EPH 57

Descriptive Statistics and Polysubstance Use of Pregnant Women Admitted to the United States Treatment Facilities With Methamphetamine Use

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BACKGROUND/OBJECTIVE

- Polysubstance use (PSU) is formally defined as the ingestion of more than one drug of abuse within a defined period with specific motivations driven by anticipated drug effect(s).
- Prenatal methamphetamine (MA) use is a growing critical public health issue, with well-documented associations between exposure and adverse maternal and neonatal outcomes.
- Prior studies have shown that infants exposed to MA in utero are more likely to experience premature birth and low birth weight (Wright et al. 340). Neurobehavioral complications in drug exposed neonates further illustrate the multidimensional detriments of prenatal MA use (Smith et al.).
- Despite these widely known consequences, MA continues to be among the most frequently reported substances of abuse among women entering treatment programs in the United States (Albrecht, Lindsay, and Terplan).
- However, there is little research concerning the prevalence of PSU among pregnant women whose primary cause of abuse is MA.
- The purpose of this study was (1) to describe the social determinants and treatment-related characteristics of pregnant women admitted to US treatment facilities with methamphetamine as primary substance of abuse; (2) to determine the prevalence of PSU or concurrent use of methamphetamine with other substances.
- By investigating PSU within the broader framework of maternal substance use research, this work aims to inform the public about targeted interventions and policies that address the complex needs of pregnant women in treatment for drug-substance abuse.

METHODS

- The Treatment Episode Data Set - Admission (TEDS-A) is a national data system maintained by the Substance Abuse and Mental Health Services Administration (SAMHSA) that collects annual data on admissions to substance abuse treatment facilities. Data from the years 2015-2022 were used for data analysis in this study.
- Our analytic sample consisted of pregnant women aged 18 to 49 years who reported MA as their primary substance of abuse at treatment admission.
- Only treatment-naïve (never been admitted before) admissions were included to assess sociodemographic and treatment-related characteristics. Admissions missing pregnancy status or primary substance information were excluded.
- The final analytic sample consisted of 13,188 pregnant women in various trimesters.
- Substance use categories were created following established PSU framework:
  - Monosubstance Methamphetamine Users (MMU): Use of MA only, with no additional substances reported.
  - Polysubstance Methamphetamine Users (PMU): Use of MA with one or more other substances, including opioids, alcohol, marijuana, cocaine/crack, etc.
  - Unknown PSU Status: Missing or unclassified secondary substance fields
- Key sociodemographic and treatment-related characteristics included:
  - Age: ≤20, 21–29, 30–39, ≥40 years
  - Educational Attainment: <High school, High school/GED, ≥Some college
  - Marital Status: Married, Never married, Separated/Divorced/Widowed, Unknown
  - Employment at Discharge: Full-time, Part-time, Unemployed, Not in labor force, Unknown
  - Living Arrangement: Independent, Dependent, Homeless, Unknown
  - Service Setting: Ambulatory, Residential/Rehabilitation, Detoxification
  - Length of Stay: 1–30 days, 31–364 days, ≥365 days
  - U.S. Census Region: Northeast, Midwest, South, West

RESULTS

Table 1. Sample Characteristics of Pregnant Women (18-49 years old) Admitted to United States Treatment Facilities With Methamphetamine Use

