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ORIGINAL ARTICLE

Treatment of Veterans with Psychiatric Diagnoses Nationally in the Veterans Health Administration: A Comparison of Service Delivery by Mental Health Specialists and Other Providers

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Abstract

Patients with psychiatric disorders are treated by both mental health specialists and non-specialists. We use national data from the Veterans Health Administration to evaluate changing proportions of patients seen exclusively by non-specialists during the study year (FY 2012) limit as well as differences in socio-demographic, clinical and service use characteristics. There has been a five-fold increase in veterans with mental disorders seen by non-specialists over 20 years from 7 to 38%, findings similar to those in non-VA settings. Veterans treated by mental health specialists were younger, more likely to have been homeless and disabled, and had more severe and more numerous psychiatric diagnoses. There is a need to maintain specialty services and to strengthen non-specialty care through education and research.

Keywords Mental health services · Veterans · Mental health specialists

It was first recognized about 40 years ago that of the 15% of Americans affected by mental illness in a given year, only one-fifth were served by the specialty mental health sector (Regier et al. 1978). In 1993, data from the Epidemiological Catchment Area study estimated the annual prevalence of mental and addictive disorders at 28.1%; with only 28.5% receiving treatment from mental health specialists and 31% receiving services from general medical settings (Regier 1993). The Healthcare for Communities survey, a national telephone survey conducted about 20 years ago, reported that even among persons with severe mental illness, three-fifths did not receive any specialty mental health services (McAlpine and Mechanic 2000).

The National Comorbidity Survey Replication (NCS-R) provided the most recent data on the treatment of adults with psychiatric disorders in the US and found that of all persons with a 12-month diagnosis of a mental illness or substance abuse, only 41.1% had received any treatment in the previous year; and only half of these (22% of the total) were treated in the specialty mental health sector (Wang et al. 2005). Comparisons between the NCS, conducted in 1990–1992, and the NCS-R, conducted in 2001–2003, found that largest proportional increase in service use by adults with mental disorders occurred in the general medical sector with a 150% increase in the number served, compared to a 30% increase in use of specialty mental health services (Wang et al. 2006).

These studies not only raised awareness of the importance of the general medical sector in serving people with mental illness, but also generated interest in expanding the provision of mental health services in general medical settings. In the ensuing years a growing literature has demonstrated the effectiveness of integrating specialty mental health and primary care for people with mental disorders, and has supported policies that encouraged the dissemination of such programs (Druss and Goldman 2018).

Despite these developments, there has been no recent study comparing persons with mental illness who receive treatment exclusively in the general medical sector with those receiving care from mental health specialists, whether in distinct mental health clinics or in other clinic settings. The few studies that have characterized patients with psychiatric diagnoses who do not receive specialty mental health services were epidemiological studies mainly based on

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self-reported survey data; which tend to overestimate service use as compared to administrative records, especially if the subjects are symptomatic (Rhodes and Fung 2004). In addition, most published studies have focused only on depressive disorders (Burns et al. 2000; Gaynes et al. 2005, n.d.; Schwenk et al. 1996; Stewart et al. 1993, n.d.; Vuorilehto et al. 2007).

As the nation's largest integrated health care system and one with extensive electronic health records, the Veteran Health Administration (VHA) provides a unique opportunity to compare the characteristics of patients with psychiatric diagnoses treated exclusively in non-mental health settings with those treated by mental health specialists. To our knowledge, there has been only one study that examined specialty outpatient service use among veterans with psychiatric diagnoses in VHA. That study used data from 1996 to 1998 and found that only seven percent of veterans with psychiatric diagnoses were seen exclusively outside of mental health specialty clinics in that year (Druss and Rosenheck 2000). The study concluded that treatment for persons with diagnosed psychiatric illnesses in VHA clinics differed markedly from what had been reported from community studies, as the vast majority of veterans with psychiatric diagnoses were seen in specialty mental health clinics. Since then, although there have been several trials evaluating the outcomes of mental health specialty services when delivered in primary care settings (Druss and Goldman 2018; Johnson-Lawrence et al. 2012), there have been no other studies, to our knowledge, that used administrative data to compare the proportions and characteristics of veterans with psychiatric diagnoses who receive treatment exclusively from non-mental health providers with those treated by mental health specialists.

This study used national VHA data from Fiscal Year (FY) 2012 to determine the proportion of veterans with mental health or substance use diagnoses who receive services exclusively from non-specialist VHA providers and those treated by mental health specialists (whether in mental health or integrated primary care clinics); and to compare these veterans on measures including socio-demographic characteristics, psychiatric and medical diagnoses, mental health and medical service utilization, and psychotropic pharmacotherapy. Such data may allow for a better understanding of the mental health needs of the populations being served in these two settings and may also provide information on basic characteristics of services received by patients diagnosed with mental health conditions in general medical settings in a large integrated healthcare system.

Noting recent trends in increased awareness of mental health conditions (Mojtabai 2007) and increased demand for mental health services (Mojtabai and Jorm 2015), we hypothesized that a larger proportion of veterans with psychiatric diagnoses received care exclusively from general medical practitioners, and that the veterans obtaining care from mental health specialists may have more numerous psychiatric co-morbidities and greater evidence of socioeconomic and functional burden (e.g. disability, low income, homelessness).

Methods

The present study is a cross-sectional analysis of data obtained from national VHA administrative databases for FY2012 (October 1, 2011 to September 30, 2012). Data were derived from the encounter file of all outpatient service use, the patient treatment file of inpatient discharge abstracts, and the pharmacy benefits management file of filled outpatient prescriptions.

Sample Characteristics

The sample included all veterans with a psychiatric diagnosis (ICD 9 codes 290.00-312.99) who had at least one outpatient clinical encounter in FY2012. A dichotomous variable was created to differentiate veterans who had received mental health specialty care (defined as any VHA 500 series stop code, from 500 to 599 reflecting care in a specialized mental health program provided by staff specifically hired to work in such programs, regardless of professional background or training). These stop codes indicate at least one outpatient visit with a mental health specialist, whether in a specialty clinic or within a primary care clinic, as contrasted with those who were treated exclusively by primary care or medical-surgical specialists. Some of these visits may have focused on providing homeless, vocational, or criminal justice outreach services, for example, that might not be regarded as mental health services, although provided by mental health specialists. Sensitivity analysis showed that excluding these services would not have affected 96% of the sample.

