Drug and Alcohol Dependence 197 (2019) 191–196

Contents lists available at ScienceDirect

Drug and Alcohol Dependence

journal homepage: www.elsevier.com/locate/drugalcdep

Full length article

Prescription opioid misuse among African-American adults: A rural-urban comparison of prevalence and risk

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ARTICLE INFO

Keywords:
Prescription opioid misuse
Nonmedical use
Blacks
African-Americans
Rural
Urban

ABSTRACT

Background: Prescription opioid misuse (POM) remains a public health concern in the United States. Although the problem has been studied extensively, little research attention is paid to POM among African-Americans (AAs), and even fewer studies consider rural status in their analysis. The goal of this study, therefore, was to identify and compare prevalence and predictors of POM among rural and urban AA adults using data from a nationally representative sample.

Methods: Using pooled data across five years (2012–2016) of the National Survey on Drug Use and Health, multivariate logistic regression models were estimated to determine which factors were associated with POM among AA adults.

Results: Findings show that urban and rural AAs have comparable prevalence rates of POM, which is somewhat surprising given that POM often varies based on rural status. A number of factors (e.g., receiving government assistance, religiosity, smoking tobacco or marijuana, misuse of other prescription medications) were significantly correlated with POM for urban and rural AAs, while others (e.g., being age 50 +, graduating high school, visiting an emergency department, being arrested, binge drinking) varied by rural status.

Conclusion: Results indicate that AA nonmedical prescription opioid users are not a monolith and have distinct demographic, clinical, and psychosocial profiles based on geographic region. Because AAs have been virtually ignored in the POM literature, our findings are an important step towards understanding POM among this understudied group. These results invite additional investigation into AA POM and encourage researchers to consider rural status in their analysis of POM among AAs.

1. Introduction

Prescription opioid misuse (POM) remains a national problem that has implications for public health, addiction treatment, and medicine. Approximately, one-third of all overdose deaths in 2015 were attributable to prescription opioids (POs), and the number of overdose deaths associated with POs has nearly doubled since 2002 (Hedegaard et al., 2017). With the United States (US) opioid crisis disproportionately affecting White Americans (Han et al., 2017; McCabe et al., 2012), very little research and media attention has focused on African-Americans (AAs). If race/ethnicity is mentioned at all, it is usually to emphasize higher rates of POM among Whites.

The inattention paid to AAs, however, is an important omission from the literature because patterns of POM vary by race/ethnicity (Harrell and Broman, 2009) and the opioid crisis has had deleterious effects on AA communities (James and Jordan, 2018). To be clear, POM prevalence has historically skewed White, but AAs now comprise a non-trivial and growing proportion of nonmedical PO users. In fact, national data show that AA adults (Nicholson and Vincent, 2019; Nicholson and Ford, 2018) and adolescents (Ford and Rigg, 2015) have very similar rates of POM compared to their White counterparts. And recent data show that AAs experienced a greater increase in overdose deaths involving POs relative to Whites and other racial/ethnic groups (Seth et al., 2018; Kandel et al., 2017), all of which highlight the importance of studying POM among AAs.

What is interesting is that opioid-related consequences for AAs appear to be pronounced in urban areas, while remaining low in rural communities (Hedegaard et al., 2017; Katz and Goodnough, 2017). For instance, large metropolitan centers such as Washington D.C. (Penaloza, 2018), Philadelphia (Mitchell, 2018), and Chicago

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https://doi.org/10.1016/j.drugalcdep.2019.01.023
Received 23 October 2018; Received in revised form 18 December 2018; Accepted 13 January 2019
Available online 27 February 2019
0376-8716/

(Bechteler and Kane-Willis, 2017) are experiencing particularly high rates of opioid-related deaths among AAs. On the other hand, AAs in rural parts of the country continue to have the absolute lowest opioid-related mortality rate of any demographic group (Rigg et al., 2018), and their rates of POM are typically low (Dowling et al., 2006). The reasons for such disparate POM risk and outcomes among rural vs. urban AAs are not entirely clear.

