Original Research

It is illegal to post this copyrighted PDF on any website. Trends in Receipt of Mental Health Treatments Among Adults in the United States, 2008–2013

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ABSTRACT

Objective: This study examined trends in the 12-month prevalence of receiving mental health treatments among adults 18 years or older and among different generational cohorts in the United States between 2008 and 2013.

Methods: We examined data from 274,900 persons 18 years or older who participated in the 2008–2013 National Surveys on Drug Use and Health (then linked to the 2011–2014 Area Health Resources Files at the county level). Multivariable logistic regressions were applied to assess trends in the model-adjusted prevalence of receiving mental health treatments.

Results: Between 2008 and 2013, the 12-month prevalence of mental illness (MI) remained stable in adults 18 years or older in the United States and in each of the examined generational cohorts. Receipt of psychotropic medications without inpatient or outpatient treatment increased in the overall adult population, baby boomers with MI, and Generation X with MI. The increase was 23.8% (6.3% to 7.8%, P < .001) among all adults, 28.4% (20.4% to 26.2%, P = .010) among baby boomers with MI, and 34.7% (14.7% to 19.8%, P = .001) among Generation X with MI. Among the Silent Generation with MI, receipt of mental health treatments remained unchanged.

Conclusions: The prevalence of receiving psychotropic medications without inpatient or outpatient treatment increased among the overall adult population, baby boomers with MI, and Generation X with MI between 2008 and 2013. With the ongoing mental health parity and health reform efforts, further studies are warranted to monitor trends in mental health treatment in these populations.

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^cDepartment of Mental Health, Johns Hopkins Bloomberg School of Public Health, Baltimore, Maryland ^dDepartment of Psychiatry and Behavioral Sciences, Johns Hopkins School of Medicine, Baltimore, Maryland A ccessibility of mental health treatment has been a serious concern in the United States. For example, about 80% of US counties in 2008 were designated as Mental Health Professional Shortage Areas.¹ Moreover, psychiatrists are significantly less likely to accept insurance than doctors in other specialties.² Although primary care physicians are increasingly more willing to prescribe psychotropic medications in recent years,³ the Institute of Medicine (IOM) projected that millions of baby boomers will be more likely to face inadequate treatment for mental illness (MI) and substance use disorders (SUD) as they age because the mental health and substance use workforce for them is far from sufficient.⁴

Significant policy changes designed to increase access to mental health treatment since 2008 may have influenced mental health treatment seeking patterns. The Mental Health Parity and Addiction Equity Act (MHPAEA) of 2008 required insurance coverage of mental health and substance abuse services to be equal to coverage of general medical care.⁵ The Medicare Improvements for Patients and Providers Act of 2008 addressed the inequity of 50% copayment for outpatient psychiatric services, compared with 20% copayment for general medical care with phased changes (45% copayment in 2010–2011, 40% in 2012, 35% in 2013, and 20% in 2014 and thereafter).⁶ Additionally, the Affordable Care Act (ACA) of 2010 reduced the amount that Medicare Part D enrollees were required to pay for prescriptions when they reached the coverage gap between the initial coverage limit and the catastrophic-coverage threshold (starting in 2011 for generics and 2013 for brand-name).⁷

In the context of these social and policy developments, it is important to assess trends in receipt of mental health treatments. Because specific generational cohorts may view and access mental health treatment in different ways, examining trends for the population as a whole and among generational cohorts could be useful. As younger cohorts view mental health problems and treatments more favorably than did the Silent Generation (born in the years 1925–1945),⁸ baby boomers (born in the years 1946–1964) and Generation X (born in the years 1965–1980) may be more accepting of mental health treatments.^{4,9–11} Moreover, baby boomers and Generation X may be more accepting of psychotropic medications^{3,12} and alternative services for mental health problems^{13,14} than the Silent Generation. The prevalence rates of SUD,¹⁵⁻¹⁷ suicide,¹⁸ and mental disorders^{4,9-11} are much higher among baby boomers than among the Silent Generation. These generational differences suggest that trends in receipt of mental health treatments for different generations with MI may be different.