Measures

Demographic Characteristics

Demographic characteristics included age, gender, geographic location of residence (e.g., urban vs. rural), race/ethnicity, receipt of a VA pension or disability compensation, and homelessness. Geographic location (i.e., urban vs. rural status) was based on zip code data and the Rural–Urban Commuting Area (RUCA) codes provided by the WWAMI Rural Health Research Center. OEF/OIF status (i.e., service in recent Middle East conflicts) was determined using data provided to the VA by the Department of Defense. Disability was classified as VA service connected disability status of

$< 50\%$ or $\geq 50\%$. About 0.3% of veterans have a 0% service connected rating and are not included in either of these categories (according to the Veterans Benefits Annual Report 2012 at http://www.vba.va.gov/reports.htm). Homelessness was defined as the use of specialized VA homeless program services in FY2012 and/or receipt of a V60.0 ICD-9 diagnostic code (reflective of lacking housing).

Medical Diagnoses

Medical diagnoses were obtained from documented clinical diagnoses in the VA Computerized Personal Record System (CPRS) and were identified from standard International Classification of Diseases, Ninth Revision (ICD-9) diagnostic codes. Major medical problems were those included in the Charlson index of medical severity (Charlson et al. 1987) and included congestive heart failure, myocardial infarction, chronic obstructive pulmonary disease, hepatic disease, diabetes mellitus, cancer, paraplegia, HIV/AIDS, connective tissue disease, peptic ulcer disease, and peripheral vascular disease. Prevalent pain-related diagnoses and other diagnoses often comorbid with psychiatric illnesses were also included in the analyses, including musculoskeletal pain, diabetes-related pain, herpetic pain, fibromyalgia, headache, insomnia, and seizures. A summary variable indicating any pain diagnosis was also created (Barry et al. 2015).

Psychiatric Diagnoses

Psychiatric diagnoses were clustered into the following categories: major depression, dysthymia, adjustment disorder, bipolar disorder, anxiety disorder, post-traumatic stress disorder (PTSD), schizophrenia, personality disorders, dementia, alcohol use disorder, and a combined variable indicating substance abuse disorder (other than alcohol). Summary variables reflecting any substance abuse and dual diagnosis (of substance abuse and psychiatric illness) were also created. Finally, three variables reflected the total number of psychiatric, substance abuse, and medical diagnoses carried by each veteran from the above categories. These diagnoses were based on outpatient encounters in FY2012.

Health Service Use

Variables measuring the number of outpatient visits were based on clinic stop codes. These included outpatient encounters in the emergency department, primary care, specialty medical-surgical clinics, as well as psychiatric and substance abuse specialty clinics. Dichotomous variables were also created that represent any inpatient mental health or inpatient medical/surgical treatment.

Psychotropic Medications

Psychotropic medication prescriptions were classified in six groups including antidepressants, antipsychotics, anxiolytics/sedative-hypnotics, stimulants, mood stabilizers, and lithium (lists of specific medications included in each group are available on request). Measures addressed the number of prescriptions filled in each class and in all classes together at VA pharmacies during the entire fiscal year.

Statistical Analyses

First, bivariate analyses compared veterans receiving services from mental health specialists (whether in mental health specialty clinics or elsewhere) with veterans treated exclusively by primary care or medical-surgical specialty clinics on sociodemographic characteristics, medical and psychiatric comorbidities, service use, and psychotropic medication fills.

The large sample sizes in these analyses would make comparisons by standard measures of statistical significance (p values) over-sensitive and not reflective of clinically substantial differences. Thus, variables were considered to have a substantial relationship to receipt of services exclusively in general medical settings on the basis of effect sizes defined by risk ratios ≥ 1.5 or ≤ 0.67 for dichotomous variables with a base rate of at least 5% in this sample; or by Cohen's d, the difference between means of continuous variables divided by their pooled standard deviation, based on a criterion of either > 0.2 or < -0.2 (Cohen 1988).

Next, logistic regression models were used to identify measures identified in bivariate analyses that were independently associated with use of services from mental health specialists. These analyses used both adjusted odds ratios and standardized regression coefficients to identify the relative strength of association between demographic, clinical, and service use variables and treatment in specialty mental health. We used three progressively inclusive logistic regression models, each with additions to the variables used in the prior analysis. These models first examined sociodemographic and clinical characteristics, second adding the number of medical, psychiatric and substance use diagnoses, and the third finally adding measures of service use and psychotropic medications. All analyses were conducted with SAS (version 9.2; SAS Institute, Inc., Cary, NC). The study was approved by the Institutional Review Board committee of the VA Connecticut Healthcare System. A waiver of informed consent was obtained as the study used administrative data and there were no patient identifiers included.

Results

Of the total sample of 2,021,078 veterans with a psychiatric diagnosis seen in outpatient settings in FY2012; 1,244,151 (61.6%) had visits with a mental health specialist and 776,927 (38.4%) did not, receiving services only from primary care or general medical or surgical specialists.

