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Mental Health Spending and Intensity of Service Use following Federal Parity for Individuals Diagnosed with Eating Disorders

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Abstract

Objective—The Mental Health Parity and Addiction Equity Act (MHPAEA) was intended to eliminate differences in insurance coverage for mental health and substance use disorder services and medical/surgical care. No studies have examined mental health service use after federal parity implementation among individuals diagnosed with eating disorders, for whom financial access to care has often been limited. This study examined whether MHPAEA implementation was associated with changes in mental health utilization and spending in this population.

Methods—Using Truven Health MarketScan data from 2007–2012, this study examines trends in mental health spending and intensity of use of specific mental health services (inpatient days, total outpatient visits, psychotherapy visits, and medication management visits) among individuals 13–64 with a diagnosis of an eating disorder (n=27,594).

Results—MHPAEA implementation was associated with a small increase in total mental health spending (\$1,271.92; F-test=26.35; df=1,44; p<.001) and no change in out-of-pocket spending (\$112.99; F-test=1.46; df=1,44; p=.234) in the first year post-parity. The law's implementation was associated with an increased number of outpatient mental health visits among users, corresponding to an additional 5.8 visits on average during the first year (F-test=64.87; df=1,44; p<.001). This overall increase was driven by an increase in psychotherapy use of 2.9 additional visits annually among users (F-test=29.47; df=1,44; p<.001).

Conclusions—The federal parity law's implementation was associated with increased intensity of outpatient mental health service use among individuals diagnosed with eating disorders, but no increase in out-of-pocket expenditures, suggesting improvements in financial protection.

Introduction

The passage of the Mental Health Parity and Addiction Equity Act (MHPAEA) in 2008 represented the culmination of decades of effort on the part of advocates to secure the enactment of a comprehensive policy to improve equity in insurance coverage for mental health and substance use disorder (MHSUD) services compared with general medical services. While the vast majority (98% in 2002) of workers with employer-sponsored health insurance coverage had mental health benefits before MHPAEA's implementation, special benefit limits for MHSUD services, including higher copayments than for general medical/surgical services and special annual limits on the number of inpatient MHSUD days and outpatient MHSUD visits covered or on MHSUD service expenditures, were common in the private insurance market.¹ Under MHPAEA and its regulations, plans that cover MHSUD services must offer MHSUD benefits that are at least as generous as benefits for comparable medical/surgical services.^{2,3} Parity requirements apply to both quantitative treatment limits (e.g., cost sharing, annual day or visit limits) and non-quantitative limits (e.g., utilization review processes, application of medical necessity criteria, provider network management). Parity advocates hoped that MHPAEA implementation would result in greater financial access to MHSUD services and improved financial protection for individuals with mental disorders, particularly high users who were most affected by annual spending and utilization

limits. MHPAEA did not, however, require plans to cover specific MHSUD diagnoses, leaving the decision about which diagnoses they will cover under federal parity to health plans.⁴

The estimated lifetime prevalence of eating disorders is 3–4% for women and 2% for men.⁵ Eating disorders including anorexia nervosa, bulimia nervosa, and binge-eating disorder are associated with social and role functioning impairment and increased risk of suicidal ideation and suicide attempts.⁶ Many individuals with eating disorders do not receive treatment for this condition,^{5,6} despite potentially life-threatening medical complications.^{7,8} Limited insurance coverage is one reason for not obtaining treatment. Anecdotal reports of privately-insured individuals with eating disorders who were unable to obtain coverage for mental health treatment services are common.^{9,10,11,12} MHPAEA could expand access to such services and improve financial protection for individuals with eating disorders and their families. However, in a national survey of commercial health plans, Horgan et al. found that 22.4% of plans did not cover services for eating disorders in 2010, the first year after the law went into effect but before enforcement efforts by the federal government began in 2011.¹³ In addition, several lawsuits brought by parties alleging violations of MHPAEA or state parity laws have involved the treatment of eating disorders.¹⁴ Little is known about the impact of MHPAEA on mental health spending and utilization among individuals with an eating disorder. We used an interrupted time series design and a large private insurance dataset to examine whether federal parity was associated with changes in mental health spending and intensity of mental health service use among commercially-insured individuals with an eating disorder.

Methods

Data and Sample

We used the *Truven Health MarketScan Database* from 2007 to 2012. The MarketScan database includes health insurance claims and enrollment information for employees and their dependents from approximately 100 large employers and health plans in the U.S., covering between 17 million and 22 million enrollees per year.