A lack of clarity exists because so few studies examine POM among AAs, and of the handful of existing studies, rural status is rarely considered, making it difficult to get a clear picture of POM across the rural-urban continuum of AAs. Recent studies have found that not only does POM occur among AA drug users (Rigg and Sharp, 2018), but their prevalence rates are comparable to Whites (Ford and Rigg, 2015; Nicholson and Ford, 2018). Importantly, there is evidence that AAs and Whites can have dissimilar demographic, clinical, and psychosocial risk factors for POM (McCabe et al., 2012; Harrell and Broman, 2009). For example, one study (Nicholson and Ford, 2018) found that gender, socioeconomic status, and educational attainment were predictors of POM for AAs, but not for Whites. Another study (Ford and Rigg, 2015) observed that the relationship between POM and housing instability, religiosity, and perceived risk also varied across racial lines. Most of these studies, however, did not consider rural status and prior research has yet to compare POM risk factors among rural and urban AAs.

Additional research on rural-urban comparisons of POM are important because studies are mixed on whether risk is higher in rural vs. urban areas, with some national studies finding higher rates in rural areas (Monnat and Rigg, 2016; Paulozzi and Xi, 2008), while others observe elevated risk in urban locations (Rigg and Monnat, 2015a; Weiss et al., 2017). There are a number of important compositional differences that may help explain rural-urban variations in POM. For example, compared to urban residents, rural residents have been found to have lower socioeconomic status (Byun et al., 2012), less access to street drugs (James et al., 2002), worse overall physical and mental health (Monnat and Beeler-Pickett, 2011; Dhingra et al., 2009), greater frequency of emergency department (ED) use (Haggerty et al., 2014), and are less likely to use illicit drugs (Gfroerer et al., 2007). Each of these factors has been linked to POM in various populations (Rigg and DeCamp, 2014; Becker et al., 2008; Cicero et al., 2008; Dowling et al., 2006; Harrell and Broman, 2009), but these studies almost exclusively used samples with little AA representation.

Because studies on AA POM are few, data to inform targeted interventions to this population are virtually nonexistent. POM research that specifically focuses on AAs are needed because patterns of POM vary by race/ethnicity and AAs more than any other racial/ethnic group are more likely to experience negative consequences from their drug use (Mitchell and Caudy, 2015; Gil et al., 2004). Identifying rural-urban differences in POM specifically among AAs is critical to tailoring interventions to this growing and vulnerable subgroup of users. Within this context, the goals of this study were two fold. First, the study aimed to determine the prevalence of POM among AA adults in urban and rural areas. The second goal was to identify demographic (e.g., age, gender, income, education, employment status, health insurance), clinical (e.g., overall health, ED visits, hospitalized for mental health condition), and psychosocial factors (e.g., mental health problems, arrest history, housing instability, religiosity) that increase risk of POM among urban and rural AA adults. We included risk factors in our analyses that have been previously linked to POM in prior studies. This study responds to the need for more research on POM among AAs and is the first to use nationally representative data to compare prevalence and predictors of POM among AAs in both urban and rural areas.

2. Methods

2.1. Data

This study used pooled data across five years (2012–2016) of the National Survey on Drug Use and Health (NSDUH), consistent with prior research (Odani et al., 2018). The NSDUH is the largest, cross-sectional substance use household survey collected in the US. The target population for the NSDUH was of non-institutionalized persons aged 12 and older living in the 50 U.S. states and the District of Columbia. In 2012, sample size was 55,268; 55,160 in 2013; 55,271 in 2014; 57,146 in 2015; and 58,897 in 2016. Data was collected for each survey year using a multistage, independent area probability sampling technique for all 50 states and the District of Columbia. Data were gathered by trained fieldworkers using both computer-assisted and self-administered interviewing in the respondent's home. After pooling together all five years of data and accounting for missing data on the assessed variables, the aggregated sample included 279,742 respondents. Once we restricted the sample to include only non-Hispanic AA adults aged 18 and older, the final analytical sample was 22,693. A total of 2,608 AA adults residing in rural areas and 20,085 living in urban areas were included in this analysis. As defined in the NSDUH, a large Core Based Statistical Area (CBSA) is a location with 1 million or more persons; a small CBSA is a population with less than 1 million persons; and a rural area is a non-CBSA setting. Consistent with past research (Rigg and Monnat, 2015a), this study coded large and small CBSAs as urban areas.