Bivariate Analysis

In contrast to veterans treated exclusively by non-mental health providers, veterans receiving specialty care were approximately 10 years younger on average, more likely to receive service connected VA disability compensation $\geq 50\%$, more likely to have served in the Iraq or Afghanistan war (OEF/OIF), and to have recently been homeless (Table 1). There was no substantial association between specialty mental health treatment and gender, race, or urban versus rural residence. Veterans treated by specialty mental health providers had a lower Charlson medical comorbidity index on average and a substantially lower frequency of several specific component conditions including cancer, cerebrovascular disease, renal disease, and peripheral vascular disease than veterans treated in general medical settings. On the other hand, veterans treated by mental health specialists had a substantially higher frequency of headache and insomnia, medical conditions often associated with psychiatric diagnoses. The psychiatric diagnoses most strongly associated with treatment by specialty mental health providers were major depression, bipolar disorder, schizophrenia, and PTSD. Substance abuse disorders other than alcohol use disorder, and dual diagnosis of psychiatric and substance abuse were also associated with treatment by mental health specialists. Also notable was the substantial difference in the average number of psychiatric or substance abuse diagnoses in the two groups. Veterans receiving specialty mental health care had approximately two psychiatric and 0.4 substance abuse diagnoses on average, compared to veterans receiving no specialist care, who had approximately one psychiatric and 0.2 substance abuse diagnoses on average. There was no substantial difference in the total number of medical diagnoses per veteran.

Analysis of service utilization metrics showed that veterans receiving specialty mental health care had an average of 22 total annual outpatient visits compared to approximately eight outpatient visits for veterans not seen by mental health specialists, of which approximately 12 visits were to specialty mental health (Table 2). Notably, veterans receiving specialty mental health care also had a substantially higher number of primary care visits on average, and even trended towards use of more specialty medical-surgical outpatient services and emergency department visits. Veterans receiving specialty mental health care received approximately three times the total number of annual psychotropic medication prescriptions, with substantial differences in the numbers of antidepressant and anxiolytic prescription fills. More than 80% veterans receiving specialty mental health services received any psychotropic medications, while less than 50% veterans seen outside of specialty mental health did.

Multivariate Logistic Regression

Multivariate logistic regression showed significant association of receipt of specialty mental health care and younger age, having a major psychiatric diagnosis such as Schizophrenia, Bipolar disorder, Major Depression, and PTSD, and being dually diagnosed (Table 3). A second logistic regression which added indicators of numbers of diagnoses to the previous analysis also showed a significant independent association between receiving specialty mental health care and having a greater number of psychiatric diagnoses, an effect independent of individual psychiatric diagnoses reflecting multi-morbidity. A third logistic regression which added indicators of service use to the variables in the previous analyses showed a significant association with the total number of psychotropic medications received in the year. Note that the number of psychotropic medications received have a large standardized regression coefficient but a small odds ratio due to the relatively small effect of each single additional medication fill.

Discussion

This study of national VHA data showed that over one-third of all VHA patients with psychiatric or substance use diagnoses had no contact with a mental health specialty program in FY2012, a marked increase since 1996, and that those who did have such contact were (1) younger, (2) more likely to receive VA disability compensation, (3) to have recently been homeless, and (4) to have been diagnosed with major psychiatric diagnoses, and (5) to have more numerous psychiatric and substance abuse diagnoses (multi-morbidity).

Increased Care of Psychiatric Disorders Outside of Specialty Care

The FY2012 data presented here stand in stark contrast to the comparable figures from 1996 to 1998 (Druss and Rosenheck 2000) demonstrating a 5.4-fold increase in the proportion of veterans receiving psychiatric care exclusively

Table 1 Bivariate analysis of demographic and clinical characteristics of Veterans with a psychiatric diagnosis treated in specialty mental health, and general medical settings

Description	MH (n = 1,244,151; 61.56%)		Non MH (n = 776,927; 38.44%)		MH/non MH	Substantial effect
Demographics	Mean	SD	Mean	SD	Cohen's D	
Age (years)	54.78	14.82	64.03	15.25	−0.617	Yes
Income (annual, $)	23,499	39,109	31,822	66,858	−0.161	No
Demographics	n	%	n	%	Risk ratio	Substantial effect
Gender (male)	1,122,825	90.2%	733,734	94.4%	0.956	No
White race	838,385	67.4%	545,577	70.2%	0.924	No
Black race	239,308	19.2%	109,724	14.1%	1.312	No
Hispanic race	91,058	7.3%	40,426	5.2%	1.350	No
Other race	16,835	1.4%	7566	1.0%	1.338	No
Mixed race	25,229	2.0%	11,602	1.5%	1.308	No
Unknown race	116,563	9.4%	98,856	12.7%	0.736	No
Receiving VA disability pension	48,074	3.9%	26,675	3.4%	1.125	No
Service connected 50% or more	471,258	37.9%	180,241	23.2%	1.633	Yes
Service connected less than 50%	228,440	18.4%	138,009	17.8%	1.034	No
Urban area residents	882,406	70.9%	514,776	66.3%	1.075	No
Large rural area residents	136,113	10.9%	94,951	12.2%	0.899	No
Small rural area residents	101,895	8.2%	77,174	9.9%	0.828	No
Isolated rural area residents	75,980	6.1%	63,451	8.2%	0.751	No
OIF/OEF era veterans	200,403	16.1%	53,597	6.9%	2.335	Yes
Homeless during the year	141,863	11.4%	5270	0.7%	16.810	Yes
Medical diagnosis	n	%	n	%	Risk ratio	Substantial effect
Any pain diagnosis	730,787	58.7%	364,352	46.9%	1.252	No
Congestive heart failure	628,962	50.6%	394,308	50.8%	0.996	No
Diabetes mellitus	284,797	15.5%	192,309	24.8%	0.925	No
Chronic obstructive airway disease	191,542	15.4%	131,016	16.9%	0.913	No
Cancer	86,121	6.9%	81,952	10.5%	0.656	Yes
Headache	124,632	10.0%	41,248	5.3%	1.887	Yes
Insomnia	103,617	8.3%	41,245	5.3%	1.569	Yes
Cerebrovascular accident	61,212	4.9%	61,386	7.9%	0.623	Yes
Renal disease	52,905	4.3%	51,328	6.6%	0.644	Yes
Peripheral vascular disease	52,839	4.2%	51,198	6.6%	0.644	Yes
Hepatic disease	54,884	4.4%	27,132	3.5%	1.263	No
Myocardial infarction	15,150	1.2%	13,437	1.7%	0.704	No
Connective tissue disease	12,879	1.0%	9655	1.2%	0.833	No
Seizures	13,811	1.1%	7120	0.9%	1.211	No
Peptic ulcer disease	11,058	0.9%	8385	1.1%	0.824	No
Paraplegia	9206	0.7%	8017	1.0%	0.717	No
HIV/AIDS	8720	0.7%	4047	0.5%	1.346	No
Medical diagnosis	Mean	SD	Mean	SD	Cohen's D	Substantial effect
Charlson medical severity diagnosis index (num)	2.77	2.39	3.77	2.59	−0.407	Yes
Psychiatric diagnosis	Mean	SD	Mean	SD	Cohen's D	Substantial effect
Major depression	285,435	22.9%	23,681	3.0%	7.527	Yes
Dysthymia	594,069	47.7%	238,162	30.7%	1.558	Yes
Bipolar disorder	104,497	8.4%	9519	1.2%	6.855	Yes
Anxiety disorder	348,604	28.0%	117,814	15.2%	1.848	Yes

