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Predictors of Poor Response to Depression Treatment in Primary Care

Rebecca C. Rossom,

HealthPartners Institute, Minneapolis, Minnesota

Leif Solberg,

HealthPartners Institute, Minnesota

Gabriela Vazquez Benitez,

HealthPartners Institute, Minneapolis, Minnesota

Robin Whitebird,

University of St. Thomas

Lauren Crain,

HealthPartners Institute, Minnesota

Arne Beck, and

Kaiser Permanente of Colorado - Institute for Health Research, Denver, Colorado, United States

Jurgen Unutzer

University of Washington

Rebecca C. Rossom: rebecca.c.rossom@healthpartners.com

Abstract

Objective—Depression is pervasive and costly, and the majority of depression is treated in primary care. The objective was to identify patient characteristics predictive of poor depression outcomes in primary care clinics.

Methods—This observational study followed 792 patients receiving usual care of their depression in 83 clinics across Minnesota for at least 6 months between 2008 and 2010. The primary outcome was an ordinal outcome of six-month remission and response without remission assessed via telephone-administered PHQ9 questionnaires. Associations of patient characteristics with the primary outcome were assessed using ordinal logistic regression.

Results—The majority of patients were female, Caucasian and employed, with some college education and good-to-excellent self-rated health. At baseline, 32% had mild depression, 40% moderate, 20% moderately-severe and 8% severe. One-third of patients had psychotherapy or psychiatric care in addition to antidepressant medications. At six months, only 47% of patients obtained depression remission/response. Patients were significantly less likely to experience remission/response if they rated their health as poor-to-fair or were unemployed, and more likely to achieve remission/response if they were younger or had mild depression.

Conflicts of Interest: For the remaining authors none were declared.

Conclusions—Patients with poor-to-fair health or unemployment are less likely to respond to usual depression care, and may be good candidates for limited but potentially more effective intensive treatment resources for depression.

INTRODUCTION

Depression is the second most common chronic condition treated by primary care providers, with an estimated 12% of primary care patients experiencing major depression.^{1,2} Despite this prevalence and the availability of effective evidence-based treatments, most depressed patients do not have adequate treatment outcomes. In primary care, the most common treatment is antidepressant medications,³ with second generation antidepressants accounting for over 90% of prescriptions.⁴ However, in a study of primary care patients receiving antidepressants as their main treatment by Solberg and colleagues, only 50% demonstrated improvement after 3 months, and 15% experienced increased depression severity.⁵ Another study by Vuorilehto and colleagues found that only 25% of primary care patients with major depression achieved and maintained remission at 18 months.⁶ Clearly, there is room for improvement in primary depression care.

Developing a clearer idea of which patients are least likely to respond to usual care may help providers focus more intensive interventions, including stepped care or collaborative care, on these patients to improve their chances of recovering from depression. Prior research has shown comorbid psychiatric⁷⁻⁹ and medical conditions,^{10,11} chronic pain,⁷ early age of depression onset,^{7,9} recurrent depressive episodes,⁹ severity of depression^{7,9} and lower socioeconomic status^{12,13} to be predictors of poor depression remission or response. However, much of these data were collected as part of clinical trials with select patient populations and/or in psychiatric care settings, not in primary care settings. The small number of studies of depression in primary care have been limited by selection bias, small sample sizes, and short follow-up times.¹⁴ As part of evaluating a statewide effort to improve primary care of depression through a collaborative care initiative, we had the opportunity to evaluate a large group of primary care patients receiving usual care prior to implementation of the new depression care model. This paper determines which patient characteristics best predict poor depression outcomes in primary care.

METHODS

Setting

Patients were enrolled in 83 urban and rural primary care clinics representing 23 medical groups across Minnesota prior to participation in a statewide collaborative care initiative.¹⁵ This study examines baseline and 6-month data that were collected between March 2008 and November 2010, prior to the implementation of collaborative care in these primary care clinics. This study was reviewed, approved, and monitored by the HealthPartners Institutional Review Board.