2.2. Measures

The outcome variable was past-year POM (i.e. codeine, hydrocodone, oxycodone, Demerol, Dilaudid, methadone, and morphine). Responses to past-year POM included "yes" or "no." Prior to the 2015 NSDUH, respondents were asked whether they (a) used a prescription drug not prescribed for you, or (b) took the drug only for the experience or feeling it caused to assess prescription drug misuse. Starting in 2015, the NSDUH began measuring misuse by asking respondents whether they had (a) used a prescription drug without a prescription of your own, (b) used it in greater amounts, more often, or longer than told to take it, or (c) used it in any other way a doctor did not direct them to use the prescription. Regardless of the differences in how this question was asked, recent studies of misuse have used pooled data that included surveys both before and after 2015 (Odani et al., 2018).

A set of demographic, psychosocial, clinical, and substance use correlates were used to examine their association to past-year POM among urban and rural AA adults. These correlates were based on questions asked to respondents across all five survey years used in this study. Demographic correlates included gender, income, educational attainment level, employment status, government program participation in the past-year (SNAP/cash assistance), and health insurance status (insured, uninsured). Clinical measures included overall health, past-year visits to the ED, and hospitalization for a mental health condition. Psychosocial measures included past-year presence of a major-depressive episode and suicidality (planned or attempted suicide), a religiosity belief index, marital status (married, unmarried), prior arrest history, criminal involvement in the past-year, being approached by a drug dealer in the last 30 days, whether respondents moved in the past-year, heroin risk perceptions, and access to illicit drugs and heroin. Finally, substance use measures included binge drinking in the past 30 days as well as past-year marijuana, tobacco, illicit drug use (cocaine, crack, heroin, hallucinogens, methamphetamine, inhalants, ecstasy, PCP, LSD) and other prescription drug misuse (sedatives, stimulants, tranquilizers).

2.3. Data analysis

We began this study by conducting descriptive statistics stratified by metropolitan status for all variables. Based on the coding scheme for each variable, chi-square and *t*-test analyses were subsequently performed to determine whether there were significance differences in past-year POM prevalence and to assess whether variations in measures

Table 1
Descriptive statistics of urban and rural African-American adults.

Measure	Coding	Urban (n = 20,085)	Rural (n = 2608)	P Value
Past-Year Prescription Opioid Misuse	Yes	4.19	3.43	P = 0.329
Demographics				
Age	18-25	18.11	15.92	P < .001
	26-34	18.22	13.66	
	35-49	26.75	24.47	
	50 +	36.92	45.95	
Gender	Female	54.60	53.38	P = 0.436
Government Program	Yes	37.57	43.15	P < .05
Income	Less than $20,000	30.31	42.19	P < .001
	$20,000-$49,999	34.91	37.65	
	$50,000-$74,999	14.32	11.58	
	$75,000 or more	20.46	8.58	
Educational Attainment	Less than HS	15.71	24.13	P < .001
	HS Graduate/ Some College	64.02	66.84	
	College Graduate	20.27	9.03	
Employment Status	Employed	61.44	52.55	P < .001
	Unemployed	9.75	9.81	
	Not in labor force	28.81	37.64	
Health Insurance	Yes	84.56	81.81	P < .01
Clinical Characteristics				
General Health	Excellent	20.59	15.63	P < .001
	Very Good	32.18	28.33	
	Good	31.06	33.40	
	Fair/Poor	16.18	22.65	
ED Visit	Yes	37.40	42.55	P < .01
Hospitalized for Mental Health	Yes	1.40	1.69	P = 0.538
Psychosocial				
Major Depressive Episode	Yes	5.43	4.52	P = 0.113
Suicidality	Yes	1.20	0.08	P = 0.182
Religiosity	1-4 (SD-SA)	2.37(mean)	2.46 (mean)	P < .001
Children in Household	None	69.50	71.58	P = 0.374
	One	14.10	13.63	
	Two	9.79	9.27	
	Three or more	6.66	5.52	
Marital Status	Not Married	68.26	64.21	P < .05
Arrest History	Yes	23.08	24.24	P = 0.391
Committed a Crime	Yes	3.67	3.61	P = 0.896
Moved	Yes	29.40	24.08	P < .01
Approached by dealer	Yes	11.38	6.16	P < .001
Obtain Illicit Drugs	Fairly Easy/Easy	65.50	64.26	P = 0.613
Obtain Heroin	Fairly Easy/Easy	25.47	18.88	P < .001
Perceived Heroin Risk	Great Risk	89.07	88.13	P = 0.407
Substance Use				
Tobacco	Yes	33.15	35.57	P = 0.185
Marijuana	Yes	16.87	11.20	P < .001
Illicit Drug Use	Yes	3.29	2.43	P = 0.103
Binge Drinking	Yes	25.03	23.23	P = 0.135
Other RX misuse	Yes	2.07	1.50	P < 0.5