Table 1 (continued)

Psychiatric diagnosis	Mean	SD	Mean	SD	Cohen's D	Substantial effect
PTSD	540,005	43.4%	98,133	12.6%	3.436	Yes
Schizophrenia	81,151	6.5%	7965	1.0%	6.362	Yes
Dementia	21,390	1.7%	37,101	4.8%	0.360	No
Personality disorder	47,145	3.8%	2874	0.4%	10.244	No
Alcohol use disorder diagnosis	261,604	21.0%	114,157	14.7%	1.431	No
Drug dependence	197,837	15.9%	36,344	4.7%	3.399	Yes
Dual diagnoses (substance abuse and psychiatric)	325,274	26.1%	56,117	7.2%	3.620	Yes
Number of diagnoses	**Mean**	**SD**	**Mean**	**SD**	**Cohen's D**	**Substantial effect**
Number of psychiatric diagnoses	1.97	1.09	1.00	0.59	1.043	Yes
Number of medical diagnoses	1.86	1.57	1.85	1.57	0.006	No
Number of substance abuse diagnoses	0.41	0.80	0.19	0.43	0.322	Yes

Table 2 Bivariate examination of service use variables of Veterans with a psychiatric diagnosis treated in specialty mental health, and general medical settings

Service utilization	Mean	SD	Mean	SD	Cohen's D	Substantial effect
Emergency room visits	0.78	2.02	0.46	1.28	0.180	No
All outpatient visits	21.83	29.65	8.22	10.09	0.565	Yes
Psychiatric or substance abuse outpatient visits	11.77	26.15	0.00	0.00	0.574	No
Number of total medical surgical visits	10.06	11.36	8.22	10.09	0.169	No
Number of primary care visits	3.64	3.71	2.91	2.90	0.215	Yes
Number of medical surgical specialty visits	6.42	9.49	5.31	8.81	0.120	No
Service utilization	**n**	**%**	**n**	**%**	**Risk ratio**	**Substantial effect**
Medical or surgical inpatient visits	111,334	8.9%	83,749	10.8%	0.830	No
Any mental health inpatient treatment	63,217	5.1%	0	0.0%	N/A	No
Psychotropic medications	**Mean**	**SD**	**Mean**	**SD**	**Cohen's D**	**Substantial effect**
All psychotropic prescriptions (fills in year)	14.86	26.99	5.05	21.53	0.391	Yes
Antidepressant prescriptions	6.45	11.68	2.27	10.75	0.369	Yes
Anxiolytic/sedative/hypnotic prescriptions	3.06	6.04	1.07	3.64	0.380	Yes
Antipsychotic prescriptions	2.45	11.40	0.46	8.02	0.194	No
Anticonvulsant/mood stabilizer prescriptions	1.93	7.99	0.84	7.38	0.141	No
Stimulant prescriptions	0.15	1.43	0.01	0.39	0.122	No
Lithium	0.19	2.50	0.01	1.40	0.083	No
Psychotropic medications	**n**	**%**	**n**	**%**	**Risk ratio**	**Substantial effect**
Any psychotropic prescriptions (any in year)	1,031,809	82.9%	363,714	46.8%	1.707	Yes
Any antidepressant prescriptions	879,850	70.7%	255,476	32.9%	2.151	Yes
Any anxiolytic/sedative/hypnotic prescriptions	278,329	22.4%	27,939	3.6%	6.221	Yes
Any antipsychotic prescriptions	472,293	38.0%	127,954	16.5%	2.305	Yes

from non-specialists. These data might be thought to reflect a decline in delivery of specialty mental health services leading to a relative increase in the proportion seen only by non-specialists, but the total number of veterans with psychiatric disorders treated in specialty mental health care has actually increased substantially by about 6% per year in recent years (Hermes et al. 2012) reaching 1.25 million in 2012.

The substantial increase in the number and proportion of patients with psychiatric diagnoses treated exclusively by outside of mental health specialty clinics may reflect general trends in the US healthcare system. Comparison of data from epidemiological surveys done a decade apart revealed that the prevalence of mental disorders remained stable, but the rate of treatment increased (Kessler et al. 2005). The greatest

Table 3 Logistic regression comparing veterans with a psychiatric diagnosis receiving treatment in specialty mental health and general medical settings