Recent trends in receipt of mental health treatments in the adult population in the United States and among these generations with MI remain unassessed. Using nationally representative data, from 2008 to 2013, this study examined trends in 12-month prevalence of receipt of outpatient mental health treatment, psychotropic medications, and

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inical Points

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- Recent trends in receipt of mental health treatments in the adult population in the United States and among different generations with mental illness remain unassessed.
- The prevalence of receiving psychotropic medications without inpatient or outpatient treatment increased among the overall adult population, baby boomers with mental illness, and Generation X with mental illness between 2008 and 2013.

alternative services for mental health problems among the adult population and separately among 3 generations of adults with MI: the baby boomers, the Silent Generation, and Generation X.

METHODS

Data Sources

We examined data from 274,900 persons 18 years or older who participated in the 2008-2013 National Surveys on Drug Use and Health (NSDUH). NSDUH was conducted by the Substance Abuse and Mental Health Services Administration (SAMHSA) and provided nationally representative data on mental illness and mental health treatment among the civilian, noninstitutionalized population 18 years or older in the United States. The NSDUH data collection protocol was approved by the Institutional Review Board at RTI International. Excluded from the survey were persons without a household address (eg, homeless persons not in shelters), active-duty military personnel, and residents of institutional group quarters (eg, nursing home residents).¹⁹ However, NSDUH covered homeless persons who lived in shelters at the time of survey interview and included adults who were institutionalized during the past year and were discharged from the institution at the time of survey interview.

To control for the impact of accessibility of services on mental health treatment prevalence, we linked the 2008– 2013 NSDUH to the 2011–2014 Area Health Resources Files (AHRFs) at the county level using Federal Information Processing Standard state and county codes. The 2011–2014 AHRFs are the most recent files with earlier years of AHRFs, comprising health workforce data for every US county.²⁰

Measures

Mental illness. MI among adults 18 years or older was defined as currently or at any time in the past year having had a diagnosable mental disorder (excluding developmental disorders and SUD) of sufficient duration to meet diagnostic criteria specified within the *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition (*DSM-IV*).²¹ To estimate MI in the United States, SAMHSA and the National Institute of Mental Health (NIMH) implemented the Mental Health Surveillance Study (MHSS) during 2008–2012. In the MHSS, 5,700 NSDUH-sampled adults participated in a clinical follow-up telephone interview by trained mental health clinicians using the Structured

Cinical Interview for DSM-IV-TR Axis 1 Disorders (SCID). Based on MHSS data, a model was developed to predict MI based on questions about distress (past-year K6 scale), impairment (truncated version of the World Health Organization Disability Assessment Schedule), serious suicidal ideation, major depressive episode (MDE), and age.²² Then, using this prediction model, both pastyear MI status (yes/no) and the predicted probability of having serious mental illness (SMI, a continuous score) were determined for each respondent in the NSDUH adult samples. The MI cut point was chosen such that the false-positives and false-negatives were as close to equal as possible so that unbiased MI estimates can be produced.²² We used the binary MI variable to identify those with MI and the continuous SMI variable to control for the severity of mental illness.¹⁹ The overall adult population and the 3 generations had similar sensitivity and specificity values of MI based on this prediction model (57% and 91% among adults 18 years or older, 65% and 94% among the Silent Generation, 57% and 91% among baby boomers, and 60% and 90% among Generation X, respectively).²²

Mental health treatments. All adult NSDUH respondents were asked to report on the receipt of inpatient or outpatient treatment or receipt of prescription medications for mental health problems in the past 12 months. Inpatient treatment included services received at the following locations: psychiatric hospital, psychiatric unit of general hospital, medical unit of general hospital for mental health treatment, or other type of hospital for mental health treatment. Outpatient treatment included services received at the following locations: community mental health center, private therapist's office (psychologist, psychiatrist, social worker, or counselor) for mental health treatment, physician's office (nonpsychiatrist) and outpatient medical clinic for mental health treatment, day treatment program for mental health treatment, or other type of facility for mental health treatment. We examined receipt of psychotropic medications overall, receipt of outpatient treatment, and receipt of psychotropic medications without inpatient or outpatient mental health treatment in the past year. We did not examine inpatient mental health treatment separately since inpatient treatment is often involuntary and would be unlikely to change with health care policy modifications.

