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National Estimates of Health Care Expenditure Burdens among Individuals with Substance Use Disorders: A 10-year Study

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BACKGROUND

- Substance use disorders (SUD) are major public health problems with a high healthcare burden for both adults and children in the US.
- The medical encounters and related costs involving SUD have been increasing for over a decade.
- However, limited information exists on national-level healthcare expenditures for the SUD.

OBJECTIVE

To examine healthcare expenditures for SUD using the Medical Expenditure Panel Survey (MEPS) data from 2011 to 2020.

METHODS

Study design/Inclusion

- A retrospective cross-sectional study
- Study included all individuals with SUD and those without SUD based on the 2011-2020 MEPS data.
- SUD cohort defined as:
  Patients of all ages diagnosed with SUD were identified using Clinical Classification Codes (categorized ICD-9 codes clinically): alcohol-related disorders (code 660) and substance-related disorders (code 661), and ICD-10 (codes F10-F19).

Data Collection

- Health care expenditures including total all-cause expenditures in all medical encounters, and all covariates were derived from the MEPS household component (HC) and Medical Provider Component (MPC).

Statistical analysis

- Weighted descriptive analyses were conducted to compare characteristics and healthcare expenditures for patients with and without SUD.
- Comparative analyses of charecteristics involved ANOVA for continuous variables, and chi-square for categorical variables
- A two-part model involving probit and generalized linear models (GLM) with Poisson family distribution and log link function was used to estimate the marginal healthcare expenditures for SUD.
- The probit model was utilized to determine the probability of having zero health expenditures in the first part, while the GLM was implemented in the second part of the model for estimating the marginal healthcare expenditures that differed between the two groups.
- Software: SAS 9.4 and STATA 17.0

RESULTS

- According to the MEPS, there were 1.47 million patients (95% CI:1.32-1.62) diagnosed with SUD between 2011 and 2020, with a prevalence of 0.13%.

Table 1 Selected Demographic Characteristics of Patients with SUD and Non-SUD: Medical Expenditure Panel Survey 2011-2020

	SUD group		Non-SUD group		
Variable	Weighted Frequency	%	Weighted Frequency	%	P value
	Mean (SD)	95% CI	Mean (SD)	95% CI	
Age	44.95 (0.72)	43.54 - 46.36	50.74 (0.22)	50.31 - 51.17	<.0001
Elixhauser Comorbidity Index Score	-1.72 (0.2)	-0.81	0.02 (0.04)	-0.15	<.0001
Gender					<.0001
Male	843,555	57.32	492,863,247	42.14	
Female	628,123	42.68	676,676,042	57.86	
Region					<.0001
Northeast	351,778	23.90	207,332,474	17.73	
Midwest	390,184	26.51	269,185,503	23.02	
South	418,669	28.45	424,589,728	36.30	
West	272,603	18.52	251,580,563	21.51	
Unknown	38,444	2.61	16,851,020	1.44	
Income category/poverty class					<.0001
Poor/Near poor	505,198	34.33	213,214,333	18.23	
Low income	180,166	12.24	155,801,789	13.32	
Middle income	426,987	29.01	319,667,141	27.33	
High income	359,327	24.42	480,856,026	41.12	
Insurance type					<.0001
Private	690,073	46.89	759,292,783	64.92	
Public	654,850	44.50	361,508,332	30.91	
Uninsured	126,755	8.61	48,738,173	4.17	
Comorbidities					0.39
1 or none	678,758	46.12	515,817,211	44.10	
2 or more	792,919	53.88	653,722,077	55.90	

Table 2 Health Care Expenditures Between SUD and Non-SUD Patients by Health Care Service: Medical Expenditure Panel Survey 2011-2020

	SUD group $		Non-SUD group $	
Type of Health Care Service	Mean	95%CI	Mean	95%CI
Total *	19136.00	15381.6 - 22889.67	14264.00	13811.01 - 14716.25
Hospital Inpatient Cost*	6992.85	3780.78-10204.93	3806.22	3579.55-4032.89
Outpatient Cost	1498.28	962.76-2033.81	1305.74	1204.21-1407.27
Emergency Room Cost*	628.93	498.32-759.54	464.57	432.74-496.4
Prescription Drug Cost	4031.81	3231.73-4831.89	3664.76	3479.47-3850.05
Dental Cost	484.35	240.25-385.51	312.88	467.67-501.03
Vision Cost	81.22	28.28-52.79	40.54	78.04-84.4
Home Health and Other Cost	1044.09	598.11-1396.74	997.42	964.98-1123.19

Table 3 Marginal Health Care Expenditure in SUD Patients by Health Care Service: Medical Expenditure Panel Survey 2011-2020

Type of Health Care Service	Marginal Expenditure, $	95%CI
Total*	4687.19	1610.88-7763.50
Hospital inpatient*	2945.74	326.45-5565.04
Prescription medications*	637.48	202.67 - 1072.30
Emergency room*	193.38	81.65-305.11
Outpatient	188.5	-447.11-824.1

*P<0.05 (significantly different),CI: Confidence interval, SUD: Substance Use Disorders

DISCUSSION

- Most patients with SUD were aged between 25 and 64, in the South and enrolled in private insurance.
- A significantly higher marginal total healthcare expenditures [$4,687.19 (95% CI: $1,610.88-$7,763.50)] were found for SUD than the non-SUD.
- This estimates were less than the national report and a previous study assessing the hospital cost of SUD in recent years, potentially due to differences in data source, definition, and covariate adjustment in the current study.
- The majority of the health burden in SUD is attributable to hospital inpatient expenditures, followed by expenditures in prescription and emergency room visits.

CONCLUSIONS

- The economic burden for SUD hospital care remains high.
- The total healthcare expenditures were higher for SUD, mainly due to inpatient and prescription expenditures, than those without SUD.
- Intervention efforts should focus on effective prevention and treatment to reduce the healthcare burden of SUD.

REFERENCES

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