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Six-Month Longitudinal Patterns of Mental Health Service Utilization by Older Adults with Depressive Symptoms

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Abstract

OBJECTIVE—For community-dwelling older adults with depressive symptoms, aims were to: describe behavioral health service utilization patterns over a six-month period; and identify factors associated with service use, guided by a multidimensional, comprehensive theoretical model emphasizing the dynamic nature of service use patterns over time and social context.

METHODS—144 participants with depressive symptoms completed an in-person baseline interview and six monthly telephone follow-up interviews. Outcomes included use of antidepressants or counseling at each follow-up. Covariates included individual (demographic, need, prior treatment experience, intentions) and social context (stigma, advice) variables.

RESULTS—Approximately half of participants received no formal service (antidepressant or counseling; $n = 70$, 48%). Service use or non-use did not change for most participants. More participants with severe symptoms received antidepressants (25–37%) than those with milder symptoms (10–14%), although more of the milder cases started (62% vs. 49%) and stopped antidepressants (77% vs. 26%) at least once. Fewer individuals received counseling overall, with no clear patterns by symptom severity. In multivariate longitudinal analyses, service use at follow-up was independently associated with younger age, current major depressive episode, baseline use of antidepressant, intention to begin a new service at baseline, and receipt of advice to use services over follow-up.

CONCLUSIONS—Over a six-month period, the majority of older adults with depressive symptoms in this study continued use or non-use of mental health services. Demographic, need, attitudinal and social variables were related to service use over time. Addressing intentions and providing advice may facilitate uptake of services.

Older adults commonly experience depressive symptoms (1, 2), with serious health consequences (3–6), although they underutilize mental health services (7, 8). Theoretical frameworks have become increasingly complex in attempts to explain this underutilization, and the network-episode model (NEM; 9, 10, 11) has been recommended to guide this research (12). The NEM emphasizes the dynamic nature of entry and exits in service systems over time and the influence of individuals' social context on service use, in addition

to individual demographic, need, and attitudinal influences (13). The purpose of the current study was to examine individual and social covariates of mental health service utilization (prescription medication, psychotherapy) in a six-month longitudinal study of older adults with depressive symptoms. Although the NEM also includes formal service system characteristics (e.g., co-location of services), their inclusion was beyond this study's scope.

At the individual level, several demographic variables are associated with older adults' lower service use, including older age, male gender, racial/ethnic minority or lower education (14). Several practical barriers have been identified, including finances (14–16). Need (i.e., diagnosis, symptom severity, disability) emerges as another important factor (17–20). Unfortunately, older adults with psychiatric disorders are less likely than younger adults to perceive need for care (19, 21); approximately half do not perceive such need (21, 22). Stressful life events may heighten older adults' perception of need by increasing distress or use of services to address the stressors (23, 24). Related to attitudes, older adults' prior experiences with mental health services and future intentions also likely influence service use, such that individuals with prior experience and intention to seek services are more likely to use services (9–11).

Regarding social context, research on social networks has yielded contradictory findings, likely due to a focus on structure (e.g., size) as opposed to messages individuals perceive from their social network (9). For example, an older person's perceptions of negative views from society regarding mental illness (i.e., stigma; 25) is thought to serve as a barrier to initiation and continuation of services (26, 27). Advice may increase general medical service use by up to fivefold (28), although advice was associated with lower mental health service use for older adults in one study (29). That study did not assess the content of advice, although another study suggests older adults may receive less advice than middle-aged adults encouraging them to use mental health services (30).

Prior research has examined subsets of these factors, but experts have called for more complex, longitudinal designs to capture the dynamic process (9, 31). Most NEM studies have been cross-sectional or retrospective (32–38), and optimal length of prospective study for identifying service use changes is unknown. One previous longitudinal study based on the NEM assessed depressed older adults' service use for six months following psychiatric hospitalization. Using monthly time increments, the authors identified several patterns based on types and number of services delivered (39).