Characteristics	Sample Size n = 13,188 (Total)	Relative Frequency (%)
Polysubstance Use Status		
Monosubstnace Methamphetamine User (MMU)*	4,837	(36.7)
Polysubstance Methamphetamine User (PMU)**	7,871	(59.7)
Unknown	480	(3.6)
Age		
≤ 20 years	891	(6.7)
21-29 years	7,455	(56.5)
30-39 years	4,497	(34.1)
≥ 40 years	345	(2.6)
Education		
Less than high school	4,840	(36.7)
High school or GED	5,838	(44.2)
Some college/College graduate	2,338	(17.7)
Unknown	172	(1.3)
Marital status		
Unknown	6,091	(46.1)
Married	844	(6.4)
Never married	4,766	(36.1)
Separated/Divorced/Widow	1,487	(11.2)
Employment status at discharge		
Full-time	869	(6.5)
Part-time	661	(5.0)
Unemployed	4,833	(36.6)
Not in labor force	4,315	(32.7)
Unknown	2,510	(19.0)
Living arrangements at discharge		
Independent living	5,950	(45.1)
Dependent living	2,649	(20.0)
Homeless	1,899	(14.4)
Unknown	2,690	(20.4)
Service setting at discharge		
Ambulatory care facilities	7,490	(56.7)
Rehabilitative or residential facilities	5,121	(38.8)
Detoxification facilities	577	(4.3)
Length of stay in treatment		
1-30 days	6,211	(47.1)
31-364 days	6,320	(47.9)
≥ 365 days	657	(4.9)
Region		
Northeast	143	(1.0)
Midwest	2,134	(16.1)
South	4,012	(30.4)
West	6,899	(52.3)

*MMU refers to monosubstance methamphetamine users without the use of other substances including cocaine/crack, methamphetamine/speed, other amphetamines, other stimulants alcohol, marijuana/hashish, phencyclidine (PCP), benzodiazepines, hallucinogen, barbiturates, inhalants, tranquilizers, other sedative/hypnotics, and over-the-counter medications at admissions.
**PMU refers to polysubstance methamphetamine users with opioids and psychoactive stimulants use including cocaine/crack, other amphetamines, marijuana, other stimulants, other substances including phencyclidine (PCP), benzodiazepines, hallucinogen, barbiturates, inhalants, tranquilizers, other sedative/hypnotics, and over-the-counter medications at admissions.

Table 2: Polysubstance Use Status in Pregnant Women (18-49 years old) Admitted to United States Treatment Facilities With Methamphetamine Use

Characteristics	Polysubstance Use Status			P-value
	MMU* n (%)	PMU** n (%)	Unknown n (%)	
Age				<0.0001
≤ 20 years	249 (27.9)	611 (68.5)	31 (3.4)	
21-29 years	2,723(36.5)	4,461(59.8)	271(3.6)	
31-39 years	1,701(37.8)	2,631(58.5)	165(3.6)	
≥ 40 years	164(47.5)	168(48.7)	13(3.7)	
Education				0.317
Less than high school	1,770(36.5)	2,890(59.7)	180(3.7)	
High school or GED	2,159(36.9)	3,453(59.1)	226(3.8)	
Some college/College graduate	836(35.7)	1,430(61.1)	72(3.0)	
Marital status				<0.0001
Unknown	2,757(45.2)	3,241(53.2)	93(1.5)	
Married	284(33.6)	509(60.3)	5!(6.0)	
Never married	1,403(29.4)	3,116(65.3)	247(5.1)	
Separated/Divorced/Widow	393(26.4)	1,005(67.5)	89(5.9)	
Employment status at discharge				<0.0001
Full-time	287(33.0)	544(62.6)	38(4.3)	
Part-time	218(32.9)	421(63.6)	22(3.3)	
Unemployed	1,735(35.9)	2,917(60.3)	181(3.75)	
Not in labor force	1,582(36.6)	2,540(58.8)	193(4.4)	
Unknown	1,015(40.4)	1,449(57.7)	46(1.8)	
Living arrangements at discharge				<0.0001
Independent living	2,135(35.8)	3,507(58.9)	308(5.1)	
Dependent living	894(33.7)	1,659(62.6)	96(3.6)	
Homeless	711(37.4)	1,159(61.0)	29(1.5)	
Unknown	1,097(40.7)	1,546(59.4)	47(1.7)	
Service setting at discharge				<0.0001
Ambulatory care facilities	2,722(36.34)	4,579(61.1)	189(2.5)	
Rehabilitative or residential facilities	1,817(35.4)	3,021(58.9)	283(5.5)	
Detoxification facilities	298(51.6)	271(46.9)	8(1.3)	
Length of stay in treatment				<0.0001
1-30 days	2,072(33.3)	3,992(64.2)	147(2.36)	
31-364 days	2,474(39.1)	3,541(56.0)	305(4.8)	
≥ 365 days	291(44.2)	338(51.4)	28(4.2)	
Region				<0.0001
Northeast	45(31.4)	97(67.8)	1(0.7)	
Midwest	810(37.9)	1,283(60.1)	41(1.9)	
South	898(22.3)	2,767(68.9)	347(8.6)	
West	3,084(44.7)	3,724(53.9)	91(1.3)	