Participants

Inclusion and exclusion criteria aimed to include only adult patients receiving treatment for a new episode of depression in primary care. Of the 11,889 patients identified via

antidepressant pharmacy claims, patients were excluded due to inability to be contacted because of incorrect information (N=2684), inability to be reached within 21 days (n=2451), refusal of screening (n=1986), having a Patient Health Questionnaire-9 (PHQ9)¹⁶ score less than 7 (n=1723), filling an antidepressant for an indication other than depression (n=1481), not being treated in a participating clinic (n=247), not filling an antidepressant prescription (n=110) or inability to complete the screen due to language or cognitive barriers or time constraints (n=420). A total of 1168 patients completed a baseline survey, and 793 patients completed a 6-month follow-up survey. One patient did not complete a PHQ9 at 6 months, leaving 792 patients in the final sample.

Usual Care for Depression

Patients received usual care for their depression in their primary care clinics. Few if any clinics were systematically performing depression screening for patients; diagnosis occurred primarily during the routine course of clinic visits. All patients in this sample received antidepressants for depression. Patients could be co-managed for their depression by psychotherapists or psychiatrists.

Measures

Patient self-report questionnaires were completed via phone interviews and provided information on patient demographics, health status, depression severity, functional impairment, and past and current depression episodes and treatment. Health status was assessed via a single item asking patients to rate their overall health, commonly referred to as the SF-1.¹⁷ Functional impairment was assessed using an item from the Work Productivity and Activity Impairment Questionnaire,¹⁸ which asked what percentage of a patient's life was impaired by the patient's health.

Depression severity was assessed using the PHQ9,¹⁶ with scores of 7–9 indicating mild depression, 10–14 moderate, 15–19 moderately severe, and 20 severe. The primary outcome was an ordinal outcome of remission and response without remission. Remission was defined as achieving a follow-up PHQ9 score of 5; if patients met criteria for remission, they were not eligible to meet criteria for response.¹⁶ Response was defined as a follow-up PHQ9 score that was at least 50% lower than the patient's baseline score.¹⁶

Data Analysis

Descriptive statistics were used to characterize the study sample. First, the associations of patient characteristics with the ordinal outcome of remission and response without remission were assessed via ordinal logistic regression analysis for each factor adjusting for baseline PHQ9. The underlying assumption of this model is that the associations of patient characteristics with the ordered categories (remission vs. response without remission vs. neither) are the same. Next, a fully adjusted analysis was conducted using an ordinal logistic regression model that included all factors from each individual model that were statistically associated with remission/response at $p < .2$ to evaluate the independent effect of each patient characteristic on the outcome variable. Consistency between the two models indicates that other variables included in the first model (adjusted only for PHQ9) did not affect the association, while different association estimates between the two models indicate that other

factors are associated both with the factor of interest and the outcome. A p-value cutpoint of .2 was chosen to keep possible contributors to nonresponse in the model while excluding those that were clearly not associated. A p-value<.2 is able to detect an absolute difference of 10% between those who achieve remission/response and those who do not in our sample. Associations are presented as odds ratios and 95% confidence intervals. All analysis was done in SAS/STAT software, Version 9.3 (SAS Institute, Inc.).

RESULTS

A total of 792 primary care patients received usual care for depression (Table 1). Patient ages ranged from 18 to 88, with a mean age of 46 years. Women comprised 75% of patients, and most patients were white and had at least some college education. Over half of patients were in relationships, and two-thirds were employed. A majority reported a household income at least twice the federal poverty level, and most reported good-to-excellent health.

At baseline, 32% of patients had mild depression, 40% moderate, 20% moderately-severe and 8% severe as measured by the PHQ9. In addition to their primary care treatment of depression, 5% received treatment from a psychiatrist, 25% participated in individual psychotherapy and 3% participated in group therapy; in all, 29% of patients received some psychiatric or psychological treatment. For 39% of patients this was their first episode of depression, while 23% had experienced one prior episode and 38% at least two prior episodes of depression. Over half of patients felt their functioning was at least 50% impaired by their health.