The aims of the current study were to: describe mental health service utilization patterns over a six-month period; and identify factors associated with service use guided by the NEM for older adults with a range of mild to severe depressive symptoms. It was hypothesized that individual (demographics – age, sex, race/ethnicity, education, income; need – diagnosis, symptom severity, disability, perceived, stressful life events; prior treatment experience; intention) and social context (stigma, advice) variables would be associated with service use (psychotropic medication, counseling) over the six-month period.

Methods

Sample

Participants were 144 community-dwelling older adults with depressive symptoms (Table 1). Participants were recruited from the Florida BRITE (Brief Intervention and Treatment for Elders) Program (40), a statewide program providing outreach, screening, and brief interventions for substance misuse (alcohol, illicit drugs, medications). BRITE providers do not provide treatment for depression, but screen for depression and suicide risk as possible signs of undetected substance use. For cases with positive depression screens (i.e., 5 on the Short-Geriatric Depression Scale [S-GDS]; 41) in the absence of substance misuse (i.e., 3 drinks/week; 2 drinks/1 day; or any illicit substance use), BRITE providers refer them to local mental health services. These individuals were recruited for the current study at the five original BRITE sites (Broward, Duval, Hillsborough, Orange, and Pinellas Counties) and the local University of South Florida research site, using similar methods in community and medical settings (40). Screening personnel were instructed to approach all individuals ineligible for BRITE services for the current study. Additional eligibility criteria for this study were: age 65; English-speaking; and passed a six-item cognitive screen (i.e., score 3; 42). Also, participants were excluded if they were currently receiving specialty mental health service utilization (i.e., psychotropic medication from psychiatrist, psychotherapy), to examine initiation of specialty services. Antidepressants from primary care professionals were allowed to increase generalizability, given their common use. Data were not collected by BRITE screening personnel regarding those who refused the screening, were ineligible, or refused participation.

Fourteen participants dropped out over the study period (7 no longer interested, 3 deceased, 3 illness, 1 unknown), four of whom were not included in the final sample because they contributed baseline data only. After complete description of the study, written informed consent was obtained.

Measures

Baseline: Individual

Demographic information: Participants reported their age, gender, race and ethnicity, years of education, marital status, living arrangements, annual household income (2008 poverty line, to compare to other research and policies), insurance status, and perceived health status (Table 1).

Need

Structured Clinical Interview for DSM-IV Diagnosis Axis I (SCID; 43): Current major depressive episode and dysthymia were assessed. Other modules were not administered to minimize participant burden. Diagnoses were determined by team consensus (interviewer, Project Coordinator, and Principal Investigator – licensed psychologist).

Short-Geriatric Depression Scale (S-GDS; 41): The S-GDS includes 15 yes/no items and has very good validity and reliability. Scores range from 0–15, with higher scores

representing more depressive symptoms. Scores of 5–9 suggest mild-moderate depression, and scores 10 suggest severe depression.

World Health Organization Disability Assessment Schedule-II (WHODAS-II; 44): The WHODAS-II is a cross-cultural measure to assess disability across six domains: communication, getting around, self care, getting along with people, life activities, and participation in society. It has good reliability and validity resulting in scores ranging from 0–100, with higher scores indicating greater disability. The 12-item version was used.

Geriatric Adverse Life Events Scale (GALES; 24): The GALES was developed and validated to assess stressful life events for older adults and includes 26 events (e.g., retirement, new illness, death of spouse). At baseline, questions were asked about events over the past year. For each event, follow-up questions assessed degree of stress (not at all, somewhat, very; scores range 0–78 with higher scores indicating more stress) and impact on mood (much better, better, the same, worse, much worse; scores range 0–130 with higher scores indicating worse mood).

Perceived current problem and need for services: Participants were asked, “Are you currently experiencing an emotional or mental problem?” (yes/no). If they responded yes, they were asked, “Do you feel like you need help for this problem currently?” (yes/no).

