

Economic Burden Associated with Pre-existing Substance Abuse in Patients with Negative Symptom Schizophrenia: US Administrative Claims Data Analysis

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INTRODUCTION

- Schizophrenia is a chronic and debilitating mental illness characterized by a diminished capacity for learning, working, self-care, and interpersonal relationships.⁽¹⁻³⁾ It is also responsible for nearly \$343.2 billion in excess economic burden in the US, as of 2019.⁽⁴⁾
- It presents with positive and negative symptoms as well as cognitive deficits which is worsened by co-existing substance abuse disorders.
- Substance use disorders (SUD) is highly prevalent in schizophrenia, with approximately 47% of patients with schizophrenia suffering from SUD in epidemiological and clinically based samples.⁽⁵⁾ Additionally, it was found that patients who presented to ER with substance abuse were about 3 times more likely to develop schizophrenia, regardless of the presence of psychosis, when compared to the general population.⁽⁶⁾
- Despite antipsychotic effectiveness against positive symptoms, there remains a treatment gap in managing negative symptoms schizophrenia (NSS). The lack of population-based studies focused on NSS in the United States has resulted in limited knowledge of the population affected by these symptoms.

OBJECTIVES

- Examine how initial substance abuse influences the economic burden and resource use among patients with negative symptoms schizophrenia.
- The findings from this study will add to the body of scientific knowledge of the impact of NSS in the face of an apparent limited efficacy of antipsychotics in treatment of NSS.

METHODS

STUDY DESIGN:

- It is a retrospective longitudinal observational study that utilized de-identified administrative claims from STATinMED RWD Insights data (01/01/2016-09/30/2022).

STUDY POPULATION:

- Included were patients with schizophrenia (International Classification of Diseases, 10th Revision, Clinical Modification [ICD-10-CM] code: F20.XX and NSS [ICD-10-CM: F20.5; index date=first NSS diagnosis date) during the identification period 01/01/2017-09/30/2021, aged ≥13 years at index, 12-month continuous capture pre- (baseline) and post- (follow-up) index date, and evidence of baseline antipsychotic use.
- All patients with NSS in the baseline period were excluded. Patients were categorized based on the presence (cases) or absence (controls) of baseline substance abuse (alcohol/drug abuse diagnosis).

STUDY OUTCOMES:

- Statistical Outcomes examined for the follow-up period included all-cause, mental health (MH)-, and schizophrenia-related health care resource utilization (HCRU) and costs per patient per year.

STATISTICAL ANALYSIS:

- Patient demographics, clinical characteristics, and other psychiatric and neurodevelopmental comorbidities were assessed for the baseline period.
- Cohorts were matched using inverse probability treatment weighting (IPTW) and Generalized Linear Models (GLMs) were performed.

FIGURE 1A: Study Design

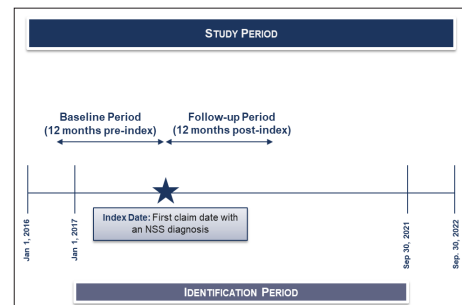
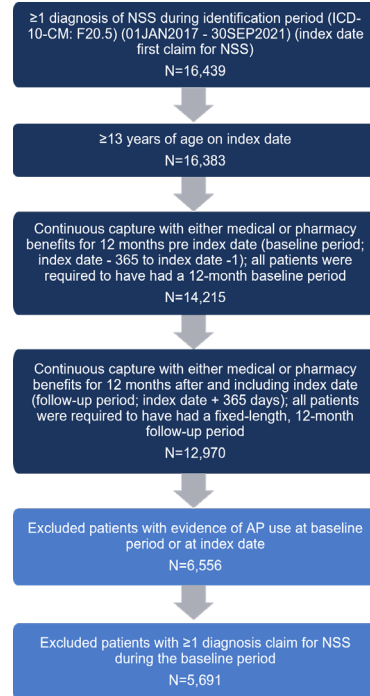


FIGURE 1: Patient Selection Criteria



RESULTS

- Of the 5,691 NSS patients, 24.6% were cases.

