaction Questionnaire; HRSD$_{17}$=17-item Hamilton Rating Scale for Depression; IDS-C$_{30}$=30-item Inventory of Depressive Symptomatology – Clinician Rated; QIDS-SR$_{16}$=16-item Quick Inventory of Depressive Symptomatology – Self-Rated.

Table 4 shows the prevalence of specific symptoms of depression at entry, obtained from the IDS-C$_{30}$. Comparisons among the groups are shown, both before and after adjusting for age, sex, race, employment status, CIRS total score, and baseline severity. In general, differences were not significant or of relatively small magnitudes. Of the 30 items, there were significant differences (adjusted values) on only weight decrease, sexual interest, interpersonal sensitivity and leaden paralysis (shown in bold). Participants with public insurance had the highest scores for leaden paralysis, while those with private insurance had higher scores on interpersonal sensitivity.

Table 5 lists the presence of a number of psychiatric syndromes based upon thresholds, using 90% specificity, on the PDSQ. After adjustment for age, sex, race, employment status, and CIRS total score, we found significant differences between groups regarding the presence of panic and drug abuse (shown in bold). After Bonferroni corrections, post-hoc comparisons showed less panic in the private insurance group and more drug abuse in the no insurance group.

DISCUSSION

This study, reporting on over 2500 participants, replicates and extends a number of the findings previously reported on the first 1500 participants in STAR*D regarding clinical and demographic characteristics in participants with public, private or no insurance. However, some findings differed between the two samples. Due to a shift in recruitment strategies, more participants in the current cohort had public or no insurance, were seen in primary care, were of Hispanic ethnicity and had lower incomes. In the current cohort, participants with public insurance appeared to be more distinct from those with no insurance, demonstrating a different demographic pattern, more comorbidity and greater functional impairment.

Participants with public insurance differed from those with private or no insurance regarding many demographic and clinical characteristics: they were older; more likely to be women, Hispanic, widowed or divorced, unemployed, and less educated; were more frequently seen in primary care settings; and had a greater number and severity of general medical conditions. They had a later age of onset for their depression, a greater length of current episode, and fewer depressive episodes over their lifetimes.

Despite the fact that the public insurance group had the highest scores on two of the three depression measures, after adjustment for age, sex, race, employment, and CIRS scores, there was only a significant difference found on one scale (the self report measure) and that was between those with private insurance and those without insurance. The QIDS-SR$_{16}$ measures only the 9 core symptom domains that diagnose an MDE, while the HRSD$_{17}$ and the IDS-C$_{30}$ measure additional symptoms such as anxiety. Thus, these findings are consistent with the suggestion that participants with public insurance reported more comorbid symptoms, commonly associated with somatic complaints, and displayed more functional impairment from physical conditions than those of either of the other groups. When these factors are controlled statistically, the higher depression scores are no longer significant. Publicly insured participants and participants without insurance showed poorer life satisfaction compared to those with private insurance. These findings highlight the need to look broadly at quality of life issues in depressed patients, including perceived disability, rather than relying solely on scales that measure depressive symptoms.

We reported previously (9), as have others (2,7,25,26), that participants with public insurance were more likely to have