Service use experience

Professionals in past year: Participants were presented a list of professionals (psychologist/therapist/counselor, social worker/case manager, psychiatrist, other physician, nurse, faith leader, or other) and asked, “In the past, did you ever talk to any of these professionals about feelings of stress or sadness?” with follow-up questions about timing. Responses were coded as “yes” if the participant reporting talking with one or more professionals within the past 12 months.

Current psychotropic medication utilization: Participants were asked whether they were “currently taking any medication prescribed by a doctor for depression, stress, nerves, moods, or anything similar.” This information was recorded to capture current medication use from non-specialty physicians (e.g., primary care provider [PCP]). Participants were categorized as taking an antidepressant at baseline if they reported use of medications approved for depression (45, 46).

Intention to begin new mental health service: Participants were asked, “In the next month, do you plan to begin any new professional service to help deal with sadness, depression, or stress?” (yes/no).

Baseline: Social context

Discrimination-Devaluation Scale (DDS; 47): The DDS assesses stigma, asking participants’ perceptions of “most people’s” attitudes about mental health problems. It includes 12 items, rated using a six-point Likert scale (“1-strongly agree” to “6-strongly

disagree”). Six items are reverse-scored. Scores range from 12–72, with higher scores representing greater stigma.

Advice to use or not use mental health services: Participants were asked, “In the past month, has anyone given you advice to use any professional service to deal with sadness, depression, stress, or any other mental or emotional problem?” (yes/no). Participants were then asked about receipt of advice to “not use” services (yes/no).

Follow-up measures

Covariates: Covariates assessed at baseline that could change were repeated at each follow-up interview: S-GDS, GALES (time frame of past month), and advice to use or not use mental health services.

Outcome variables: Mental health service utilization in the past month: At each follow-up, the interviewer read the same list of professionals from baseline and asked “Since last month, have you talked to any of these professionals about feelings of stress or sadness?” Follow-up questions asked about type of treatment, location, and frequency. Counseling was recorded if the person reported psychotherapy, counseling, or talk therapy, regardless of number of sessions or professional type. They also were asked, “Since last month, were you taking any medication prescribed by a doctor or other health professional for depression, stress, nerves, moods, or anything similar?” Three variables for each follow-up period were derived for receipt of counseling, antidepressant medication, or any formal treatment (counseling or antidepressant).

Procedures

All procedures were approved by the University of South Florida Institutional Review Board. The baseline interview was conducted in-person, and the six monthly follow-up interviews were conducted by telephone. All interviews were audio recorded unless the participant refused. Each follow-up was considered “on-time” if it was completed within a one-week window around the due date, and was “late” if completed within two weeks after the due date (“late” interviews were included based on sensitivity analyses revealing no differences). If a participant missed an interview, the interviewer contacted the participant for the remaining follow-up interviews unless the participant withdrew from the study. To minimize missing data from missed interviews, at the next follow-up, the interviewer asked only the service utilization questions for all monthly blocks since the last completed interview. Interviewers offered mental health referrals using a standard script (Appendix). All participants received referral information at baseline, and most received similar referrals at follow-ups; thus referrals were not analyzed. Data collection took place from December 2007 to August 2009.

Interviewers were counselors in the BRITE Program or trained research interviewers at University of South Florida. Supervised by the first author, the Project Coordinator reviewed all baseline interviews, each interviewer’s first seven follow-up interviews, and additional follow-up interviews as needed, resolving issues with the interviewer.

Data analysis

For aim 1, descriptive statistics were investigated for all variables. Service use patterns were examined separately by symptom severity, although inferential statistics were not conducted given the sample size. Participants were considered more likely to be in need of mental health services if they met criteria for MDE or reported severe symptoms (i.e., S-GDS = 10), compared to those without current MDE and S-GDS in the mild-moderate range (i.e., 5–9). To assess covariates of service use over the six month follow-up period (aim 2), logistic generalized estimation equations (GEE) with robust standard errors were used with both time-constant and time-varying variables. We investigated an unstructured, independent, exchangeable and first order autoregressive longitudinal correlational structures, using the quasi-likelihood criterion.