Notes: numbers included in Table 1 are percentages and means. weighted percentages/confidence intervals reported; (* p < .05, ** p < .01, *** p < .001). 2012–2016 National Survey on Drug Use and Health.

used to predict POM were meaningful between urban and rural AA adults. We then estimated fully adjusted multivariate logistic regression models stratified by metropolitan status using all correlates as predictors to examine their relationship to POM. Odds ratios were reported and 95% confidence intervals (CIs) were used. All regression analyses controlled for the survey year to adjust for the potential shifts in past-year POM prevalence. All analyses were performed using the SVYSET and SVY commands in STATA. As such, all estimated test statistics accounted for the complex design of the NSDUH, including the weight, stratification, and primary sampling unit.

3. Results

3.1. Descriptive findings

Table 1 contains the results of the bivariate descriptive analyses stratified by metropolitan status. Findings revealed no significant differences in past-year POM prevalence between urban (4.19%) and rural AAs (3.43%). However, a number of meaningful differences by metropolitan status appeared regarding the correlates used to examine POM. Rural AAs were more likely to be older, have lower household incomes, be on one or more government assistance programs, have less than a high school diploma, be married, be out of the labor force, and be uninsured compared to urban AAs. Rural AAs also had significantly worse self-reported health and were more likely to visit the ED in the past-year. Lastly, urban AAs were more likely to report easier access to illicit drugs and past-year misuse of other prescription drugs.

3.2. Regression results

Results of the fully adjusted multivariate logistic regression models stratified by metropolitan status are provided in Table 2. Numerous significant relationships were contingent on whether the respondent lived in an urban or rural area. Several correlates were also significantly associated with POM, regardless of location and in similar directions. We now proceed by reporting the results based on respondent's location

Table 2
Correlates of prescription opioid misuse among urban and rural black adults.

Measure	Coding	Urban (n = 20,085)	Rural (n = 2608)
Demographics			
Age	18–25	–	–
	26–34	1.09 (0.84, 1.41)	0.71 (0.31, 1.63)
	35–49	0.63 (0.47, 0.84)**	0.46 (0.22, 0.99)*
	50+	0.82 (0.53, 1.27)	0.36 (0.15, 0.86)*
Gender	Female	0.96 (0.76, 1.21)	1.12 (0.65, 1.94)
Government Program	Yes	1.31 (1.03, 1.66)*	2.54 (1.40, 4.59)**
Income	Less than $20,000	–	–
	$20,000-$49,999	0.93 (0.74, 1.18)	1.57 (0.71, 3.45)
	$50,000-$74,999	0.98 (0.66, 1.46)	2.90 (1.17, 7.16)*
	$75,000 or more	0.94 (0.69, 1.31)	0.40 (0.06, 2.58)
Educational Attainment	Less than HS	–	–
	HS Graduate/ Some College	0.71 (0.51, 1.00)*	1.55 (0.74, 3.25)
	College Graduate	0.72 (0.46, 1.11)	2.70 (0.85, 8.59)
Employment Status	Employed	–	–
	Unemployed	0.90 (0.65, 1.26)	0.73 (0.33, 1.61)
	Not in Labor Force	0.85 (0.62, 1.18)	1.26 (0.74, 2.17)
Health Insurance	Yes	1.02 (0.78, 1.33)	2.47 (1.22, 5.01)*
Clinical Characteristics			
General Health	Excellent	–	–
	Very Good	1.33 (0.96, 1.84)	0.99 (0.45, 2.20)
	Good	1.30 (0.97, 1.77)	1.80 (0.81, 3.98)
	Fair/Poor	1.31 (0.89, 1.93)	1.69 (0.57, 5.02)
ED Visit		1.42 (1.10, 1.85)**	1.57 (0.97, 2.57)
Hospitalized for Mental Health	Yes	1.79 (0.83, 3.90)	1.35 (0.37, 5.02)
Psychosocial			
Major Depressive Episode	Yes	1.07 (0.78, 1.47)	0.85 (0.25, 2.91)
Suicidality	Yes	1.20 (0.67, 2.13)	2.12 (0.43, 10.55)
Religiosity	1-4 (SD-SA)	0.88 (0.79, 0.98)*	0.66 (0.52, 0.82)***
Children in Household	None	–	–
	One	0.87 (0.61, 1.23)	0.46 (0.20, 1.05)
	Two	0.88 (0.57, 1.35)	0.63 (0.18, 2.20)
	Three or more	0.75 (0.48, 1.16)	0.70 (0.22, 2.21)
Marital Status	Not Married	0.88 (0.66, 1.19)	0.96 (0.54, 1.71)
Arrest History	Yes	1.07 (0.81, 1.42)	2.40 (1.26, 4.58)**
Committed a Crime	Yes	0.87 (0.59, 1.29)	1.10 (0.54, 2.27)
Moved	Yes	1.29 (0.99, 1.68)	1.20 (0.72, 1.98)
Approached by dealer	Yes	1.38 (1.07, 1.78)*	1.38 (0.75, 2.55)
Obtain Illicit Drugs	Fairly Easy/Easy	1.41 (0.98, 2.03)	3.05 (1.27, 7.36)*
Obtain Heroin	Fairly Easy/Easy	1.04 (0.80, 1.33)	0.81 (0.39, 1.69)
Perceived Heroin Risk	Great Risk	0.59 (0.41, 0.87)**	0.97 (0.55, 1.74)
Substance Use			
Tobacco	Yes	1.61 (1.18, 2.21)**	1.98 (1.16, 3.39)*
Marijuana	Yes	1.50 (1.21, 1.87)***	2.02 (1.11, 3.69)*
Illicit Drug Use	Yes	1.73 (1.18, 2.53)**	1.45 (0.47, 4.45)
Binge Drinking	Yes	1.35 (1.07, 1.72)**	1.42 (0.87, 2.33)
Other RX misuse	Yes	9.77 (7.05, 13.52)***	7.36 (2.38, 22.77)***
Survey Year	2012-2016	0.97 (0.89, 1.06)	(0.68, 1.04)