Table 4 Association of Symptoms with Insurance Type

	Insurance Type							
	Private N=1203 (48.8%)		Public N=384 (15.6%)		None N=879 (35.6%)		Unadj. p-value	Adj. p-value[a]
IDS-C$_{30}$ Items	%	OR[a]	%	OR[a]	%	OR[a]		
Sleep onset insomnia	62	1	73	1.02	71	1.27	<.0001	0.1062
Middle insomnia	77	1	85	1.09	81	1.12	0.0039	0.6899
Early morning insomnia	48	1	59	1.09	53	1.06	0.0010	0.7913
Hypersomnia	24	1	22	0.97	26	1.08	0.4379	0.7321
Mood (sad)	97	1	98	1.34	98	1.09	0.4967	0.8333
Mood (irritable)	81	1	83	1.02	82	0.99	0.7039	0.9899
Mood (anxious)	81	1	86	1.20	86	1.38	0.0036	0.0843
Mood reactivity	75	1	70	0.65	73	0.78	0.1845	0.0139
Mood variation	21	1	17	0.76	21	0.95	0.2665	0.2940
Quality of mood	76	1	72	0.76	74	0.88	0.2240	0.1799
Appetite decrease	44	1	44	0.76	43	0.80	0.8858	0.0586
Appetite increase	19	1	24	1.30	22	1.28	0.0820	0.0873
Weight decrease	30	1	29	0.68	28	0.72	0.6459	**0.0070**
Weight increase	22	1	27	1.20	23	1.06	0.1536	0.5045
Concentration	90	1	88	0.64	91	1.00	0.2742	0.1118
Outlook (Self)	80	1	78	0.71	79	0.79	0.6051	0.0915
Outlook (Future)	75	1	77	1.01	75	0.96	0.7385	0.9026
Suicidal ideation	45	1	51	1.06	50	1.08	0.0283	0.7531
Involvement	83	1	86	0.93	84	0.91	0.2523	0.8165
Energy	88	1	92	1.20	89	0.91	0.0799	0.5687
Pleasure	70	1	74	1.03	75	1.09	0.0634	0.7471
Sexual interest	65	1	65	0.74	61	0.72	0.1395	**0.0066**
Psychomotor slowing	61	1	67	1.02	61	0.91	0.1317	0.6061
Psychomotor agitation	59	1	64	0.97	67	1.21	0.0026	0.1531
Somatic (pain) complaints	74	1	85	1.44	78	1.10	<.0001	0.1387
Sympathetic arousal	65	1	81	1.58	70	1.13	<.0001	0.0275
Panic/phobic symptoms	34	1	48	1.50	41	1.25	<.0001	0.0141
Gastrointestinal symptoms	38	1	49	0.99	40	0.90	0.0030	0.5926
Interpersonal sensitivity	63	1	56	0.61	62	0.88	0.0551	**0.0038**
Leaden paralysis	38	1	54	1.47	48	1.33	<.0001	**0.0039**

[a]Adjusted for Age, Sex, Race, Employment Status, CIRS Total Score and baseline severity.
IDS-C$_{30}$=30-item Inventory of Depressive Symptomatology – Clinician Rated.

greater functional impairment and have more medical comorbidities, known risk factors associated with poorer treatment response (27). Also in accordance with these studies, we found that participants with public insurance are seen more often in primary care where the recognition and adequacy of vigorous treatment may not be optimal (28,29). Therefore, these depressed patients with a greater potential risk of poor treatment response are more likely to seek treatment at facilities that have greater difficulties in recognizing their depression and in providing adequate treatment.

On measures of comorbidity and functional impairment, publicly insured participants were more impaired than both other groups. Their MDD was also characterized more by physical symptoms and by symptoms related to anxiety, which are often experienced physically and thus add to the somatic presentation of the depression. As noted above, they were more often seen in primary care clinics. To address the question of whether being seen in primary care influenced measures of

depression severity and functional impairment, we ran analyses looking at locus of care vs. insurance status. Only the SF-12 showed a significant interaction, with physical impairment more likely to be seen in those attending primary care.

Taken together, these findings point to the possibility that patients from the public sector (which included more patients from minority backgrounds) experience their depression with increased physical symptoms compared to patients with private insurance, and to an extent, those with no insurance, findings consistent with previous work (25,30–33). Alternatively, the publicly insured may be a more medically ill group, and their depression might be a reflection of this greater medical burden. In either case, primary care clinicians would need to be more vigilant in looking for depression, as these patients may couch their complaints in somatic terms.

There is substantial room for improvement regarding recognition of depression in primary care settings. Edlund et al. found that only 21% of patients attending primary care clinics

Table 5   Association of Insurance Status with Psychiatric Comorbidity

Psychiatric Comorbidity Present	Insurance Type						Un adj. p-value	Adj. p-value[a]
	Private N=1203 (48.8%)		Public N=384 (15.6%)		None N=879 (35.6%)			
	%	OR	%	OR[b]	%	OR[b]		
Anxiety Disorder	18	1.0	27	1.25	22	1.13	0.0016	0.2995
OCD	11	1.0	20	1.57	15	1.20	0.0001	0.0354
Panic	9	1.0	21	2.06	14	1.54	<.0001	**0.0001**
Social Phobia	29	1.0	27	0.85	31	1.03	0.3277	0.3742
PTSD	15	1.0	24	1.35	17	0.97	0.0003	0.0883
Agoraphobia	9	1.0	17	1.46	14	1.39	<.0001	0.0485
Alcohol Abuse	10	1.0	11	1.25	14	1.39	0.0145	0.0685
Drug Abuse	6	1.0	7	1.38	11	1.73	<.0001	**0.0089**
Somatoform	2	1.0	5	1.79	2	0.93	0.0010	0.1208
Hypochondriasis	3	1.0	9	1.62	5	1.01	0.0001	0.1217
Bulimia	14	1.0	11	0.71	10	0.67	0.0037	0.0189
PDSQ Count							<.0001	0.0096
0	42		33		36			
1	27	1	24	1.40	26	1.18		
2	14		15		16			
3	7		8		9			
≥4	10		20		13			