The study population includes adolescents and adults ages 13–64 with an inpatient or outpatient claim with a primary diagnosis of an eating disorder, including anorexia nervosa, eating disorder not otherwise specified or bulimia nervosa (International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) code 307.1, 307.50, and 307.51) anytime during the six-year study period from 2007 through 2012. We initially examined the number of individuals identified as having an eating disorder diagnosis using only the primary diagnosis vs. any diagnosis on a claim, and the sample sizes obtained from the two approaches were very similar. To ensure that we identified individuals who were receiving care specifically for an eating disorder, we opted to use the more restrictive definition that requires an individual to have at least one claim with a primary diagnosis of an eating disorder. The unit of analysis was the person-month. To be included in the cohort, an individual must have been enrolled continuously during all 12 months of the year of initial eating disorder diagnosis. Given the chronic nature of most eating disorders and the undercoding of these diagnoses, once an individual meets the criteria for inclusion, the

individual appears in the study population for all subsequent calendar years in which they were enrolled 12 months during the study period. To ensure we have complete information on mental health service use, we omitted plans for which MH/SUD carve-out claims were unavailable in the Marketscan data.

The Affordable Care Act (ACA) provision requiring health plans to cover all young adults up to age 26 as dependents on their parents' private insurance plans was implemented in the same year that enforcement of MHPAEA began (2011). To address the potential for compositional changes in the population studied resulting from the dependent care provision's implementation, we excluded individuals who were aged 19–25 and enrolled as a dependent in either 2011 or 2012. The final analytic sample consisted of 27,594 individuals who had an eating disorder diagnosis during the study period.

To determine whether an individual had a co-morbid mental health or substance use disorder, we used ICD-9 diagnostic codes to group individuals using a hierarchy of five diagnosis categories: bipolar disorder; depression; anxiety, post-traumatic stress disorder, phobia, or obsessive compulsive disorders; or other mental health or substance use disorder. For example, if a participant had at least one bipolar disorder diagnosis during the study period, he or she would be placed in that group, regardless of any other diagnoses; if that participant did not have a bipolar disorder diagnosis but had a depression diagnosis, he or she would be placed in the depression group, and so on.

Study Outcomes

Among individuals with an eating disorder diagnosis during our study period, we focused on two types of outcomes: mental health spending and intensity of mental health service use. All outcomes were calculated at the person month level. For spending, we examined total mental health spending (the sum of health plan and enrollee out-of-pocket spending on these services), outpatient mental health spending, inpatient mental health spending, and out-of-pocket mental health spending, which includes deductibles, copayments, and coinsurance. The total spending measure includes spending on inpatient and outpatient mental health services and psychiatric medications, defined using a well-established algorithm.^{15,16,17} The costs associated with an inpatient mental health hospitalization were included if the majority of the claims associated with the stay had a primary diagnosis of a mental health condition (295.xx–302.xx, 306.xx–309.xx, or 311.xx–314.xx) and the discharge claim had a primary diagnosis of a mental health condition, as in previous work.^{17, 18} Spending on outpatient services was included if the claim had a primary diagnosis of a mental health condition, a mental health-specific procedure code, or a mental health-specific HCFA revenue code. As is typical, emergency department services are captured in the inpatient file if that visit resulted in a hospitalization; otherwise these services are captured in the outpatient file. All spending outcomes were adjusted for inflation using the Personal Health Care (PHC) Index¹⁹ and are reported in 2012 dollars.

For intensity of use, outcomes focused on the number of units of specific services used in a month among the subset of individuals who used that type of service at least once during the month. We examined the number of mental health inpatient days in the month among mental health inpatient service users. On the outpatient side, outcomes were: 1) the number of

psychotherapy visits among users; 2) the number of medication management visits among users; and 3) the total number of outpatient mental health visits among users.

Statistical Approach

To assess the impact of the federal parity law on mental health spending and intensity of mental health service use for individuals diagnosed with eating disorders, we used interrupted time series models to compare trends observed in the post-parity period with what would have been expected given trends in the pre-parity period. These models were estimated using data aggregated to the month level, rather than the individual enrollee level (and thus do not include demographic or other patient-level variables). To measure federal parity, we created a binary variable that was coded as 0 for the thirty-six months before parity became effective (2007–09) and 1 for the twenty-four months after enforcement of MHPAEA began (2011–12). Although plans were aware that enforcement of the law would not begin until 2011, previous research has documented that many plans dropped quantitative treatment limits that were not at parity with general medical benefits when the law became effective in 2010.^{13,20} Consequently, the year 2010 was treated as a transition period (since the law had become effective but was not yet being enforced), and the twelve months of 2010 were dropped from the analysis.