For the 42 individuals with 1 missing interview, 21 missed the last follow-up. The service use questions were answered for prior months in 17 interviews. No recall bias was noted based on GEE sensitivity analyses treating these data as missing, so they were retained. Participants with 1 missing interview did not differ on sociodemographic variables compared to those without missing interviews ($p > .05$), but they were more likely to have a current major depressive episode, 39.3% vs. 22.5%, $\chi^2 = 4.72$, $df = 1$, $p = .03$, and higher S-GDS, $M = 9.22 \pm 2.67$ vs. $M = 7.98 \pm 2.64$, $t = -2.53$, $df = 142$, $p = .01$, at baseline. All models were tested using Stata 11.1(48).

Results

Sample characteristics at baseline

See Table 1. Average age was 75.7 ± 7.6 years old. The largest percentages of participants were female, white or black, had at least a high school education, unmarried, lived alone, and perceived themselves to be in “fair” health. Fifty-five (38%) participants reported symptoms consistent with a current major depressive episode, with the average S-GDS score in the mild-moderately depressed range ($M = 8 \pm 2.7$).

Aim 1: Description of service utilization patterns

Approximately half of the sample received no formal service during the study period ($n = 70$, 48%). Of those receiving no services at baseline, more initiated new services earlier (i.e., follow-up 1–2; $n = 35$, 30%) than later (i.e., follow-up 3 or later; $n = 12$, 10%).

Of participants not receiving services at a given assessment period, 88% did not receive any service at the next follow-up. For participants receiving at least one service, 80% received at least one service at the next follow-up.

Details regarding antidepressant and counseling use by severity are presented in Table 2. More participants with severe symptoms received antidepressants (25–37%) than those with milder symptoms (10–14%), although more of the milder cases started (62% vs. 49%) and stopped antidepressants (77% vs. 26%) at least once. Fewer individuals received counseling overall, with no clear patterns by symptom severity.

Table 3 displays information regarding professionals reported as prescribing antidepressant medications or delivering counseling. The most common service across all time points was antidepressant medication prescribed PCPs. Counseling was delivered most frequently by a psychologist/therapist or social worker/case manager.

Aim 2: Covariates of service use patterns

For the GEE analysis (Table 4), the autoregressive correlational structure was used. After controlling for baseline antidepressant use, younger age, baseline current major depressive episode, baseline intention, and receipt of advice at follow-up were significantly associated with increased odds of service use.

Discussion

Related to aim one, the main finding was that most older adults with depressive symptoms changed little in their use or non-use of mental health services over a six-month period. Approximately half of participants received no formal services, and participants tended to start a new service early in the follow-up period if at all. More participants with severe symptoms or current MDE received antidepressants than those with less severe symptoms, and they also appeared more consistent in their service use, starting or stopping antidepressants less often overall. Regarding aim two, partially consistent with the hypotheses, in controlled analyses, participants were more likely to use services during the follow-up period if they were younger, had a current major depressive episode at baseline, were receiving an antidepressant at baseline, intended to use services at baseline, and received advice to use mental health services at follow-up.

The current study extends prior cross-sectional research (19, 49) by demonstrating relative stability over a six-month period. A strength of this study is monthly assessments, which enhance recall accuracy. Longer follow-up periods may be needed, however, to observe “critical periods” when older adults make changes in service use.

The covariates of service use were not surprising, again extending prior studies and consistent with the NEM (10), with key demographic (age), need (major depressive episode diagnosis), attitudes (intention), prior experience (antidepressant use), and social context (advice) as important factors (19, 49–51). Stigma was not associated with service use, which could be due to its measurement, statistical power, the possibility that stigma was not as salient for this sample as it would be for a more severely depressed sample (25), or the possibility that stigma is not as significant a barrier as previously thought (52). Consistent with the NEM, advice encouraging use was associated with use. One positive finding was that almost no participants received advice discouraging service use. Indirectly related to the social context, the observation that participants who initiated services tended to do so early in the study period suggests that something about joining the study may have triggered service use, such as awareness of symptoms due to the screening or referrals.