At six months, 47% of patients achieved a combined ordinal outcome of remission (PHQ9<5; n=292) and response without remission (PHQ9<50% of baseline; n=83). Health status was most strongly associated with depression remission/response, with those who reported poor-to-fair health significantly less likely to experience depression remission/response than those with good-to-excellent health (Table 2; OR=.58, 95% CI=.42-.80 adjusted for PHQ9; OR=.63, 95% CI=.46-.88 in the fully adjusted model). Patients who were unemployed were also less likely to achieve remission/response (OR=.70; 95% CI=.52-.93 adjusted for PHQ9), although this association was no longer significant in the fully adjusted model. Patients who had lower incomes or who were treated by a psychiatrist or psychotherapist tended to have lower rates of remission/response, but these associations did not achieve statistical significance. In contrast, although there was not a monotonic association between age and remission and response, we found that patients under age 35 were more likely to achieve remission/response (OR=1.46, 95% CI=1.02-2.09 adjusted for PHQ9; OR=1.49, 95% CI=1.03-2.15 in the fully adjusted model). Similarly, patients with mild depression were more likely to achieve depression remission/response than those with more severe depression (OR=2.16, 95% CI 1.23-3.79 adjusted for PHQ9), but this association was no longer significant in the fully adjusted model.

DISCUSSION

Our results from this large sample of primary care patients indicate that patients were significantly less likely to achieve depression remission/response at 6 months if their self-

rated health status was poor-to-fair or they were unemployed, and more likely to achieve remission/response if they were younger or had mild depression. Patients with lower income and those who received specialty mental health care tended to have lower rates of remission/response that did not reach statistical significance.

Poorer self-rated health was by far the strongest predictor of depression remission/response in our population, and the only significant predictor in the fully adjusted model. Several studies have shown that adults with depression function poorly, on par with those with chronic medical conditions such as cardiopulmonary disease, arthritis, hypertension or diabetes,^{19–21} and that depression can prolong the recovery from certain medical illnesses and increase the risk of mortality.^{22,23} Further, depression can decrease energy and motivation and lead to poorer self-care behaviors.²⁴ Ultimately, patients with poorer health are more likely to develop depression,²⁵ and our study shows these patients are also less likely to achieve depression remission/response with usual care. Most primary care providers have easy access to patients' problem lists or past medical histories, surrogates for health status that have been found in other studies to be associated with poor depression outcomes,²⁶ and in this manner could identify patients less likely to respond to usual depression care. Even easier, perhaps, would be to ask patients to self-rate their health, as in our sample self-rated health was a robust predictor of depression remission/response.

Other predictors of poorer depression outcomes in our study included unemployment and lower income. A systematic review of observational studies in primary care similarly found lower education and unemployment to be significant risk factors for persistent depression,¹⁴ and other studies have shown a correlation between unemployment, lower income and the prevalence of depression.^{27,28,29,30} This relationship between depression and employment/income is thought to be bidirectional, with depression impairing one's ability to obtain and maintain employment and income level, and unemployment and poverty increasing one's risk for depression. In other research, poverty has been one of the most consistent predictors of depression,³¹ and common correlates to low income, including living in disadvantaged neighborhoods, having less access to educational and employment opportunities, and having concerns about safety and resources have significant detrimental effects on mental health beyond the direct effects of poverty itself,³² particularly for women.^{33,34} We should note that in our sample, the association between employment and depression outcomes was no longer significant when fully adjusted, likely because this association was confounded with health status. Regardless, our results unfortunately show that when disadvantaged people develop depression, their depression is less likely to respond to usual care.

Overall, 64% of patients in our sample had persistent depression without remission or response at 6 months. This rate of nonresponse is consistent with the few other studies of usual care of depression in primary care, which have found nonresponse rates ranging from 24% to 81% at six-to-twelve months.^{35–40} This rate of continued depression is troublesome, particularly given the significant morbidity and mortality that accompany depression.^{41,42} It may be that providing more intense depression treatment for patients at higher risk of nonresponse – those with poor health, more severe depression, or unemployment or lower income – could improve these relatively dismal rates of improvement, and this is an area for future study.