To measure time, we created a continuous variable that indicated the time in months from federal parity enforcement (values ranged from –35 to 36). We included an interaction between time and parity, and 12 binary variables for the calendar months to account for seasonal variation in outcomes (e.g., monthly variation in out-of-pocket spending due to deductibles that restart in January of each year) and in the symptomology of eating disorders.²¹ The two key variables of interest are the parity coefficient, which captures changes at the time of MHPAEA enforcement in a given outcome, and the time*parity interaction coefficient, which reflects changes in the trend of outcomes of interest over time due to parity enforcement. A statistically-significant coefficient on either or both of these terms indicates that MHPAEA had an effect on the outcome. We also show a joint F-test for the full effect of MHPAEA during the first year of its enforcement that combines the parity and parity*time coefficients.

The models were fit with 60 monthly observations, aggregated across individuals. Variances were calculated using Yule-Walker first-order autoregressive parameters to account for correlation between consecutive months. We used SAS statistical software (Version 9) to estimate all models. The study was approved by the XXX Institutional Review Board.

Results

Unadjusted characteristics of the sample of person-years with an eating disorder diagnosis during our study period appear in Table 1. The size of our eating disorder cohort increases each year due to the sampling strategy (i.e., once an individual meets inclusion criteria, she remains in the sample for all subsequent calendar years during which she is enrolled 12 months). Across all years, the vast majority (between 85% and 90%) of the sample was female and 13–29% was under the age of 25. Depending on the year, between 37% and 44% had a diagnosis of a co-occurring mental health or substance use disorder during the

calendar year. Average per-person total annual mental health spending ranged from \$3,006 to \$3,829 during the study period, while average annual out-of-pocket spending ranged from \$458 to \$601. Among outpatient mental health service users, the average number of visits per year ranged from 14.7 to 17.6.

Associations between MHPAEA enforcement and mental health service spending are shown in Table 2. We found a significant increase in total mental health spending associated with MHPAEA enforcement, primarily due to a change in the slope of spending following MHPAEA. During the first year after enforcement, total mental health spending increased \$1,271.92 (F-test=26.35; df=1,44; p<.001). There was no significant increase in out-of-pocket mental health spending associated with MHPAEA (\$112.99; F-test=1.46; df=1,44; p=.234 during the first year).

Associations between MHPAEA enforcement and the intensity of mental health services used by individuals with an eating disorder diagnosis are shown in Table 3. We find that parity was associated with increases in the total number of outpatient mental health services among users of those services. Through the first year post-enforcement, these changes translate into 5.8 additional outpatient mental health visits (F-test=64.87; df=1,44; p<.001), including 2.9 additional psychotherapy visits, on average, among individuals receiving psychotherapy (F-test=29.47; df=1,44; p<.001). There were no associations between MHPAEA and the number of inpatient mental health days or number of outpatient medication management visits.

Discussion

Enforcement of the federal parity law was associated with increased use of outpatient mental health services, including psychotherapy visits, among individuals with eating disorder diagnoses who accessed these services, and increased total mental health spending. In contrast, we documented no changes in out-of-pocket mental health spending after enforcement of the federal law began. These results suggest that the law may have provided some level of financial protection for individuals with eating disorders as they accessed additional mental health services.

These results are consistent with a recent analysis of MHPAEA's impact on children with autism spectrum disorders (ASD), another condition for which many plans have excluded coverage in the past.²² This analysis found similar increases in outpatient service use, with no change in out-of-pocket spending for children with ASD.

There is an extensive literature documenting the effects of earlier parity policies on utilization and spending for MHSUD services.¹⁵ These studies have generally found that parity results in improved financial protection for users of MHSUD services with little or no increase in total spending for this care. However, there are no studies that look specifically at impacts on individuals with eating disorders. In contrast to many other psychiatric diagnoses, eating disorders result in numerous important medical effects, including widespread changes to the cardiovascular, neurologic, hematologic, and endocrine/reproductive systems.⁸

Early analyses of the implementation of MHPAEA found that most plans were complying with the law by offering MHSUD benefits that were at least as generous as general medical benefits.^{13,23} However, a sizeable minority were not complying with all provisions of the law. As noted above, Horgan et al. documented that nearly a quarter of commercial plans did not cover eating disorder services in the first year after the law's implementation, before regulations intended to guide MHPAEA implementation had been released.¹³ More recent study of MHPAEA compliance is needed to understand how services for individuals with eating disorders are now being covered after final MHPAEA regulations went into effect in 2015.