Several limitations affect the generalizability of the findings. First is the lack of information regarding refusals. Additional selection biases may have occurred due to using community-based outreach recruitment methods, English-speaking individuals, including individuals

receiving antidepressants from PCPs, and including participants with a range of depressive symptoms. Thus, formal mental health services were not indicated in all cases, although their inclusion allowed us to explore patterns of severity with service use. Although inconclusive given the sample size, participants with fewer depressive symptoms started and stopped antidepressant medication more frequently than those with more severe symptoms. These patterns may reflect overuse or inconsistent use that is not likely to be therapeutic, a possibility that warrants further research. Reasons for service use could elucidate these patterns; unfortunately data are not available regarding participants' perceived reasons for starting and stopping services.

Conclusions

Over a six-month period, the majority of older adults with depressive symptoms in this study either continued their use of mental health services or did not use services at all. Age, prior treatment experience, current need, intention, and advice emerged as the most critical covariates of service use. Strengths of this study included its comprehensive assessment of covariates of service use and longitudinal design using a complex theoretical framework. Future research will likely need to approach this complex, dynamic phenomenon of service use patterns with mixed quantitative and qualitative methods. For example, quantitative studies such as the current study that include a comprehensive number of covariates of service use suggest factors that may be important influences on service use, such as advice. In depth analysis of subsets of these factors is also needed to fully understand how they may influence service use and how they may inform interventions. For example, this study's findings suggest the need for in-depth, qualitative assessment of factors such as intentions (e.g., what is intended, specificity of plan), advice (e.g., from whom, how delivered, how it facilitated or hindered service use, how advice-givers might be included to facilitate service use), and open-ended questions regarding decisive factors that may be somewhat idiosyncratic.

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Appendix. Script for Depression Treatment Referrals

	YES	NO
Score 5+ on the short GDS?		
Suicidal ideation?		
Request depression treatment?		

Were any SHADED boxes checked? ☐ Yes ➡ **MAKE REFERRAL**

☐ No ➡ **SKIP TO NEXT SECTION**

Script for making the referral:

You have [reported symptoms of depression/requested treatment for depression].

[If prior referrals: I previously referred you for depression services. Now]

I would like to refer you to *(same or different setting)*:

Provider name

Basic information about treatment modality (medications, counseling, etc.)

Contact information

People with symptoms such as yours often improve with this type of treatment. Do you have any questions? *Answer questions as appropriate.*

Record referrals made and reasons for making them in the last section (“Interviewer Report”).

Table 1

Sample Characteristics at Baseline (N=144)

Variable		N or $M \pm SD$	%
Age		75.7 $\pm$ 7.6	
Gender	Female	114	79
Race	White	104	72
	Black	34	24
	Asian	2	1
	Multi-racial	4	3
Hispanic Ethnicity		13	9
Education	< High school	37	26
	High school	44	31
	> High school	63	44
Marital status	Married	23	16
	Widowed	64	44
	Divorced/Separated	45	31
	Never married	12	8
Living arrangements	Alone	94	65
	With others	50	35
Income ^{a, b}	Poverty	61	42
	Not poverty	61	42
Insurance ^b	Medicare	137	95
	Medicaid	39	27
	Private insurance	35	24
	Supplemental	48	33
Perceived health status	Poor	28	19
	Fair	65	45
	Good	39	27
	Very good/Excellent	12	8
Depressive disorder ^b	Current major depressive episode	55	38
	Past major depressive episode	16	11
	Dysthymia	5	4
S-GDS (range 5–15)		8.3 $\pm$ 2.7	
WHODAS-II	Total	30.7 $\pm$ 17.0	
	Understanding and communication	23.1 $\pm$ 19.6	
	Getting around	46.6 $\pm$ 28.6	
	Self care	15.8 $\pm$ 20.0	
	Getting along with people	13.3 $\pm$ 18.9	
	Household activities	48.0 $\pm$ 34.2	
	Participation in society	35.9 $\pm$ 24.3	
GALES	Number of events	4.2 $\pm$ 2.5	
	Perceived stress	11.1 $\pm$ 7.1	