"Alternative" services for mental health problems. NSDUH asked all adult respondents about alternative services received for mental health problems in the past year (eg, acupuncturist, chiropractor, herbalist, in-person support group or self-help group, Internet support group or chat room, spiritual or religious advisor, telephone hotline, or massage therapist).

Sociodemographic characteristics. The study examined age (continuous variable), gender (male/female), race/ ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, or non-Hispanic others), health insurance (private insurance only, Medicaid only, Medicare, uninsured, or other miscellaneous types), education (less than high school It is illegal to post this copyrighted PDF on any website. Table 1. Trends in 12-Month Prevalence of Mental Illness Between 2008 and 2013 Among Adults 18 Years or Older and 3 Generation Cohorts in the United States: 2008–2013 National Surveys on Drug Use and Health

	Adults 18 y or Older Unadjusted Weighted Prevalence (standard error)	Silent Generation (born 1925–1945) Unadjusted Weighted Prevalence (standard error)	Baby Boomers (born 1946–1964) Unadjusted Weighted Prevalence (standard error)	Generation X (born 1965–1980) Unadjusted Weighted Prevalence (standard error)	Generational
	n=274,900 ^a	n=15,100 ^a	n=43,400 ^a	n=61,000 ^a	Difference
Year					P<.001
2008	17.7 (0.30)	10.5 (0.72)	17.5 (0.59)	21.8 (0.53)	
2009	18.1 (0.31)	11.5 (0.80)	18.1 (0.58)	22.2 (0.53)	
2010	18.1 (0.30)	12.3 (0.86)	18.2 (0.59)	21.1 (0.51)	
2011	17.8 (0.30)	11.4 (0.77)	17.7 (0.59)	20.0 (0.53)	
2012	18.6 (0.31)	12.7 (0.87)	17.8 (0.62)	20.8 (0.54)	
2013	18.5 (0.31)	11.1 (0.84)	17.4 (0.62)	20.7 (0.56)	
Time trend	P=.070	P=.588	P=.859	P=.125	

Substance Abuse and Mental Health Services Administration requires that any description of overall sample sizes based on the restricted-use data files has to be rounded to the nearest 100, which intends to minimize potential disclosure risk.

education, high school graduate, some college education, or college graduate or beyond), family income as a percentage of Federal Poverty Level (FPL) (<100% FPL, 100%–199% FPL, or \geq 200% FPL), marital status (married, widowed, divorced/ separated, or never married), employment status (full-time or part-time employment, disabled for work, unemployment, or other), metropolitan statistical area (yes/no), and region.

Health status. NSDUH asked adult respondents if they were told by doctors or other health professionals that they had hypertension, heart disease, diabetes, stroke, asthma, and HIV/AIDS in the past year. We computed the number of past-year chronic physical conditions for each adult respondent (range, 0–6). NSDUH captured a respondent's self-rated health and the number of past 12-month emergency room (ER) visits (for any reason) and assessed whether a respondent had past-year SUD (yes/no) and MDE (yes/no) according to *DSM-IV* criteria.²¹

AHRF variables as potential covariates. This study examined the following measures per 10,000 county residents: the number of persons at or under FPL, the number of licensed psychologists, the number of office-based psychiatrists, the number of hospital-based psychiatrists, the number of general hospitals with psychiatry care, and the number of psychiatric hospitals. Additionally, we assessed primary care shortage area at the county level (whole county, half county, none), indicating county primary care accessibility.

Data Analysis

Descriptive analyses were conducted to estimate trends in the prevalence of MI among adults 18 years or older and among the 3 generations and to examine trends in the prevalence of receiving mental health treatments among adults 18 years or older and among the 3 generations with MI between 2008 and 2013. Then, multivariable logistic regression modeling was applied to assess modeladjusted 12-month prevalence and model-adjusted risk ratios (MARR) using PREDMARG and PRED_EFF statements in SUDAAN.^{23,24} The following outcomes were examined: receipt of any outpatient treatment, psychotropic medications, psychotropic medications without inpatient or outpatient treatment, and alternative services. We also tested potential interaction effects, particularly those that would suggest differences in trends by generation. Multicollinearity was assessed using variance inflation factors and was not identified in the final multivariable models.