Variable	Odds ratio	Lower 95% CI	Upper 95% CI	Estimate	Standardized error	Standardized estimate
Demographics						
Age (years)	0.977	0.977	0.978	−0.023	0.000	−0.197
Service connected 50% or more	1.168	1.158	1.178	0.156	0.004	0.040
OIF/OEF era veterans	1.043	1.028	1.058	0.042	0.007	0.008
Homeless during the year	15.924	15.464	16.399	2.768	0.015	0.397
Medical diagnoses						
Insomnia	1.243	1.225	1.261	0.218	0.007	0.031
Headache	1.094	1.078	1.110	0.090	0.007	0.014
Renal disease	1.022	1.005	1.038	0.022	0.008	0.003
Cerebrovascular accident	0.985	0.970	1.000	−0.015	0.008	−0.002
Cancer	0.935	0.923	0.947	−0.068	0.007	−0.010
Peripheral vascular disease	0.932	0.917	0.947	−0.071	0.008	−0.009
Psychiatric diagnoses						
Schizophrenia	17.708	17.271	18.156	2.874	0.013	0.325
Bipolar disorder	11.557	11.291	11.830	2.447	0.012	0.311
Major depression	10.798	10.639	10.960	2.379	0.008	0.472
PTSD	7.053	6.985	7.122	1.953	0.005	0.501
Dual diagnoses (substance abuse or psychiatric)	2.892	2.853	2.931	1.062	0.007	0.229
Dysthymia	2.802	2.781	2.824	1.031	0.004	0.280
Anxiety disorder	2.800	2.774	2.826	1.030	0.005	0.239
Drug dependence	1.416	1.390	1.441	0.348	0.009	0.061
Number of diagnoses						
Number of psychiatric diagnoses	2.869	2.845	2.893	1.054	0.004	0.606
Service utilization						
All psychotropic medications	1.025	1.025	1.026	0.025	0.000	0.350
Number of total Primary care visits	1.044	1.043	1.045	0.043	0.001	0.083

increase in service use by adults with mental disorders took place in the general medical sector (Wang et al. 2006). This increase in attention to mental illness by non-specialists may reflect the broad re-medicalization of psychiatric treatment since the years when psychotherapeutic perspectives predominated, and a growing belief that mental conditions are not fundamentally different from other medical diseases (Katon 2003; Katon et al. 2007; Poole and Steptoe 2018; Ruo et al. 2003). This trend is also reflected by data showing that in the 10 years from 1987 to 1997, the percentage of patients with depression who received their psychiatric medication from PCPs increased from 37.3 to 74.5% (Olfson et al. 2002). These trends may also reflect de-stigmatizing effects of advocacy by groups like NAMI, as well as direct to consumer advertising of psychotropic medications (Becker and Midoun 2016), which feature prominent sports figures and other celebrities who encourage recognition of mental illness and use of psychotropic medications.

More specifically, in 1998, VHA instituted requirements for yearly primary care screening for mental disorders (Kirkcaldy and Tynes 2006) including depression, anxiety, PTSD, and alcohol abuse. This screening likely led directly to an increase in the number of patients given psychiatric diagnoses as a result of positive screens (Oslin et al. 2006; Shiner et al. 2014). There may also be an indirect effect of screening which may have led to a greater general awareness and increased attention to mental health issues among non-specialists in VA.

In addition, in 2007 VHA initiated a Primary Care Mental Health Initiative (PCMHI), whereby mental health specialists were located within primary care clinics for the purpose of providing consultations and short term treatment (Zivin et al. 2010). The presence and availability of these specialists for consultation may have increased recognition of mental illnesses among non-specialists. In some cases, veterans could have been seen in the PCMHI program in one year (visits that would have counted in our analyses as having been performed by mental health specialists), but whose care would be continued exclusively by non-specialists in subsequent years. There may also be an indirect effort of the PCMHI program in that the presence of mental health specialists may have encouraged more general attention to mental disorders by non-specialists who may feel more comfortable treating mental illness if specialists are available for informal consultation, even without actually any formal referral.

Severity and Multi-Morbidity in Specialty Care

In comparison with veterans receiving non-specialty mental health care, veterans seen by mental health specialists were more likely to have serious psychiatric diagnoses such as schizophrenia, bipolar disorder, major depression, and PTSD; as well as more multi-morbid mental illnesses with almost double the number of psychiatric and substance abuse diagnoses per patient. It was expected that veterans receiving care from mental health specialists would have fewer medical disorders and would be more likely to be diagnosed with more severe psychiatric and substance abuse disorders, but it is notable that they received more numerous distinct diagnoses representing increased multi-morbidity during the year.

Interest has grown in recent years in the importance of co-occurring psychiatric and substance abuse diagnoses using the lens of multi-morbidity which recognizes that the concurrent disorders exacerbate each other's impact, and that their interaction may critically shape approaches to treatment (North et al. 2016). A recent VA study noted that among veterans with any mental disorder seen in specialty mental health clinics, 77.6% were diagnosed as having more than one mental disorder, with each veteran having an average of 2.68 ± 1.52 such diagnoses (Bhalla and Rosenheck 2018). We found, using the same measure, that the average number of psychiatric and substance abuse diagnoses recorded for veterans in specialty mental health increased substantially from 1.7 in 1998 to 2.4 in 2012; while in primary care and general medical settings, in contrast, the average number of diagnoses decreased from 1.3 in 1998 to 1.2 in 2012 (Druss and Rosenheck 2000).

Multi-morbidity researchers argue that while most research and medical education is based on a single-disease or primary diagnosis framework, a more dynamic strategy is needed to address the impact of multi-morbidity and thereby provide more personalized and comprehensive care (Barnett et al. 2012). The finding that patients treated by mental health specialists have more severe and greater numbers of co-existing mental illness, emphasizes the need for maintenance of the unique role of specialty care clinics as well as for the expansion of research and development of evidence-based guidelines to improve treatment of psychiatric multi-morbidity. While the turn to more formal diagnostic criteria with DSM-III in 1980 represented progress in the definition of psychiatric disorders it has led, we believe, to an over emphasis in both training and practice on finding a single "right" diagnosis rather than on understanding the complexity of each patient's diagnostic and psychosocial situation. This tendency has been noted outside of psychiatry in general medicine as well, and formed the focus of Jerome Groopman's book "How Doctors Think" which illustrates the perils of jumping hastily to simple diagnostic conclusions (Groopman 2007).

Differences in General Medical Care and Psychotropic Medication Utilization

Analysis of outpatient service utilization in this study demonstrated that even after excluding specialty mental health visits, veterans receiving specialty mental health care had approximately 50% more annual outpatient medical-surgical visits than patients with psychiatric disorders seen only by non-specialists. This might not have been expected since the latter group has more severe medical comorbidities on average.