- Cases were significantly younger (mean age: 44 vs 52), had higher proportion of patients insured by Medicaid (87% vs 62%), higher comorbidities including Quan-Charlson comorbidity index score (mean: 1.7 vs 1.3), depression (53% vs 22%), uncomplicated hypertension (48% vs 38%), mild liver disease (14% vs 5%), psychoses (96% vs 75%), anxiety (45% vs 21%), bipolar disorder (43% vs 17%), suicidal ideation/attempt/intentional self-harm (44% vs 8%), and trauma- and stressor-related disorders (21% vs 7%).

- Following IPTW (Table 3), cases had a significantly greater mean number inpatient admissions (8.7 vs 6.3), outpatient ER visits (5.7 vs 2.8), lower prescription counts (41.92 vs 55.04), and higher mean outpatient ER costs (\$2,276 vs \$1,439).

- GLM analysis also showed cases had higher mean number of inpatient admissions (10.5 vs 5.7), outpatient visits (22.7 vs 16.5), lower prescription counts (40.1 vs 55.6), and higher outpatient visit costs (\$12,505 vs \$8,722).
- These findings were generally consistent with MH- and schizophrenia-related HCRU and costs; however, MH-related total costs were significantly higher (\$32,195 vs \$25,003; all p<0.05).

TABLE 1: Baseline Demographic Characteristics for the Study Cohorts

	BL Substance Abuse (n=1,400)		No BL Substance Abuse (n=4,291)		Pre-IPTW	BL Substance Abuse (n=1,400)		No BL Substance Abuse (n=4,291)		Post-IPTW
Mean/N / SD/%					STD					STD
Demographics										
Age	43.79	13.34	51.99	15.41	56.92	49.18	14.33	49.72	15.75	3.62
Male	1,008	72%	2,447	57%	31.68	825.13	59%	2586.70	60%	2.74
Female	392	28%	1,844	43%	31.68	574.87	41%	1704.30	40%	2.74
Payer Channel										
Commercial	89	6%	479	11%	17.06	151.59	11%	431.33	10%	2.54
Medicare	91	7%	1,102	26%	54.07	267.67	19%	897.00	21%	4.46
Medicaid	1,217	87%	2,679	62%	58.70	978.21	70%	2937.58	68%	3.06
Others*	3	0%	31	1%	7.45	2.53	0%	25.09	1%	6.55

TABLE 2: Baseline Clinical Characteristics for the Study Cohorts

	BL Substance Abuse (n=1,400)		No BL Substance Abuse (n=4,291)		Pre-IPTW	BL Substance Abuse (n=1,400)		No BL Substance Abuse (n=4,291)		Post-IPTW
Mean/N / SD/%					STD					STD
Clinical Characteristics and Comorbidity										
CCI	1.73	2.89	1.32	2.54	15.05	1.49	2.68	1.40	2.60	3.28
Depression	742	53%	962	22%	66.48	491.81	35%	1292.81	30%	10.68
Hypertension, uncomplicated	678	48%	1,651	38%	20.18	122.69	9%	301.72	7%	6.42
Liver disease, mild	189	14%	195	5%	31.64	113.03	8%	279.37	7%	6.01
Psychoses	1,339	96%	3,197	75%	62.10	1134.91	81%	3422.77	80%	3.27
Mental Health										
Anxiety and fear-related disorders	632	45%	885	21%	54.05	418.10	30%	1155.09	27%	6.53
Bipolar and related disorders	608	43%	736	17%	59.66	351.07	25%	1016.84	24%	3.21
Suicidal ideation/attempt/intentional self-harm	613	44%	357	8%	88.31	247.76	18%	735.25	17%	1.48
Trauma- and stressor-related disorders	291	21%	284	7%	42.09	179.19	13%	445.35	10%	7.57