The final pooled multivariable models adjusted for the following characteristics: age (continuous variable for overall adult analysis and for generation analysis since each generation has a wide age range), sex, race/ethnicity, family income, health insurance, marital status, self-rated health, the number of ER visits, MDE, SUD, severity of mental illness, the number of chronic physical diseases, and accessibility of mental health treatment per 10,000 county residents (the number of licensed psychologists and the number of office-based psychiatrists), and an interaction between time period and generation. The rest of the examined variables were statistically insignificant and were excluded from the final multivariable models. All the analyses used SUDAAN software²⁴ to account for the complex sample design and sampling weights of the NSDUH.

RESULTS

Twelve-Month Prevalence of MI

The 12-month prevalence of MI remained stable in adults 18 years or older and among each of the 3 generations between 2008 and 2013 (Table 1). The prevalence of MI among baby boomers (weighted annual average: 17.8%) was lower than that among Generation X (weighted annual average: 21.1%), but was higher than that among the Silent Generation (weighted annual average: 11.6%).

Model-Adjusted Prevalence of

Receiving Mental Health Treatments Among Adults

Among adults 18 years or older, receipt of outpatient mental health treatment and receipt of alternative services for mental health problems remained stable between

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Table 2. Trends in the Model-Adjusted 12-Month Prevalence of Receiving Mental Health Treatments Between 2008 and 2013 Among Adults 18 Years or Older in the United States (N = 274,900),^a 2008–2013 National Surveys on Drug Use and Health

		Model-Adjusted	P Value for	
Outeenee	Model-Adjusted	Risk Ratio	Model-Adjusted	
	Prevalence (SE) ²	(95% CI) ²		
Outpatient treatment	(0.10)	11(007 114)	.217	
2008	6.8 (0.19)	1.1(0.97 - 1.14) 1.0(0.90, 1.05)		
2009	0.2 (0.17) 6 E (0.19)	1.0 (0.09-1.05)		
2010	6.6 (0.10)	1.0(0.93 - 1.10) 1.0(0.04, 1.10)		
2011	6.5 (0.18)	1.0 (0.94–1.10)		
2012	6.4 (0.19)	1.0 (0.93–1.09) 1.0 ^c		
Psychotropic			.004	
medications			1001	
2008	11.4 (0.25)	0.9 (0.87–0.97)		
2009	11.5 (0.23)	0.9 (0.87–0.98)		
2010	11.7 (0.23)	0.9 (0.89-0.99)		
2011	11.6 (0.23)	0.9 (0.88-0.99)		
2012	12.4 (0.25)	1.0 (0.74–1.05)		
2013	12.4 (0.25)	1.0 ^c		
Psychotropic			<.001	
medications				
without inpatient or				
outpatient treatment				
2008	6.3 (0.20)	0.8 (0.75-0.88)		
2009	6.9 (0.21)	0.9 (0.82-0.96)		
2010	6.9 (0.19)	0.9 (0.82–0.96)		
2011	6.8 (0.19)	0.9 (0.81–0.95)		
2012	7.8 (0.21)	1.0 (0.93–1.08)		
2013	7.8 (0.21)	1.0 ^c		
Outpatient treatment			.004	
or psychotropic				
medications				
2008	13.2 (0.26)	0.9 (0.88–0.98)		
2009	13.2 (0.24)	0.9 (0.88–0.98)		
2010	13.5 (0.25)	0.9 (0.90–0.99)		
2011	13.6 (0.24)	0.9 (0.90–0.99)		
2012	14.4 (0.26)	1.0 (0.96–1.06)		
2013	14.3 (0.26)	1.0 ^c		
Alternative treatment			.511	
2008	8.6 (0.21)	1.0 (0.92–1.05)		
2009	8.7 (0.22)	1.0 (0.91–1.05)		
2010	8.4 (0.21)	1.0 (0.89–1.02)		
2011	8.7 (0.22)	1.0 (0.93–1.06)		
2012	8.9 (0.22)	1.0 (0.94–1.07)		
2013	8.8 (0.20)	1.0 ^c		

^aSubstance Abuse and Mental Health Services Administration requires that any description of overall sample sizes based on the restricted-use data files must be rounded to the nearest 100, which intends to minimize potential disclosure risk.