Our data suggest that there may be a general effect of psychiatric multi-morbidity and psychosocial disability on overall service utilization, both within and beyond mental health specialty care. Greater utilization of general medical services among the patients receiving specialty mental health services may reflect their more frequent VA service-connected disability status, which tends to increase their eligibility and/or priority for VA medical services, although does not require specific service use. We do not have data on use of medical services outside the VA, but it is also possible that the group getting treatment for psychiatric disorders exclusively by non-mental health specialists may seek some of their general medical care from non-VA providers, perhaps because they less frequently receive service-connected disability compensation.

It is also notable that of all veterans having a psychiatric diagnosis and receiving treatment outside of specialty care, fewer than 50% received any psychotropic medications, compared to more than 80% in the group treated by mental health specialists. This likely reflects lower severity of symptoms and less need of pharmacological treatment in patients seen exclusively by non-specialists, although it has been shown that many who do receive medications do not receive a psychiatric diagnosis (Wiechers et al. 2014).

Implications and Future Directions

The data presented here point to the need for attention to three areas: (1) ongoing mental health training for non-specialists, (2) expanded use of information technology to provide effective, low intensity mental health care in non-specialist settings, and (3) further research into effective treatments for psychiatric multi-morbidity and ongoing support of the specialist mental health sector.

A growing field of research has attested to the inconsistent quality of psychiatric care in general medical settings, including psychotropic prescription with no diagnosis (Beardsley et al. 1988), diagnoses that do not fully meet diagnostic criteria (Berardi et al. 2005), and inadequate retention in treatment (Mojtabai and Olfson 2008). Along with the fact that more patients with psychiatric diagnoses are treated exclusively by non-specialists, these findings point to a need to develop better training and supervision models for primary care physicians to enable them to effectively treat mental disorders (Hodges et al. 2001; Pincus et al. 1983).

The role of technology in providing evidence-based care in general medical settings should also be expanded. Computerized therapy has been found to be acceptable and effective for certain mental disorders (Craske et al. 2009; Farrer et al. 2013; Hermes et al. 2015), and interventions based on computerized therapies have also started to be implemented in certain outpatient settings (Hermes and Rosenheck 2016). Availability of electronic psychiatric consultations for primary care physicians can also increase their comfort in managing mental health conditions (Golberstein et al. 2018).

Strengths and Limitations

The major strength of this study is that it is based on national administrative data from a comprehensive healthcare system with a sophisticated electronic health record system that allowed examination of demographic, clinical and service use variables of a large number of veterans diagnosed with psychiatric disorders. Nevertheless, several methodological limitations require comment.

First, all diagnoses, especially psychiatric diagnoses, were based on administrative data from only 1 year and were not uniformly validated with standard diagnostic tools. Additionally, we could not determine whether some patients had additional psychiatric diagnoses or specialty mental health care in previous years or were in process of being referred to specialty mental health care which was to occur the next year. On the other hand, available diagnostic data accurately reflect the working diagnoses of involved clinicians during FY2012, the focus of this study.

A second potential limitation concerns our definition of receipt of specialty mental health care. We used the somewhat arbitrary criterion that veterans who had at least one clinical contact with a mental health specialty clinician during the study year were considered to have received specialty care. One could argue that more than one visit would be needed to demonstrate engagement with specialty care services. However, use of a larger number of visits would be no less arbitrary and it is likely that the needs of some veterans are, in fact, met with a single visit to a specialist. We used the criterion of a single visit because of its simplicity, plausibility, and objectivity. We acknowledge that it no doubt over simplifies a complex issue. To note one example, we were unable to differentiate specialty mental health care provided in primary care settings—i.e., through the mental health integration (PCMHI) program, from that provided in specialized mental clinics. This, in particular, is likely to be a small effect since examination of clinic stop data show that only 3% of the total specialty mental health visits occurred in integrated care settings in 2012. Since the PCMHI program offers only short term intervention patients have fewer visits and thus the proportion of patients seen by specialists in primary care is likely to be even smaller than the proportion of visits.

Perhaps the most important limitation of this study is the lack of data on the quality of care and outcomes of mental health treatment of veterans seen entirely by non-mental health specialists. Whether these patients are undertreated or not cannot be discerned from the available data and there is little research and few guidelines on optimal service delivery for this distinct group of patients.

Conclusions

There has been a dramatic increase in the proportion of VHA patients receiving treatment exclusively from non-mental health specialists from 1996 to 2012 reflecting both broad trends in the US healthcare system and recent VHA initiatives. These patients appear to have quite different needs from those treated by mental health specialists, highlighting both the need for continuing support for the specialty mental health sector and for further education and research on the care of the distinct segment of patients with psychiatric diagnoses treated exclusively by non-specialists.

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Compliance with Ethical Standards

Conflict of interest Nikhil Gupta, Ish Bhalla and Robert Rosenheck declare that they have no conflict of interest.

Ethical Approval This article does not contain any studies with human participants performed by any of the authors. The study was approved by the Institutional Review Board committee of the VA Connecticut Healthcare System. A waiver of informed consent was obtained as the study used administrative data and there were no patient identifiers included.

References

Barnett, K., Mercer, S. W., Norbury, M., Watt, G., Wyke, S., & Guthrie, B. (2012). Epidemiology of multimorbidity and implications for health care, research, and medical education: A cross-sectional study. *The Lancet, 380*(9836), 37–43. https://doi.org/10.1016/S0140-6736(12)60240-2.

Barry, D. T., Sofuoglu, M., Kerns, R. D., Wiechers, I. R., & Rosenheck, R. A. (2015). Prevalence and correlates of co-prescribing psychotropic medications with long-term opioid use nationally in the Veterans Health Administration. *Psychiatry Research, 227*(2–3), 324–332. https://doi.org/10.1016/j.psychres.2015.03.006.

Beardsley, R. S., Gardocki, G. J., Larson, D. B., & Hidalgo, J. (1988). Prescribing of psychotropic medication by primary care physicians and psychiatrists. *Archives of General Psychiatry, 45*(12), 1117. https://doi.org/10.1001/archpsyc.1988.01800360065009.