*MMU refers to monosubstance methamphetamine users
** PMU refers to polysubstance methamphetamine users with opioids and psychoactive stimulants use including cocaine/crack, other amphetamines, marijuana, other stimulants, other substances including phencyclidine (PCP), benzodiazepines, hallucinogen, barbiturates, inhalants, tranquilizers, other sedative/hypnotics, and over-the-counter medications at admissions.

Table 1:

- Nearly 59.7% of pregnant women admitted to treatment facilities with methamphetamine use were polysubstance methamphetamine users (PMU), while 36.7% were monosubstance methamphetamine users (MMU), and 3.6% had unknown PSU status.
- There was a noticeable difference in PSU prevalence by demographic characteristics and treatment factors. The majority of women were aged 21–29 years (56.5%), had a high school diploma or GED (44.2%), were never married (36.1%), and were unemployed (36.6%) at discharge.
- Most women lived independently (45.1%), and over half were treated in ambulatory care settings (56.7%).
- Treatment duration most frequently ranged from 1–30 days (47.1%), and more than half of participants were located in the Western region (52.3%), followed by the South (30.4%).
- Overall, women aged 21–29 years demonstrated the highest PSU prevalence (59.8%), while those aged 40 years or older showed the lowest (48.7%).
- Regional differences were notable, with PSU prevalence highest in the South (68.9%) and Northeast (67.8%), followed by the Midwest (60.1%) and West (53.9%).

Table 2:

- A significantly higher proportion of women who were separated, divorced, or widowed (67.5%) or never married (65.3%) were polysubstance users compared to married women (60.3%) ($p < 0.0001$).
- PSU prevalence was also increased among women with dependent living arrangements (62.6%) or homelessness (61.0%) relative to those living independently (58.9%) ($p < 0.0001$).
- Women discharged from ambulatory care facilities (61.1%) exhibited higher PSU prevalence than those treated in detoxification settings (46.9%) ($p < 0.0001$).
- Similarly, women with shorter treatment durations (1–30 days) had higher PSU prevalence (64.2%) than those treated for 31–364 days (56.0%) or ≥365 days (51.4%) ($p < 0.0001$).
- Employment status was associated with PSU ($p < 0.0001$), with the highest prevalence among part-time (63.6%) and full-time employed (62.6%) women.
- Educational attainment was not significantly associated with PSU ($p = 0.317$).

CONCLUSION

Summary of Findings

- Among 13,188 pregnant women admitted to U.S. treatment facilities for methamphetamine use, nearly 60% reported polysubstance use (PSU)
- PSU was significantly associated with younger age (21–29 years), marital instability, unemployment, dependent or homeless living arrangements, and shorter treatment durations.
- Women treated in ambulatory care settings had higher PSU prevalence than those in residential or detoxification programs.
- The South (68.9%) and Northeast (67.8%) demonstrated higher PSU prevalence compared with the West (53.9%) and Midwest (60.1%).
- Education level was not significantly associated with PSU, indicating that factors beyond schooling (social support, stability, and treatment access) may more strongly influence substance-use behavior during pregnancy.

Implications

- Social and structural vulnerabilities, including housing insecurity, relationship instability, and unemployment, should be considered and incorporated into treatment planning to enhance impact and retention. Evaluating the effectiveness of integrated substance-use and prenatal care programs could guide the design of interventions that reduce harm and improve both maternal and fetal outcomes.
- Region-specific prevention strategies may be necessary, particularly in the South and Northeast, to address contextual factors contributing to higher PSU prevalence.
- Longitudinal studies are warranted to assess how PSU during pregnancy influences maternal outcomes, neonatal health, and treatment completion over time.