^bCovariates in each final multivariable logistic regression model: age (continuous variable), sex, race/ethnicity, family income, health insurance, marital status, self-rated health, number of emergency room visits, major depressive episode, substance use disorders, severity of mental illness, number of chronic physical diseases in the past year, and accessibility of mental health treatment per 10,000 county residents (number of licensed psychologists and number of office-based psychiatrists).

^cReference group was 2013. Since many 2013 estimates were the highest prevalence and because 2008 estimates were not necessarily the lowest prevalence during this period, it is statistically informative to use the 2013 estimates as the reference groups and show how the 2013 estimates were higher than the estimates in the previous years.

2008 and 2013 (Table 2). However, receipt of psychotropic medications increased by 8.8% (11.4% to 12.4%, P=.004), receipt of psychotropic medications without inpatient or outpatient treatment increased by 23.8% (6.3% to 7.8%, P<.001), and receipt of outpatient or psychotropic medications increased by 8.3% (13.2% to 14.3%, P=.004).

Model-Adjusted Prevalence of Receiving Mental Health Treatments by Generation

Among adults who had 12-month MI, our final multivariable models identified significant interactions between time and generation on receipt of psychotropic medications without inpatient or outpatient treatment (P = .020), between time and generation on overall receipt of psychotropic medications (P = .001), and between time and generation on receipt of outpatient or psychotropic medications (P = .001). To better understand trends in receipt of mental health treatments in each generation with MI, we then conducted multivariable logistic regression models stratified by generation.

The model-adjusted 12-month prevalence of receiving mental health treatments and prevalence of receiving services for mental health problems remained stable among the Silent Generation between 2008 and 2013 (Table 3). Among baby boomers with MI, the model-adjusted 12-month prevalence of receiving inpatient treatment and of receiving outpatient treatment remained unchanged during this study period. However, receipt of psychotropic medications without inpatient or outpatient treatment among baby boomers increased by 28.4% (20.4% to 26.2%, P = .010). Overall, receipt of psychotropic medications increased by 14.2% (44.4% to 50.7%, P=.012). Receipt of outpatient treatment or psychotropic medications increased by 16.5% (48.0% to 55.9%, P=.002). Among Generation X with MI, the model-adjusted 12-month prevalence of receiving outpatient treatment declined by 16.3% (26.4% to 22.1%, P = .006). However, the receipt of psychotropic medications without inpatient or outpatient treatment increased by 34.7% (14.7% to 19.8%, P = .001). The prevalence of receiving other treatment examined in this study remained stable during this period.

DISCUSSION

Recent policy changes promoting access to mental health treatment happened at different points during 2008–2013,^{5–7} and the period covered in this study may be too short to reveal their full impact. We found no changes in outpatient treatment in the overall adult population and among baby boomers and the Silent Generation. We even found a decline in receipt of outpatient treatment among Generation X. Importantly, we identified an increasing trend in receipt of psychotropic medications without inpatient or outpatient treatment in the overall adult population, baby boomers with MI, and Generation X with MI, groups too young to benefit from Medicare policy changes. Similar to findings from previous studies,^{3,12} our results may indicate the recent increase in receipt of psychotropic medications from primary care providers. These results may also point to limited accessibility of **It is illegal to post this copyrighted PDF on any website** Table 3. Trends in the Model-Adjusted 12-Month Prevalence of Receiving Mental Health Treatments Between 2008 and 2013 Among the 3 Generations Born 1925–1980 Who Had Past-Year Mental Illness (MI) in the United States (N = 23,500), 2008–2013 National Surveys on Drug Use and Health