There are several limitations to our study. First, the study lacks a comparison group, a common limitation when studying policy changes that are implemented nationally. As a result, our findings could be sensitive to other changes in service use and expenditures that occurred at the time of parity implementation but are unrelated to it. Second, claims data lack detailed clinical information that would be useful in understanding the association between federal parity and mental health service use among individuals with eating disorder diagnoses. Claims data also lack information on benefit design that would allow us to understand specific changes that may have been made to coverage of eating disorder treatment services after MHPAEA's implementation and lack data on service use that was not reimbursed by insurance (i.e., services paid entirely out of pocket). Third, we are unable to study the probability of mental health service among individuals with eating disorders using this design due to concerns about possible changes in diagnosis coding practices after parity law implementation. However, our design allows us to examine changes in intensity of mental health service use among those individuals diagnosed with an eating disorder at any point during the study period. Fourth, while the MarketScan database allows us to study MHPAEA's impacts on over 27,000 individuals with eating disorder diagnoses who are enrolled in commercial health plans, MarketScan includes many large, self-insured plans that tend to have generous coverage relative to the market as a whole, which may limit the generalizability of our findings and result in a lower bound estimate of the effect of parity on the outcomes studied.²⁴ Finally, we were unable to include individuals who obtained coverage through the ACA's dependent coverage provision since this provision and MHPAEA were implemented in the same year (i.e., including these individuals could result in our conflating effects of the parity policy with population changes resulting from the dependent care provision). Nevertheless, this study provides the first evidence on the association between the federal parity law's implementation and mental health spending and intensity of service use among adolescents and adults diagnosed with an eating disorder.

Conclusions

Using a large national database of privately-insured individuals, we found increased intensity of service use with no increase in out-of-pocket spending for enrollees with eating disorders, suggesting improved financial protection for individuals with eating disorders and their families. The long-term impact of the law on individuals with eating disorders will depend on plans' future compliance with parity provisions and how plans respond to the flexibility in the law regarding which diagnoses to cover. The 21st Century Cures Act passed in December 2016 includes provisions intended to tighten enforcement of MHPAEA, and

may affect plan coverage decisions and utilization among individuals with eating disorders in the future. Additional research will be necessary to understand the effects of parity requirements on this population as additional legislative and regulatory changes to the health insurance market are made.

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Table 1

Unadjusted descriptive characteristics of person-years with an eating disorder diagnosis in each year or a previous year, 2007–2012

	Pre-parity						Transition						Post-parity					
	2007		2008		2009		2010		2011		2012		2011		2012			
	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%		
N	4,390		7,651		9,532		11,409		14,372		17,101							
Female	3,944	89.8	6,677	87.3	8,174	85.8	9,734	85.3	12,206	84.9	14,465	84.6						
Age																		
13–17	521	11.9	838	11.0	916	9.6	1,184	10.4	1,915	13.3	2,929	17.1						
18–24	765	17.4	997	13.0	756	7.9	265	2.3	232	1.6	236	1.4						
25–34	912	20.8	1,651	21.6	2,161	22.7	2,543	22.3	2,952	20.5	3,134	18.3						
35–44	1,056	24.1	1,920	25.1	2,562	26.9	3,265	28.6	4,026	28.0	4,612	27.0						
45–54	878	20.0	1,655	21.6	2,283	24.0	2,950	25.9	3,622	25.2	4,237	24.8						
55–64	258	5.9	590	7.7	854	9.0	1,202	10.5	1,625	11.3	1,953	11.4						
Any co-morbid mental health diagnosis	1,925	43.8	3,074	40.2	3,712	38.9	4,182	36.7	5,339	37.1	6,436	37.6						
Bipolar disorder	223	5.1	318	4.2	378	4.0	417	3.7	538	3.7	586	3.4						
Depression	1,125	25.6	1,724	22.5	2,059	21.6	2,281	20.0	2,760	19.2	3,380	19.8						
Anxiety/PTSD/Phobia/OCD	258	5.9	485	6.3	613	6.4	729	6.4	1,041	7.2	1,304	7.6						
Other disorder	319	7.3	547	7.1	662	6.9	755	6.6	1,000	7.0	1,166	6.8						
Intensity of mental health service use																		
Average number of inpatient days per year, among inpatient service users (N=1,516)	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD		
	17.4	19.0	16.6	18.5	18.1	18.5	18.1	19.5	18.3	18.3	18.1	19.5	18.1	22.3	18.1	21.7		
Average number of outpatient visits per year, among outpatient service users (N=36,937)	15.1	21.5	14.8	20.7	14.7	20.7	14.8	22.8	16.7	16.7	17.6	26.5	17.6	26.5	17.6	26.9		
Average number of psychotherapy visits per year, among psychotherapy users (N=24,000)	14.5	15.6	14.8	16.1	14.7	16.6	15.3	18.6	16.5	16.5	16.4	21.5	16.4	21.5	16.4	19.5		
Average number of medication management visits per year, among medication management users (N=5,879)	4.2	3.9	4.0	3.5	4.4	4.6	4.3	4.3	4.2	4.2	4.1	4.1	4.1	4.1	4.1	3.8		
Average number of partial hospitalization/intensive outpatient visits per year, among users of either service (N=1,831)	16.1	20.6	17.1	19.9	15.7	14.4	19.9	21.7	22.3	22.3	23.3	22.3	23.3	22.3	23.3	22.2		