Variable		N or <i>M</i> ± <i>SD</i>	%
Effects on mood		17.4±11.1	
DDS		47.0±8.9	
Discussed MH issue with professional in past 12 months	Yes	70	49
Perceived current MH problem	Yes	92	64
Need help now for MH problem ^b	Yes	67	47
Intention to begin MH service ^b	Yes	33	23
Advice to use MH services	Yes	48	33
Advice to not use MH services	Yes	3	2

^aBased on 2008 poverty levels. Poverty is being below the line. 1 per household-\$10,400; 2-\$14,000; 3-\$17,600; 4-\$21,200; 5-\$24,800

^bMissing: 22 income, 1 insurance, 2 past major depressive episode, 4 dysthymia, 1 need help now for problem, 1 intention to begin new service.

MH = mental health, WHODAS-II = World Health Organization Disability Assessment Schedule-II total score (possible scores range from 0 to 100, with higher scores indicating greater disability), S-GDS – Short Geriatric Depression Scale (possible scores range from 0 to 15, with higher scores indicating more depressive symptoms), GALES = Geriatric Adverse Life Events Scale (possible scores range from 0 to 26 for number of events, 0–78 for perceived stress, and 0–130 for effects on mood, with higher scores indicating more events, stress, and effects, respectively), DDS = Discrimination-Devaluation Scale (possible scores range from 12 to 72, with higher scores indicating greater stigma).

Table 2
Receipt and Change in Antidepressant and Counseling Use At Each Time Period by Symptom Severity*

	N			Receiving Service			Initiating New Service			Stopped Service			No Change		
	Mild-moderate			Severe			Mild-moderate			Mild-moderate			Mild-moderate		
	N	%		N	%		N	%		N	%		N	%	
<i>Antidepressant</i>															
Baseline	67	77	9	13	19	25	-	-	-	-	-	-	-	-	-
Follow up 1	66	76	7	11	24	32	3	43	7	29	5	56	2	11	88
Follow up 2	63	72	6	10	25	35	2	33	3	12	3	43	2	8	93
Follow up 3	62	73	7	11	23	32	2	29	2	9	1	17	3	13	93
Follow up 4	59	68	8	14	23	34	2	25	3	13	0	0	1	5	94
Follow up 5	60	69	8	13	25	36	1	13	2	8	1	13	0	0	97
Follow up 6	60	64	6	10	24	37	0	0	3	13	3	38	2	9	92
Any (baseline-follow up 6)	67	77	13	19	35	45	8	62	17	49	10	77	9	26	-
<i>Counseling</i>															
Baseline	67	77	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow up 1	66	76	7	11	7	9	7	100	7	100	-	-	-	-	-
Follow up 2	63	72	9	14	6	8	6	67	2	33	3	50	3	43	93
Follow up 3	62	73	7	11	8	11	3	43	3	38	5	56	2	33	93
Follow up 4	59	68	6	10	10	15	0	0	6	60	1	14	3	38	87
Follow up 5	60	69	7	12	7	10	3	43	0	0	2	33	4	40	94
Follow up 6	60	64	8	13	7	11	1	17	2	29	1	17	1	17	95
Any (follow up 1-6)	67	77	21	31	18	23	39	100	39	100	12	57	13	72	-

* Mild-moderate = No current major depressive episode (MDE) and Short Geriatric Depression Scale (S-GDS) score < 10; Severe = Current MDE and/or S-GDS score 10.

For "receiving service," percentage represents number of those receiving service divided by the N for each severity group for that time period (in left columns). For "initiating new service," percentage represents number of those beginning the service divided by the number of those receiving the service at the same time period. For "stopped service," percentage represents number of those stopping the service divided by the number receiving the service at the prior time period. For "no change," percentage represents number of participants who either continued receiving the service or continued not receiving the service from the prior time period to the current time period, divided by the N for each severity group at the current time period. There was a small amount of missing data for the "initiating new service," "stopped service," and "no change" columns in instances when data from the prior time period were missing.