	Silent Generation With MI (n = 1,700) ^a		Baby Boomers With MI (n=8,200) ^a		Generation X With MI (n = 13,600) ^a				
Outcome	Model- Adjusted Prevalence (SE) ^b	Model- Adjusted Risk Ratio (95% CI) ^b	Model- Adjusted Trend Over Time ^b (P Value)	Model- Adjusted Prevalence (SE) ^b	Model- Adjusted Risk Ratio (95% CI) ^b	Model- Adjusted Trend Over Time ^b (P Value)	Model- Adjusted Prevalence (SE) ^b	Model- Adjusted Risk Ratio (95% Cl) ^b	Model- Adjusted Trend Over Time ^b (P Value)
Outpatient treatment			.698			.260			.006
2008	15.6 (2.67)	1.2 (0.64–1.96)		27.3 (1.55)	0.9 (0.77-1.07)		26.4 (1.12)	1.2 (1.05–1.36)	
2009	12.0 (2.23)	0.9 (0.49-1.52)		25.7 (1.52)	0.9 (0.72-1.01)		24.0 (1.08)	1.1 (0.95–1.24)	
2010	13.3 (2.66)	0.9 (0.54-1.69)		27.2 (1.55)	0.9 (0.77-1.07)		23.6 (1.05)	1.1 (0.93–1.22)	
2011	17.8 (2.75)	1.3 (0.76-2.14)		26.4 (1.53)	0.9 (0.75-1.03)		24.3 (1.20)	1.1 (0.96–1.26)	
2012	10.5 (1.93)	0.8 (0.43-1.34)		25.1 (1.49)	0.8 (0.77-0.99)		24.7 (1.07)	1.1 (0.98–1.27)	
2013	13.9 (3.14)	1.0 ^c		30.0 (1.82)	1.0 ^c		22.1 (1.11)	1.0 ^c	
Psychotropic medications			.288			.012			.685
2008	33.6 (3.37)	1.2 (0.87–1.66)		44.4 (1.73)	0.9 (0.79–0.97)		37.0 (1.27)	0.9 (0.89–1.08)	
2009	22.1 (2.63)	0.8 (0.55-1.12)		44.5 (1.61)	0.9 (0.79-0.97)		35.5 (1.17)	0.9 (0.86-1.03)	
2010	29.5 (3.18)	1.0 (0.74–1.47)		45.2 (1.68)	0.9 (0.80-0.99)		38.2 (1.18)	1.0 (0.93-1.10)	
2011	33.0 (2.99)	1.2 (0.85–1.61)		43.9 (1.60)	0.9 (0.79–0.95)		34.7 (1.24)	0.9 (0.84–1.01)	
2012	25.9 (2.81)	0.9 (0.66–1.29)		41.5 (1.62)	0.8 (0.74–0.91)		39.0 (1.33)	1.0(0.95 - 1.13)	
2013	28.2 (3.82)	1.0 ^c		50.7 (1.89)	1.0 ^c		37.7 (1.24)	1.0 ^c	
Psychotropic medications without inpatient/ outpatient treatment			.617			.010			.001
2008	19.5 (2.84)	1.1 (0.72–1.75)		20.4 (1.41)	0.8 (0.65-0.94)		14.7 (0.99)	0.7 (0.62-0.88)	
2009	13.9 (2.42)	0.8 (0.49-1.30)		22.5 (1.47)	0.9 (0.71-1.04)		16.0 (0.92)	0.8 (0.69-0.94)	
2010	20.4 (2.84)	1.2 (0.75-1.83)		21.0 (1.48)	0.8 (0.66-0.97)		19.8 (1.11)	1.0 (0.86-1.17)	
2011	15.8 (2.35)	0.9 (0.57-1.44)		20.1 (1.35)	0.8 (0.64-0.93)		15.6 (0.92)	0.8 (0.67-0.92)	
2012	18.4 (2.64)	1.1 (0.69–1.62)		21.5 (1.41)	0.8 (0.68-0.98)		20.0 (1.18)	1.0 (0.87–1.18)	
2013	17.4 (3.03)	1.0 ^c		26.2 (1.81)	1.0 ^c		19.8 (1.06)	1.0 ^c	
Outpatient treatment or psychotropic medications			.518			.002			.803
2008	35.1 (3.42)	1.1 (0.81–1.52)		48.0 (1.69)	0.9 (0.78-0.95)		41.7 (1.31)	1.0 (0.91–1.08)	
2009	26.2 (2.96)	0.8 (0.59-1.16)		48.4 (1.64)	0.9 (0.79-0.95)		40.6 (1.21)	1.0 (0.89-1.05)	
2010	34.3 (3.54)	1.1 (0.80-1.48)		49.0 (1.67)	0.9 (0.80-0.96)		43.6 (1.18)	1.0 (0.96-1.12)	
2011	33.6 (3.03)	1.1 (0.80-1.43)		47.5 (1.61)	0.9 (0.78-0.93)		40.2 (1.29)	1.0 (0.88-1.04)	
2012	29.3 (3.06)	0.9 (0.68–1.27)		47.0 (1.67)	0.8 (0.77-0.92)		44.8 (1.31)	1.1 (0.98–1.15)	
2013	31.6 (4.00)	1.0 ^c		55.9 (1.87)	1.0 ^c		42.2 (1.29)	1.0 ^c	
Alternative treatment			.493			.188			.951
2008	13.6 (2.39)	0.8 (0.50-1.39)		19.7 (1.42)	0.9 (0.71-1.07)		22.7 (1.16)	1.0 (0.87-1.17)	
2009	10.7 (2.24)	0.7 (0.39-1.15)		22.3 (1.36)	1.0 (0.80-1.16)		19.7 (0.99)	0.9 (0.75-1.00)	
2010	10.9 (2.29)	0.7 (0.37-1.21)		19.9 (1.47)	0.9 (0.72-1.06)		22.9 (1.13)	1.0 (0.88–1.17)	
2011	12.4 (2.47)	0.8 (0.44-1.32)		20.6 (1.39)	0.9 (0.75-1.09)		22.8 (1.25)	1.0 (0.87–1.16)	
2012	14.4 (2.45)	0.9 (0.53-1.48)		20.6 (1.52)	0.9 (0.76-1.12)		21.8 (1.15)	1.0 (0.83-1.12)	
2013	16.3 (3.23)	1.0 ^c		22.5 (1.58)	1.0 ^c		22.6 (1.17)	1.0 ^c	