Becker, S. J., & Midoun, M. M. (2016). Effects of direct-to-consumer advertising on patient prescription requests and physician prescribing: A systematic review of psychiatry-relevant studies. *The Journal of Clinical Psychiatry, 77*(10), e1293. https://doi.org/10.4088/JCP.15R10325.

Berardi, D., Menchetti, M., Cevenini, N., Scaini, S., Versari, M., & De Ronchi, D. (2005). Increased recognition of depression in primary care. Comparison between primary-care physician and ICD-10 diagnosis of depression. *Psychotherapy and Psychosomatics, 74*(4), 225–230. https://doi.org/10.1159/000085146.

Bhalla, I. P., & Rosenheck, R. A. (2018). A change in perspective: From dual diagnosis to multimorbidity. *Psychiatric Services, 69*(1), 112–116. https://doi.org/10.1176/appi.ps.201700194.

Burns, B. J., Wagner, H. R., Gaynes, B. N., Wells, K. B., & Schulberg, H. C. (2000). General medical and specialty mental health service use for major depression. *The International Journal of Psychiatry in Medicine, 30*(2), 127–143. https://doi.org/10.2190/TLXJ-YXLX-F4YA-6PHA.

Charlson, M. E., Pompei, P., Ales, K. L., & MacKenzie, C. R. (1987). A new method of classifying prognostic comorbidity in longitudinal studies: Development and validation. *Journal of Chronic Diseases, 40*(5), 373–383. https://doi.org/10.1016/0021-9681(87)90171-8.

Cohen, J. (1988). Statistical power analysis for the behavioral sciences. *Lawrence Erlbaum Associates*. https://doi.org/10.1234/12345678.

Craske, M. G., Rose, R. D., Lang, A., Welch, S. S., Campbell-Sills, L., Sullivan, G., … Roy-Byrne, P. P. (2009). Computer-assisted delivery of cognitive behavioral therapy for anxiety disorders in primary-care settings. *Depression and Anxiety, 26*(3), 235–242. https://doi.org/10.1002/da.20542.

Druss, B. G., & Goldman, H. H. (2018). Integrating health and mental health services: A past and future history. *American Journal of Psychiatry*. https://doi.org/10.1176/appi.ajp.2018.18020169.

Druss, B. G., & Rosenheck, R. A. (2000). Locus of mental health treatment in an integrated service system. *Psychiatric Services, 51*(7), 890–892. https://doi.org/10.1176/appi.ps.51.7.890.

Farrer, L., Gulliver, A., Chan, J. K. Y., Batterham, P. J., Reynolds, J., Calear, A., … Griffiths, K. M. (2013). Technology-based interventions for mental health in tertiary students: Systematic review. *Journal of Medical Internet Research, 15*(5), e101. https://doi.org/10.2196/jmir.2639.

Gaynes, B., Rush, A., Trivedi, M., … S. W.-G. hospital, & 2005 undefined. (n.d.). A direct comparison of presenting characteristics of depressed outpatients from primary vs. specialty care settings: Preliminary findings from the STAR* D clinical trial. *Elsevier*. Retrieved from https://www.sciencedirect.com/science/article/pii/S016383430400132X.

Golberstein, E., Kolvenbach, S., Carruthers, H., Druss, B., & Goering, P. (2018). Effects of electronic psychiatric consultations on primary care provider perceptions of mental health care: Survey results from a randomized evaluation. *Healthcare, 6*(1), 17–22. https://doi.org/10.1016/j.hjdsi.2017.01.002.

Groopman, J. (2007). *What's the trouble? How doctors think*. New York: The New Yorker.

Hermes, E. D. A., & Rosenheck, R. A. (2016). Implementing computer-based psychotherapy among veterans in outpatient treatment for substance use disorders. *Psychiatric Services, 67*(2), 176–183. https://doi.org/10.1176/appi.ps.201400532.

Hermes, E. D. A., Rosenheck, R. A., Desai, R., & Fontana, A. F. (2012). Recent trends in the treatment of posttraumatic stress disorder and other mental disorders in the VHA. *Psychiatric Services, 63*(5), 471–476. https://doi.org/10.1176/appi.ps.201100432.

Hermes, E. D. A., Tsai, J., & Rosenheck, R. (2015). Technology use and interest in computerized psychotherapy: A survey of veterans in treatment for substance use disorders. *Telemedicine and E-Health, 21*(9), 721–728. https://doi.org/10.1089/tmj.2014.0215.

Hodges, B., Inch, C., & Silver, I. (2001). Improving the psychiatric knowledge, skills, and attitudes of primary care physicians, 1950–2000: A review. *American Journal of Psychiatry, 158*(10), 1579–1586. https://doi.org/10.1176/appi.ajp.158.10.1579.

Johnson-Lawrence, V., Zivin, K., Szymanski, B. R., Pfeiffer, P. N., & McCarthy, J. F. (2012). VA primary care-mental health integration: Patient characteristics and receipt of mental health services, 2008–2010. *Psychiatric Services, 63*(11), 1137–1141. https://doi.org/10.1176/appi.ps.201100365.

Katon, W., Lin, E. H. B., & Kroenke, K. (2007). The association of depression and anxiety with medical symptom burden in patients with chronic medical illness. *General Hospital Psychiatry, 29*(2), 147–155. https://doi.org/10.1016/J.GENHOSPPSYCH.2006.11.005.

Katon, W. J. (2003). Clinical and health services relationships between major depression, depressive symptoms, and general medical illness. *Biological Psychiatry, 54*(3), 216–226. https://doi.org/10.1016/S0006-3223(03)00273-7.

Kessler, R. C., Demler, O., Frank, R. G., Olfson, M., Pincus, H. A., Walters, E. E., … Zaslavsky, A. M. (2005). Prevalence and treatment of mental disorders, 1990 to 2003. *New England Journal of Medicine, 352*(24), 2515–2523. https://doi.org/10.1056/NEJMsa043266.