Our study has several potential limitations. Although we interviewed patients within 21 days of their index prescription for depression, some may have responded to depression treatment by the time of the interview. This may have resulted in lower PHQ9 scores at baseline than they might have had at the time of treatment initiation, possibly excluding some otherwise eligible patients from our sample. We studied patients receiving usual care in their primary care clinics, and thus could not control factors we might have in a randomized clinical trial, such as additional treatment by mental health providers. Our sample included only those patients who started antidepressant medications, and results cannot be generalized to other groups, such as patients receiving only psychotherapy, or those who opted for no treatment. Additionally, the generalizability of our data is limited by the fact that only 792 patients out of a potential sample of 11,889 patients completed our baseline and 6-month surveys. Some of these patients were excluded because they did not have depression or could not complete the measures, but others were excluded because we were unable to reach them or they refused screening, and thus potential selection bias may have influenced our results. Further, it is likely that patients who were willing to participate in our surveys may have been less severely depressed and perhaps higher functioning than the patients who declined. Generalizability was also limited by our sample being predominantly white and of relatively high socioeconomic status.

In summary, unemployment, poorer health, and more severe depression were significantly associated with lower rates of depression remission/response. Ideally, being better able to identify such predictors of poor depression outcomes may help clinics and care systems determine where limited but potentially effective intensive and evidence-based treatment resources for depression may be most helpful.

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Table 1

Distribution of Patient Characteristics at Baseline and Distribution According to Response and Remission at 6 months.

Characteristic	Distribution of Patient Baseline Characteristics		Distribution of Remission and Response at 6 months According to Patient Characteristics					
	N	Column %	Remission (n)	Row %	Response without remission (n)	Row %	Neither (n)	Row %
Total Sample	792	100	292	37	83	10	417	53
Age								
<35	196	25	86	44	15	8	95	49
35-49	273	35	93	34	25	9	155	57
50-64	251	32	86	34	32	13	133	53
65+	72	9	27	38	11	15	34	47
Gender								
Female	591	75	218	37	59	10	314	53
Male	201	25	74	37	24	12	103	51
Ethnicity								
White	711	90	265	37	76	11	370	52
Hispanic	19	2	8	42	3	16	8	42
Other	62	8	19	31	4	6	39	63
Relationship Status								
Partnered	486	61	185	38	53	11	248	51
Single	306	39	107	35	30	10	169	55
Location								
Urban	493	62	184	37	50	10	259	53
Rural	299	38	108	36	33	11	158	53
Employed								
Yes	532	67	212	40	57	10	263	49

Characteristic	Distribution of Patient Baseline Characteristics		Distribution of Remission and Response at 6 months According to Patient Characteristics					
	N	Column %	Remission (n)	Row %	Response without remission (n)	Row %	Neither (n)	Row %
No	260	33	80	31	26	10	154	59
Education								
HS or less	208	26	72	35	20	10	116	56
Some college or technical school	313	40	110	35	37	12	166	53
College graduate	271	34	110	41	26	10	135	50
Income								
> 2× the poverty level	544	69	214	40	59	11	271	50
2× the poverty level	248	31	78	32	24	10	146	59
Health Status								
Excellent/Very good/Good	573	72	237	41	56	10	280	49
Fair/Poor	219	28	55	25	27	12	137	63
PHQ9 score								
7–9	255	32	126	49	·	·	129	51
10–14	315	40	118	38	35	11	162	51
15–19	161	20	40	25	30	19	91	57
20+	61	8	8	13	18	30	35	57
% life impaired due to health								
<50	337	43	143	42	29	9	165	49
50	455	57	149	33	54	12	252	55
Treatment by a psychiatrist								
Yes	43	5	72	31	28	12	130	57