^aSubstance Abuse and Mental Health Services Administration requires that any description of overall sample sizes based on the restricted-use data files has to be rounded to the nearest 100, which intends to minimize potential disclosure risk.

^bCovariates in each final multivariable logistic regression model: age (continuous variable due to a wide age range within each generational cohort), sex, race/ ethnicity, family income, health insurance, marital status, self-rated health, number of emergency room visits, major depressive episode, substance use disorders, severity of mental illness, number of chronic physical diseases in the past year, and accessibility of mental health treatment per 10,000 county residents (number of licensed psychologists and number of office-based psychiatrists).

^CReference group was 2013. Since many 2013 estimates were the highest prevalence and because 2008 estimates were not necessarily the lowest prevalence during this period, it is statistically informative to use the 2013 estimates as the reference groups and show how the 2013 estimates were higher than the estimates in the previous years. Abbreviation: SE = standard error.

mental health treatment because of shortages in the mental health workforce⁴ and because psychiatrists are less likely to accept insurance compared with doctors in other specialties.²

Importantly, with the increasing trends in receipt of psychotropic medications without inpatient or outpatient treatment, more research is needed to assess quality of mental health care over time. The combination of psychosocial interventions and rehabilitation services with psychotropic medications is frequently the recommended delivery mode of mental health care.²⁵ A recent study found that patients had a stronger preference for psychosocial therapy over receipt of psychotropic medications only.²⁶ Nevertheless, psychotherapy has been shown to have a decreasingly prominent role in outpatient mental health treatment, and an increasing proportion of mental health outpatients receive psychotropic medications without psychotherapy.²⁷ The failure to use psychotherapy as an intervention may be associated with greater development of