Table 3
Professionals Prescribing Antidepressant and Delivering Counseling Services at Each Time Period

	N	Primary care physician		Psychiatrist		Other physician/health professional		Nurse		Psychologist/Therapist		Social worker/Case manager		Faith leader	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%
<i>Antidepressant</i>															
Baseline	27	26	96	-	-	3	11	0	0	-	-	-	-	-	-
Follow up 1	31	25	81	1	3	4	13	1	3	0	0	0	0	0	0
Follow up 2	31	21	68	1	3	7	23	1	3	0	0	0	0	0	0
Follow up 3	30	18	60	2	7	7	23	1	3	1	3	0	0	0	0
Follow up 4	31	21	68	3	10	7	23	0	0	1	3	0	0	0	0
Follow up 5	33	22	67	3	9	6	18	1	3	1	3	0	0	0	0
Follow up 6	30	20	67	2	7	5	17	1	3	0	0	0	0	0	0
<i>Counseling</i>															
Baseline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Follow up 1	14	0	0	1	7	1	7	1	7	7	50	3	21	1	7
Follow up 2	15	0	0	1	7	3	20	0	0	8	53	3	20	0	0
Follow up 3	14	0	0	1	7	0	0	0	0	10	71	2	14	1	7
Follow up 4	16	0	0	2	13	0	0	2	13	8	50	3	19	0	0
Follow up 5	14	0	0	2	14	0	0	0	0	8	57	2	14	0	0
Follow up 6	15	0	0	1	7	0	0	0	0	7	47	5	33	2	13

Note. Percentages are based on the number receiving each service at the corresponding time period, displayed in the left column. For "other physician/health professional," all except one antidepressant prescription at baseline were prescribed by a physician. Numbers do not add to 100% due to small amount of overlap (e.g., antidepressants from more than one provider) and missing data for specific professionals in a few cells.

Table 4

Covariates of Formal Service Use Over Six Months

	OR	Adj OR	95% CI for AOR	p for AOR
Age	.95**	.93*	.88–.98	.012
Gender (female)	.84	1.44	.52–4.02	.483
Race/ethnicity (minority)	.44**	.46	.18–1.18	.105
Education				
None – 11 th grade	Ref			
High school/GED	1.07	.78	.30–2.07	.625
Higher Education	2.31*	1.48	.54–4.07	.446
Current major depressive episode (baseline)	3.11***	2.89*	1.09–7.56	.032
WHODAS-II (baseline)	1.03**	1.02	.99–1.05	.113
S-GDS (baseline)	1.03	.88	.73–1.07	.215
S-GDS (follow up)	1.06	1.03	.94–1.14	.590
GALES (baseline)	1.09*	1.02	.98–1.07	.332
GALES (follow up)	1.12*	.98	.83–1.15	.812
DDS (baseline)	1.02	1.03	.98–1.08	.276
Discussed MH issue with professional in past 12 months (baseline)	4.23***	2.14	.96–4.80	.063
Antidepressant use (baseline)	25.01***	31.55***	8.89–112.05	<.001
Perceived current MH problem (baseline)	1.20	.68	.30–1.54	.353
Intention to begin MH service (baseline)	1.97*	3.75**	1.43–9.83	.007
Advice to use MH services (baseline)	1.26	.50	.20–1.25	.140
Advice to use MH services (follow up)	1.76*	2.54**	1.32–4.88	.005

Note. OR = odds ratio, AOR = adjusted OR, CI = confidence interval, MH = mental health, WHODAS-II = World Health Organization Disability Assessment Schedule-II total score, S-GDS = Short Geriatric Depression Scale, GALES = Geriatric Adverse Life Events Scale, DDS = Discrimination-Devaluation Scale.

Adjusted model included all variables significant at $p < .05$ in the unadjusted model (left column).

*
 $p < .05$,

**
 $p < .01$,

 $p < .001$.