Kirkcaldy, R. D., & Tynes, L. L. (2006). Best practices: Depression screening in a VA primary care clinic. *Psychiatric Services, 57*(12), 1694–1696. https://doi.org/10.1176/ps.2006.57.12.1694.

McAlpine, D. D., & Mechanic, D. (2000). Utilization of specialty mental health care among persons with severe mental illness: The roles of demographics, need, insurance, and risk. *Health Services Research, 35*(1 Pt 2), 277–292. Retrieved from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=1089101&tool=pmcentrez&rendertype=abstract.

Mojtabai, R. (2007). Americans' attitudes toward mental health treatment seeking: 1990–2003. *Psychiatric Services, 58*(5), 642–651. https://doi.org/10.1176/ps.2007.58.5.642.

Mojtabai, R., & Jorm, A. F. (2015). Trends in psychological distress, depressive episodes and mental health treatment-seeking in the United States: 2001–2012. *Journal of Affective Disorders, 174*, 556–561. https://doi.org/10.1016/j.jad.2014.12.039.

Mojtabai, R., & Olfson, M. (2008). National patterns in antidepressant treatment by psychiatrists and general medical providers: Results from the national comorbidity survey replication. *The Journal of Clinical Psychiatry, 69*(7), 1064–1074. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/18399725.

North, C. S., Brown, E. S., & Pollio, D. E. (2016). Expanded conceptualization of multimorbidity to encompass substance use disorders and other psychiatric illness. *Annals of Clinical Psychiatry: Official Journal of the American Academy of Clinical Psychiatrists, 28*(3), 182–188.

Olfson, M., Marcus, S. C., Druss, B., Elinson, L., Tanielian, T., & Pincus, H. A. (2002). National trends in the outpatient treatment of depression. *JAMA, 287*(2), 203–209. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/11779262.

Oslin, D. W., Ross, J., Sayers, S., Murphy, J., Kane, V., & Katz, I. R. (2006). Screening, assessment, and management of depression in VA primary care clinics. *Journal of General Internal Medicine, 21*(1), 46–50. https://doi.org/10.1111/j.1525-1497.2005.0267.x.

Pincus, H. A., Strain, J. J., Houpt, J. L., & Gise, L. H. (1983). Models of mental health training in primary care. *JAMA, 249*(22), 3065–3068. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/6406690.

Poole, L., & Steptoe, A. (2018). Depressive symptoms predict incident chronic disease burden 10 years later: Findings from the English Longitudinal Study of Ageing (ELSA). *Journal of Psychosomatic Research, 113*, 30–36. https://doi.org/10.1016/j.jpsychores.2018.07.009.

Regier, D. A. (1993). The de facto US mental and addictive disorders service system. *Archives of General Psychiatry, 50*(2), 85. https://doi.org/10.1001/archpsyc.1993.01820140007001.

Regier, D. A., Goldberg, I. D., & Taube, C. A. (1978). The de facto US mental health services system: A public health perspective. *Arch Gen Psychiatry, 35*(6), 685–693. https://doi.org/10.1001/archpsyc.1978.01770300027002.

Rhodes, A. E., & Fung, K. (2004). Self-reported use of mental health services versus administrative records: Care to recall? *International Journal of Methods in Psychiatric Research, 13*(3), 165–175. https://doi.org/10.1002/mpr.172.

Ruo, B., Rumsfeld, J. S., Hlatky, M. A., Liu, H., Browner, W. S., & Whooley, M. A. (2003). Depressive symptoms and health-related quality of life. *JAMA, 290*(2), 215. https://doi.org/10.1001/jama.290.2.215.

Schwenk, T. L., Coyne, J. C., & Fechner-Bates, S. (1996). Differences between detected and undetected patients in primary care and depressed psychiatric patients. *General Hospital Psychiatry, 18*(6), 407–415. https://doi.org/10.1016/S0163-8343(96)00062-X.

Shiner, B., Tang, C., Trapp, A. C., Konrad, R., Bar-On, I., & Watts, B. V. (2014). The provision of mental health treatment after screening: Exploring the relationship between treatment setting and treatment intensity. *General Hospital Psychiatry, 36*(6), 581–588. https://doi.org/10.1016/J.GENHOSPPSYCH.2014.07.009.

Stewart, A., Sherbourne, C., … K. W.-J. of consulting, & 1993, undefined. (n.d.). Do depressed patients in different treatment settings have different levels of well-being and functioning? *Psycnet.Apa.Org*. Retrieved from http://psycnet.apa.org/record/1994-06482-001.

Vuorilehto, M. S., Melartin, T. K., Rytsälä, H. J., & Isometsä, E. T. (2007). Do characteristics of patients with major depressive disorder differ between primary and psychiatric care? *Psychological Medicine, 37*(06), 893. https://doi.org/10.1017/S0033291707000098.

Wang, P. S., Demler, O., Olfson, M., Pincus, H. A., Wells, K. B., & Kessler, R. C. (2006). Changing profiles of service sectors used for mental health care in the United States. *American Journal of Psychiatry, 163*(7), 1187–1198. https://doi.org/10.1176/ajp.2006.163.7.1187.

Wang, P. S., Wang, P. S., Lane, M., Lane, M., Olfson, M., Olfson, M., … Kessler, R. C. (2005). Twelve-month use of mental health services in the United States. *Archives of General Psychiatry, 62*(June), 629–640.

Wiechers, I. R., Kirwin, P. D., & Rosenheck, R. A. (2014). Increased risk among older veterans of prescribing psychotropic medication in the absence of psychiatric diagnoses. *The American Journal of Geriatric Psychiatry, 22*(6), 531–539. https://doi.org/10.1016/j.jagp.2013.10.007.

Zivin, K., Pfeiffer, P. N., Szymanski, B. R., Valenstein, M., Post, E. P., Miller, E. M., & McCarthy, J. F. (2010). Initiation of primary care—mental health integration programs in the VA health system: Associations With psychiatric diagnoses in primary care. *Medical Care*. https://doi.org/10.2307/25750565.