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	Pre-parity						Transition		Post-parity			
	2007		2008		2009		2010		2011		2012	
	N	%	N	%	N	%	N	%	N	%	N	%
N	4,390		7,651		9,532		11,409		14,372		17,101	
Average number of other outpatient services excluding those above, among outpatient service users (N=25,999)	3.2	7.1	3.3	6.7	3.3	6.5	3.1	6.4	3.5	8.5	3.9	8.0
Mental health spending												
Average total mental health spending per year	3,829	11,080	3,499	9,986	3,242	8,707	3,006	8,607	3,306	9,904	3,475	10,973
Average out-of-pocket mental health spending per year	601	1,874	588	2,103	504	948	458	815	492	913	498	936

Note: Descriptive statistics are presented in person years. Individuals are represented each year from the first year they have an eating disorder diagnosis and 12-month continuous enrollment in a calendar year. There are 27,594 unique individuals with eating disorders diagnoses in the study sample. Persons with an eating disorder diagnosis could have more than one co-morbid mental health diagnosis.

Table 2

Interrupted time series models on changes in total and out-of-pocket spending on mental health services among individuals diagnosed with eating disorders, 2007–2012

	Coefficient	Standard Error	P-Value	Effect through first year post-parity enforcement		
				Estimate	F ^a	p-value
Total mental health spending						
Average total mental health spending per month among individuals with eating disorders				1,271.92	26.35	<.001
Parity	14.58	26.18	.580			
Time	-3.85	.49	<.001			
Parity*Time	4.94	1.01	<.001			
Out-of-pocket mental health spending						
Average out-of-pocket mental health spending per month among individuals with eating disorders				112.99	1.46	.234
Parity	4.71	9.72	.630			
Time	-.54	.19	.007			
Parity*Time	.25	.39	.522			
Outpatient mental health spending						
Average outpatient mental health spending per month among individuals with eating disorders who had outpatient use				543.86	2.95	.093
Parity	-3.72	33.21	.911			
Time	-.69	.64	.286			
Parity*Time	2.65	1.31	.049			
Inpatient mental health spending						
Average inpatient mental health spending per month among individuals with eating disorders who had inpatient use				35,589.00	5.13	.029
Parity	3,471.00	1,667.00	.043			
Time	-37.05	31.24	.242			
Parity*Time	-27.31	63.87	.671			

^a df= 1, 44

Note: Estimates for first year post-parity reflect the effect of parity through the first year of parity enforcement.

Table 3

Interrupted time series models on changes in intensity of use for mental health services among individuals diagnosed with eating disorders, conditional on using the specific service in a given month, 2007–2012

	Coefficient	Standard Error	P-Value	Effect through first year post-parity enforcement		
				Estimate	F ^a	p-value
Average number of total inpatient mental health days, per month among users						
Parity	1.715	1.126	.135	15.74	2.17	.148
Time	-.014	.021	.528			
Parity*Time	-.022	.044	.620			
Average number of total outpatient mental health services, per month per user						
Parity	.192	.076	.016	5.78	64.87	<.001
Time	-.006	.001	<.001			
Parity*Time	.016	.003	<.001			
Average number of outpatient psychotherapy services, per month per user						
Parity	.257	.057	<.001	2.89	29.47	<.001
Time	-.001	.001	.201			
Parity*Time	-.001	.002	.692			
Average number of outpatient medication management services, per month per user						
Parity	.011	.044	.800	-.63	2.20	.145
Time	.001	.001	.260			
Parity*Time	-.003	.002	.059			

^a df=1, 44

Note: Estimates for first year post-parity reflect the effect of parity through the first year of parity enforcement.