Economic Burden of Comorbid Anxiety and Depression among Patients with Moderate to Severe Psoriasis

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Background

- Psoriasis (PsO) is an inflammatory skin disease associated with a variety of psychiatric comorbidities such as anxiety and depression.
- Psychiatric comorbidities are associated with poor treatment adherence in PsO patients, resulting in worse quality of life and increased economic burden.[1]

Objectives

- To estimate the healthcare utilization, direct costs, and indirect costs due to absenteeism or short-term disability associated with treated comorbid anxiety and/or depression among moderate-to-severe PsO patients in the US

Methods

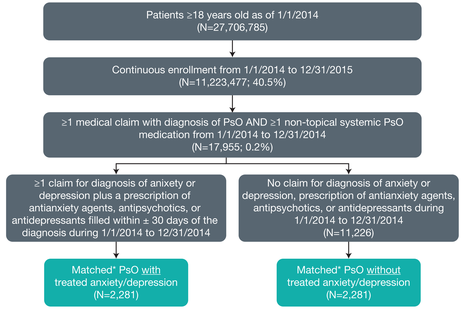
Study Design and Data Sources

- This was a retrospective cohort study of a commercially-insured population in the US.
- Data were extracted from the Truven Health MarketScan® Commercial Claims and Encounters (Commercial) database and Health and Productivity (HPM) databases.
  - The Commercial database provides detailed outcome measures including resource utilization and associated costs for healthcare services performed in inpatient and outpatient setting.
  - The HPM database contains workplan absenteeism and short-term disability data for a subset of enrollees in the Commercial databases.

Study Cohorts

- Moderate to severe PsO: Adults with ≥1 PsO diagnosis plus ≥1 prescribed systemic or biologic PsO medication (proxy for moderate-to-severe PsO) from 1/1/2014 to 12/31/2014
  - PsO with treated anxiety/depression: Patients with ≥1 diagnosis for anxiety and/or depression plus a prescription for anxiolytics, antipsychotics, or antidepressants filled within ±30 days of diagnosis
  - PsO without treated anxiety/depression (controls): Patients with neither anxiety/depression diagnosis nor prescription for anxiolytics, antipsychotics, or antidepressants
  - Controls were randomly selected and matched 1:1 with patients with treated anxiety/depression on age, gender, health plan type, and region using the exact attribute matching method, to ensure comparability and reduce potential confounding biases.

Figure 1. Patient Selection



*The exact attribute matching method was applied to match the moderate to severe PsO patients with vs without treated anxiety/depression on a 1:1 ratio based on the following variables: age, gender, health plan type, residence region

Study Measures

- All-cause healthcare costs were defined as the sum of plan–paid and patient-paid costs, associated with any conditions incurred from inpatient admissions, emergency room visits, outpatient services, and outpatient pharmacy prescriptions.
- PsO-related costs included medical costs associated with a PsO diagnosis and costs for PsO-related biologics and other systemic medications.
- All-cause and PsO-related healthcare costs were compared between those with treated anxiety/depression and matched controls; in addition, costs due to both anxiety and depression, anxiety only, or depression only were also compared between the two cohorts.
- Lost time from short term disability was reported and indirect costs were estimated by multiplying lost days by 70%[2] of the 2015 Bureau of Labor (BLS) age-gender stratified daily wage rate for patients whose data could be linked with the HPM database.

Statistical Analysis

- The statistical significance of differences between the two cohorts was assessed using the t-test for continuous variables and chi-square or Fisher's exact test for categorical variables.
- Generalized linear models with gamma distribution were used to estimate the incremental total costs attributable to treated anxiety/depression, after adjusting for demographic characteristics and comorbid conditions.
- All statistical analyses were conducted using SAS Enterprise Guide 7 (SAS Institute Inc., Cary NC).
- A p-value of < 0.05 was defined as statistically significant.

Results

Demographic Characteristics

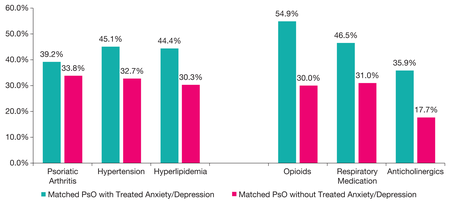
- A total of 4,562 commercially insured patients were included; 65% were female and the mean (±SD) age was 49 (±11) years (Table 1).

Table 1. Demographic Characteristics of the Study Patients

	Total PsO N=4,562		Matched PsO with Treated Anxiety/Depression (n=2,281)		Matched PsO without Treated Anxiety/Depression (n=2,281)	
Age (mean, SD)	48.6	10.5	48.6	10.5	48.6	10.5
18-44 (n, %)	1,452	31.8%	726	31.8%	726	31.8%
45-64	3,110	68.2%	1,555	68.2%	1,555	68.2%
65+	0	0.0%	0	0.0%	0	0.0%
Gender (n, %)						
Male	1,614	35.4%	807	35.4%	807	35.4%
Female	2,948	64.6%	1,474	64.6%	1,474	64.6%
Region (n, %)						
Northeast	796	17.4%	398	17.4%	398	17.4%
North central	852	18.7%	426	18.7%	426	18.7%
South	2,356	51.6%	1,178	51.6%	1,178	51.6%
West	556	12.2%	278	12.2%	278	12.2%
Unknown	2	0.0%	1	0.0%	1	0.0%
Commercial Plan Type (n, %)						
HMO	418	9.2%	209	9.2%	209	9.2%
PPO	3,022	66.2%	1,511	66.2%	1,511	66.2%
POS	226	5.0%	113	5.0%	113	5.0%
CDHP/HDHP	734	16.1%	365	16.0%	369	16.2%
Others*	146	3.2%	75	3.3%	71	3.1%
Unknown	16	0.4%	8	0.4%	8	0.4%