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Characteristic	Distribution of Patient Baseline Characteristics		Distribution of Remission and Response at 6 months According to Patient Characteristics					
	N	Column %	Remission (n)	Row %	Response without remission (n)	Row %	Neither (n)	Row %
No	749	95	220	39	55	10	287	51
Treatment by a psychotherapist								
Yes	201	25	62	31	23	11	116	58
No	591	75	230	39	60	10	301	51
Group Therapy								
Yes	26	3	9	35	.	.	17	65
No	766	97	283	37	83	11	400	52
Times treated for depression in past								
0	307	39	116	38	27	9	164	53
1	185	23	74	40	25	14	86	47
2+	300	38	102	34	31	10	167	56

Odds of Achieving Either Remission or Response at 6 months (OR, 95% CI) for Patient Characteristics at Baseline (N=792).^a

Table 2

Characteristic	Model 1: adjusted for baseline PHQ9 score ^b			Model 2: includes only variables from Model 1 with p<.2, adjusted for all other variables in the model ^c		
	OR	95% CI	p-value	OR	95% CI	p-value
Age			.18			.12
<35	1.46	1.02 – 2.09		1.49	1.03 – 2.15	
35–49	Ref	Ref		Ref	Ref	
50–64	1.10	.78 – 1.53		1.07	.76 – 1.51	
65+	1.33	.80 – 2.20		1.48	.86 – 2.56	
Gender			.75			
Female (reference: male)	.95	.70–1.30		--	--	
Ethnicity			.36			
White	Ref	Ref		--	--	
Hispanic	1.41	.59 – 3.41		--	--	
Other	.73	.43 – 1.24		--	--	
Relationship Status			.48			
Single (reference: partnered)	.90	.68–1.20		--	--	
Location			.96			
Urban (reference: rural)	1.01	.76 – 1.33		--	--	
Employed			.02			.12
No (reference: yes)	.70	.52 – .93		.76	.54 – 1.07	
Education			.61			
HS or less	.93	.66 – 1.32		--	--	
Some college or technical school	Ref	Ref		--	--	
College graduate	1.11	.81 – 1.53		--	--	

	Model 1: adjusted for baseline PHQ9 score ^b			Model 2: includes only variables from Model 1 with p<.2, adjusted for all other variables in the model ^c		
	OR	95% CI	p-value	OR	95% CI	p-value
Income			.052			.17
2× the poverty level (reference: >2× the poverty level)	.74	.55 – 1.01		.80	.58 – 1.11	
Health Status			.0008			.01
Fair/Poor (reference: excellent/very good/good)	.58	.42 – .80		.63	.46 – .88	
PHQ9 score ^d			.005			.12
7–9	2.16	1.23 – 3.79		1.60	.88 – 2.89	
10–14	1.67	.96 – 2.90		1.40	.79 – 2.48	
15–19	1.20	.66 – 2.18		1.03	.56 – 1.91	
20+	Ref	Ref		Ref	Ref	
% life impaired due to health			.12			.38
50 (reference: <50)	.80	.61 – 1.06		.88	.66 – 1.17	
Treatment by a psychiatrist			.09			.15
Yes (reference: no)	.57	.30 – 1.09		.61	.32 – 1.19	
Treatment by a psychotherapist			.07			.06
Yes (reference: no)	.74	.54 – 1.02		.73	.52 – 1.01	
Group Therapy			.30			
Yes (reference: no)	.66	.30 – 1.45		--	--	
Times treated for depression in past			.31			
0	Ref	Ref		--	--	
1	1.18	.84 – 1.69		--	--	
2+	.90	.66 – 1.23		--	--	

^a Outcome variables were coded as follows: 1=remission, 2=response w/o remission, 3=none.

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^bOdds ratios estimated using an ordinal logistic regression, adjusted for baseline PHQ9 score

^cOdds ratios estimated using an ordinal logistic regression, including only variables from Model 1 with $p < .2$, adjusted for all other variables in the model

^dIn Model 1, the OR for PHQ9 score is an unadjusted estimate