It is illegal to post this copy treatment resistance in conditions such as major depression. Several studies have shown the beneficial effects of the use of psychotherapy (eg, cognitive behavioral therapy) when using switching and augmentation approaches (2 common pharmacotherapy strategies) for patients with treatmentresistant depression.^{28,29} Compared with specialty mental health providers, fewer primary care providers have the time, training, or reimbursement mechanisms to provide psychotherapy or counseling.^{3,30,31} Primary care providers may not refer patients to specialty mental health providers due to limited accessibility of mental health treatment.^{4,32} Fewer patients received mental health treatment that exceeded a threshold of minimal adequacy in general medical settings than in specialty mental health settings (12.7% vs 48.3%).³³ Additionally, psychotropic medications are implicated in many adverse drug events treated in US emergency departments.³⁴ In this context, it is not surprising that an IOM report highlighted concerns about poor quality of mental health treatment in the United States.³⁵

Between 2008 and 2013, compared with older and younger counterparts, baby boomers with MI had higher prevalence of receiving outpatient mental health treatment and receiving psychotropic medications. However, even among baby boomers with MI, more than one third received neither mental health treatment nor alternative services for their mental health problems. Moreover, the prevalence of receiving mental health treatment among the Silent Generation remained unchanged between 2008 and 2013. The Silent Generation cohort in this study may be less ill than other generations represented in the community because severity of mental illness is associated with higher mortality, disability, and nursing home placement.³⁶ We adjusted for severity of mental illness in our model-based estimates, but mental health care needs across generations with MI may differ.

This study has several limitations. First, NSDUH as a self-reported survey is subject to measurement errors. Second, the 2008-2013 NSDUH did not specifically ask about enrollment in Medicare Part D. Third, NSDUH did not collect types, names, and dosages of psychotropic medications. Fourth, NSDUH did not measure the appropriateness and effectiveness of mental health treatment and the types and specialties of providers who prescribed the psychotropic medications. Fifth, trends in behavioral interventions could not be examined directly; yet, behavioral interventions may be affected by policy changes differently from pharmacotherapy. Sixth, the NSDUH model used to predict MI had relatively low sensitivity (compared to SCID results), and many cases with MI may be missed. However, determining a cut point probability that attempts to equalize false-positives and false-negatives provided a calibrated estimator of MI that produced unbiased estimates. Additionally, the measure had similar sensitivity and specificity values among the overall adult population and across generations, and the high values of specificity indicated that the large majority of the included cases met the criteria for MI. To test for bias, we examined trends **adult** population regardless of whether adults had MI and found similarly increasing trends in receipt of psychotropic medications without inpatient or outpatient mental health treatment.

Longer duration studies are needed to assess trends in prevalence of receiving mental health treatments among the 3 generations with MI after the implementation of the ACA and the full implementation of the MHPAEA. Under the ACA, there is a strong push to integrate mental health and substance use services with general medical services.²⁵ Several studies have suggested the effectiveness of collaborative care to improve the management of mental illness using case managers to link primary care providers, patients, and mental health specialists.³⁷⁻⁴¹ Delivering collaborative care and ensuring continuation of collaborative care face many challenges and barriers.²⁵ Beginning in 2014, under the ACA, people cannot be denied coverage, charged more, or denied treatment based on preexisting health conditions.⁴² Also, starting in 2014, 28 states extended Medicaid coverage to uninsured adults under age 65 whose family income is under 138% of FPL,⁴² which may increase access to mental health treatment among baby boomers and Generation X with MI.43 Moreover, a recent report has shown that states that chose to expand Medicaid are better able to treat low-income people with MI than the states that opted out of expansion (including some of the largest states, such as Texas and Florida).⁴⁴ Furthermore, there will be additional savings on brand-name and generic drugs for Medicare Part D enrollees during the coverage gap in the next several years until it is closed in 2020,⁷ which may increase access to psychotropic medications. In addition, the final regulation implementing MHPAEA was effective in 2014. To enforce the federal parity law, state insurance commissioners can fine, sue, decertify plans, or force insurers to review denied claims.45,46 Further studies are needed to continue to monitor mental health treatment patterns and related quality of mental health care among these populations in the coming years.

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