Notes: Multivariate logistic regression with adjusted odds ratio and 95% confidence intervals (* $p < .05$, ** $p < .01$, *** $p < .001$). The following variables are measured in the past-year: depressive episode, psychosocial distress, suicidal, ED visit, hospitalized for mental health, committed crime, moved, and tobacco, marijuana use, illicit drug use, and other prescription drug misuse; binge drinking is assessed in the past 30 days; "Other" employment includes disabled, students, housekeeper, and retired.

of residence.

3.2.1 Correlates of POM among Rural African-Americans. Among rural AAs, household incomes between $50,000-$74,999 were associated with higher odds of past-year POM compared to respondents reporting household incomes less than $20,000 (AOR = 2.90; 95% CI [1.17–7.16]). Similarly, having health insurance (AOR = 2.47; 95% CI [1.22–5.01]) and having ever been arrested/booked (AOR = 2.40; 95% CI [1.26–4.58]) were associated with greater odds of POM. Participation in a government program in the past-year (AOR = 2.54; 95% CI [1.40–4.59]), perceptions of fairly easy/easy access to illicit drugs (AOR = 3.05; 95% CI [1.27–7.36]), past-year tobacco (AOR = 1.98; 95% CI [1.16–3.39]), marijuana use (AOR = 2.02; 95% CI [1.11–3.69]) and other prescription drug use/misuse (AOR = 7.36; 95% CI [2.38–22.77]) were also associated with a greater probability of POM. A few correlates were related to lower odds of POM. Being between the ages of 35–49 (AOR = 0.46; 95% CI [0.22-0.99]) and 50 and older (AOR = 0.36; 95% CI [0.15-0.86]) were associated with lower odds of POM compared to those between the age of 18–25. In addition, higher levels of religiosity (AOR = 0.66; 95% CI [0.52-0.82]) significantly decreased odds of POM.