TABLE 3: HCRU for All-Cause and Schizophrenia-Related after IPTW Adjustment

	Baseline Substance Abuse (n=1,400)	No Baseline Substance Abuse (n=4,291)	p-value
All-cause HCRU			
≥1 inpatient stay	69%	51%	<.0001
≥1 outpatient visit	98%	98%	0.1848
≥1 pharmacy visit	79%	82%	0.0077
Inpatient LOS	10.56	14.04	0.6987
Number of inpatient admissions	16.84	14.90	<.0001
Number of outpatient visits	28.53	23.62	0.0005
Number of pharmacy visits	22.13	22.19	<.0001
Number of prescription visits	48.55	55.65	<.0001
Schizophrenia HCRU			
≥1 inpatient stay	51%	40%	<.0001
≥1 outpatient visit	87%	89%	0.0116
≥1 pharmacy visit	68%	75%	<.0001
Inpatient LOS	13.16	13.09	0.1895
Number of inpatient admissions	8.43	8.58	0.0073
Number of outpatient visits	21.09	16.89	0.6941
Number of pharmacy visits	6.99	7.46	<.0001
Number of prescription visits	9.58	10.57	<.0001

STRENGTHS & LIMITATIONS

- The usage of claims data comes with some restrictions. A diagnosis code on a medical claim may be improperly coded or used as a rule-out criteria rather than the actual condition, therefore its existence does not necessarily indicate the occurrence of a disease.
- Additionally, the existence of a claim for a filled prescription does not prove that the medication was taken as directed or that it was consumed.

CONCLUSION

- Substance abuse and schizophrenia are strongly correlated with a high prevalence of SUD found in patients with schizophrenia. Substance abuse is associated with a higher risk of developing schizophrenia, as well as worsening existing symptoms of schizophrenia and NSS.
- Our study finds that baseline substance abuse further increases the economic burden associated with NSS.

ABBREVIATIONS

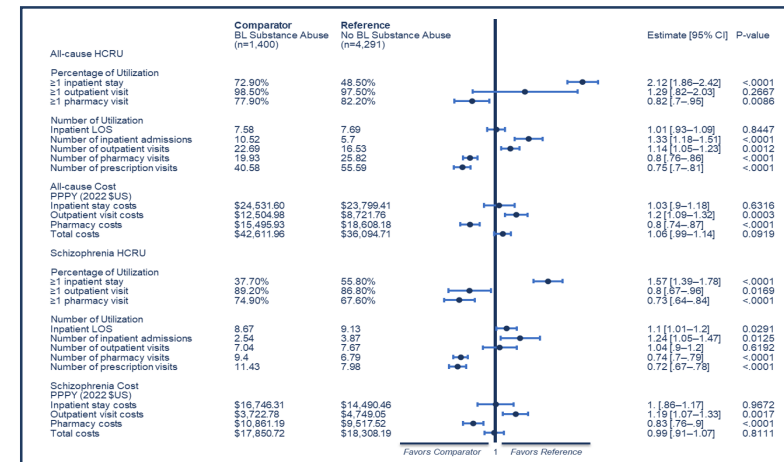
Abbreviations: AP, antipsychotic, BL, Baseline, CCI, Quan Charlson Comorbidity Index Score, CI, confidence interval, HCRU, healthcare resource utilization, ICD, International Classification of Diseases, IPTW, Inverse probability of treatment weighting, LOS, length of stay, NSS, Negative Symptom Schizophrenia, PPPY, Per Person Per Year SD, standard deviation, STD, standardized difference

FIGURE 2: Costs (PPPY) for All-Cause and Schizophrenia-Related after IPTW Adjustment



FIGURE 2A: HCRU and Costs for All-Cause and Schizophrenia-Related

GLM model adjusted for patients' demographics and comorbidities



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