[a]Adjusted for Age, Sex, Race, Employment Status and CIRS Total Score.
[b]Adjusted Odds Ratio.
OCD=Obsessive Compulsive Disorder; PTSD=Post Traumatic Stress Disorder.
PDSQ=Psychiatric Diagnostic Screening Questionnaire.

reported being asked questions related to screening for depression (29). Interestingly, insurance status did not differentiate those who were screened vs. those who were not. When depression is recognized, utilization of algorithm-based and depression disease management programs in primary care has shown that significant improvements can be obtained in the outcomes for depressed patients (34,35).

Participants with no insurance, regardless of the locus of care, showed results that were intermediate between those with public insurance and those with private insurance, including: more likely to be from a minority group, having more general medical conditions and functional impairment related to physical symptoms, and having lower life satisfaction. About one-half of the participants without insurance were employed. Thus, a significant number were working, but uninsured, adding to the heterogeneity of this group.

Surprisingly, more uninsured participants received care in psychiatric rather than primary care settings. This finding may be somewhat an artifact of STAR*D, where assessment and treatment were provided at no charge when no means of reimbursement was available. It may also reflect a presentation of depression with less of a somatic component and more self-reported disability related to mental symptoms, which could prompt affected individuals to seek treatment in a psychiatric care setting rather than a primary care setting. This heterogeneous uninsured group may include subgroups that, upon examination of the variables assessed in this study, resemble participants with public or private insurance. If such resemblances exist, it would seem to indicate that their needs cannot be determined solely by the fact that they have no insurance. Instead, their needs may vary depending upon the reasons why they have no insurance, a factor that we cannot assess in the current study.

It has been reported that participants from minority groups and those without insurance are less likely to be prescribed or fill a prescription for antidepressants (36–38) and that patients who seek care in the public sector have a relatively poor response to treatment, even when medication algorithm protocols are employed (39,40,41). Taken together, these data would predict that poor and minority patients (e.g., those with public insurance) are less likely to achieve remission of their depression. In STAR*D, large numbers of participants were treated in a series of stepwise treatments with maximum dosing of medications provided free of charge; therefore, we will be able to control for some of these factors when assessing treatment responses across the three groups of patients.

Several limitations of this study should be noted. The participants in our cohort were outpatients, nonpsychotic, and with no history of bipolar disorder. Thus, they do not represent patients with a more severe depressive illness, though participant depression severity scores at entry were in the range, or higher, of those usually reported in clinical trials of antidepressants. Also, despite the fact that we studied a large number of participants, made efforts to include an ethnically

representative sample, and recruited from both psychiatric and primary care settings across the country, our study cohort might not be representative of all geographic regions. Much of the historical data used in this study, as well as medical history data, were based solely on participant report and could be subject to recall bias. Significantly, we did not query participants on why they had a particular type of insurance, or were uninsured. Finally, we were unable to ascertain the timing of when participants obtained insurance in relation to their depressive illness; thus, causal inferences could not be drawn.

In summary, depressed participants who had public insurance presented with more comorbid physical and psychological symptoms, were more disabled and functionally impaired, and had a more chronic course of illness. Whether their having public insurance was the result of these factors or, in some way, preceded their depression cannot be ascertained by these data. Participants without insurance appeared to be a heterogeneous group, reflecting both working people who have no access to insurance and those who are unemployed. The needs of such a heterogeneous group cannot be determined by insurance status alone, but may vary depending upon their reasons for being uninsured. Our data underscore the importance of socioeconomic factors in the global presentation of depression. Future reports will focus on the extent to which socioeconomic factors influence treatment outcome.

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