CDHP: consumer-driven health plan; HDHP: high deductible health plan; HMO: health maintenance organization; PPO: preferred provider organization; POS: point-of-service plan
**Includes Comprehensive/Indemnity, Exclusive Provider Organization, missing or Unknown*

Figure 2. Three Most Frequently Occurring Comorbid Conditions and Concomitant Medications used Among Study Patients



[1]All p<0.01

Clinical Characteristics

- Compared with controls, PsO patients with treated anxiety/depression had significantly higher overall burden of comorbidity, as measured by the Quan-Charlson Comorbidity index (all p<0.01).
- The PsO with treated anxiety/depression cohort had a significantly higher percentage of patients with hypertension, hyperlipidemia, psoriatic arthritis (all p<0.01,) and use of concomitant medications (including opioids) (Figure 2) than the control cohorts.

All-cause and PsO-related Healthcare Costs

- On average, patients in the PsO with treated anxiety and/or depression cohort incurred $10,419 (p<.01) higher unadjusted and $6,343 (p<.01) higher adjusted annual all-cause healthcare costs than matched PsO controls; 88% of the difference was due to medical services and 12% due to prescriptions (Table 2).
  - The all-cause difference was driven by a higher percentage of patients in the PsO with treated anxiety/depression cohort who had hospitalizations, ER visits, physician office visits, and other outpatient services (all p<.01).
  - PsO related total healthcare costs were not significantly different between the PsO with treated anxiety/depression group and the PsO without treated anxiety/depression group.

Table 2. Annual All-cause and PsO-related Healthcare Costs of the Study Patients

	Matched PsO with Treated Anxiety/Depression		Matched PsO without Treated Anxiety/Depression		Unadjusted mean difference	p-value	Adjusted* mean difference	p-value
All-cause costs (mean, SD)								
Total costs	$50,300	$44,271	$39,881	$28,490	$10,419	<.01	$6,343	<.01
Medical costs	$18,696	$39,280	$9,531	$21,539	$9,165	<.01	$5,618	<.01
Pharmacy costs	$31,604	$24,533	$30,350	$21,971	$1,254	0.19	$414	0.67
PsO-related costs (mean, SD)								
Total costs	$28,654	$24,632	$29,548	$21,373	-$894	0.48	-$1,393	0.28
Medical costs	$2,626	$13,789	$1,747	$8,410	$879	<.01	$366	0.01
Pharmacy costs	$26,028	$21,464	$27,801	$20,908	-$1,773	0.24	-$1,906	0.21

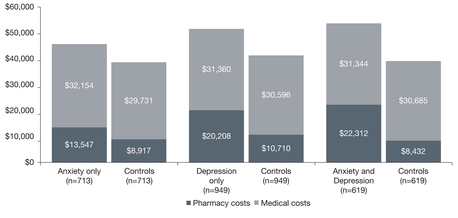
**The adjusted costs were estimated using GLM with gamma distribution after adjusting the following variables: QCI, Other Psychiatric Conditions, Psoriatic Arthritis, Rheumatoid Arthritis, Diabetes, Hypertension, Hyperlipidemia, Obesity, Thyroid Disease.*

- Compared with matched PsO controls, PsO patients with both treated anxiety and depression had $14,539 higher mean costs, PsO patients with treated depression only had $10,262 higher mean costs and PsO patients with treated anxiety only had $7,052 higher mean costs (all p<.01; Figure 3).

Indirect Healthcare Costs

- Among those patients who could be linked with absenteeism records (n=99), PsO patients with treated anxiety/depression had a mean of 22 (316 vs 294, p=.45) more work hours lost and $44 ($6,759 vs $6,714, p=.95) higher indirect costs due to absenteeism than matched PsO controls.
- Among those patients who could be linked with the short term disability records (n=96), PsO patients with treated anxiety/depression had a mean of 23 (63 vs 40, p=0.02) more lost days and $2,776 ($7,487 vs $4,711, p=0.01) higher indirect costs due to disability than matched PsO controls.

Figure 3. Healthcare Costs Stratified by Patients with Treated Anxiety Only, Depression Only, or both Anxiety and Depression



[1]All p<0.01

Limitations

- Administrative claims data were collected for facilitating payment for healthcare services; therefore, definitive diagnoses are not available, and the true prevalence of treated anxiety and/or depression may be underestimated.
- Indirect costs may be also underestimated as presenteeism was not available in the database; however, indirect costs due to absenteeism and short-term disability were reported.
- The study was composed of patients covered by commercial insurance; therefore, the results may not be generalizable to PsO patients with other or no insurance coverage.

Conclusions

- PsO patients with treated anxiety/depression in a commercially insured population incur a substantial incremental economic burden over matched PsO patients without treated anxiety/depression, primarily driven by greater use of medical services.
- While further research is needed to confirm these findings, PsO treatments that relieve psychiatric symptoms such as anxiety and depression may reduce incremental economic burden to benefit patients and the healthcare system.

References

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2. Soliman AM, Surrey E, Bonafede M et al. Real-World Evaluation of Direct and Indirect Economic Burden Among ndometriosis Patients in the United States. *Adv Ther.* 2018;35(3):408-423.

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