3.2.2. Correlates of POM among Urban African-Americans. Among urban AAs, having a high school degree/some college (AOR = 0.71; 95% CI [0.51–1.00]) was associated with lower odds of POM compared to those with less than a high school degree. Being between the ages of 35–49 years old was related to decreased odds of POM (AOR = 0.63; 95% CI [0.47-0.84]) compared to those aged 18–25 years old. In addition, greater risk perception of heroin (AOR = 0.59; 95% CI [0.41-0.87]) and higher levels of religiosity (AOR = 0.88; 95% CI [0.79-0.98]) were associated with decreased odds of POM. In contrast, visits to the ED (AOR = 1.42; 95% CI [1.10–1.85]), participation in government programs in the past-year (AOR = 1.31; 95% CI [1.03–1.66]) and having encountered a drug dealer in the past 30 days (AOR = 1.38; 95% CI [1.07–1.78]) were associated with increased odds of POM. Lastly, past-year illicit drug (AOR = 1.73; 95% CI [1.18–2.53]),

marijuana (AOR = 1.50; 95% CI [1.21–1.87]) and tobacco use (AOR = 1.61; 95% CI [1.18–2.21]), other prescription drug misuse (AOR = 9.77; 95% CI [7.05–13.52]), and binge drinking in the past 30 days (AOR = 1.35; 95% CI [1.07–1.72]) were associated with higher odds of POM.

4. Discussion

Although the opioid crisis has been studied extensively over the last two decades, there is very little scientific reporting on POM among AAs. To the authors' knowledge, this is the first study that examined both prevalence and predictors of POM among urban and rural AAs using nationally representative data. Research on this topic is especially important as prior studies show that POM is an active and growing phenomenon among AAs (James and Jordan, 2018; Bechteler and Kane-Willis, 2017). Our results add to the limited amount of research in this area and begins to fill an important void in the POM literature.

We found no statistically significant differences in past year POM between urban and rural AAs. This is surprising given that numerous studies have shown that POM risk often varies based on rural status (Rigg and Monnat, 2015a; Monnat and Rigg, 2016; Keyes et al., 2014; Havens et al., 2011). Our data suggest that while there may be rural-urban differences in POM prevalence in the general population of nonmedical PO users, these differences may not be as pronounced for AA users. This is somewhat unexpected given that rural residents tend to have lower incomes (Byun et al., 2012) and educational attainment (Roscigno and Crowle, 2001), a higher proportion of manual labor occupations (McGranahan, 2003), worse self-rated health (Monnat and Beeler-Pickett, 2011), and greater frequency of ED use (Haggerty et al., 2014), all of which have been linked to POM in previous research (Becker et al., 2008; Cicero et al., 2008; Dowling et al., 2006; Harrell and Broman, 2009; Rigg and DeCamp, 2014). Our results are consistent with previous research (Ford and Rigg, 2015) that also found geographic region to be less important in determining POM among AAs. Future research might examine why rural areas confer POM risk differentially for Whites than they do for AAs.

Although the prevalence of POM was comparable among rural and urban AAs, a number of unique predictors were identified. Our analysis found that having a high school diploma significantly lowered risk of POM among urban AAs, but not for AAs living in rural areas. This indicates that the protective effects of education for AAs operate differently depending upon which part of the country they live, with a high school diploma having a buffering effect for rural AAs only. Future studies might examine exactly why the protection against POM that a high school diploma offers AAs is geographically dependent.

Another interesting finding of our study is that having health insurance was a significant risk factor for rural AAs only. In a recent national study of POM among AAs (Nicholson and Ford, 2018), health insurance was not found to be a significant predictor. However, this study did not examine rural and urban AAs separately. While being insured can generally be viewed as providing greater access to opioid analgesics via the healthcare system, physicians have historically been far less willing to prescribe opioids to AA patients (Singhal et al., 2016; Pletcher et al., 2008), suggesting that insurance coverage would not be related to POM for AAs. However, our findings suggest that while this was true for urban AAs, health insurance conferred significant risk for rural AAs. Although the reasons for this are not entirely clear, it might suggest that racial disparities in opioid prescribing are less pronounced in rural areas. This finding calls for further investigation to determine the extent to which rural physicians are willing to prescribe opioids to their AA patients. If rural AAs are more easily able to obtain opioids via their physicians than through dealers, where fentanyl adulteration is more common (e.g., heroin, counterfeit opioid pills; Bode et al., 2017; Centers for Disease Control and Prevention, 2016), this may help explain why opioid-related deaths are very low among rural AAs (Rigg et al., 2018).

Visiting an ED was another unique predictor of POM, this time for urban AAs only. ED visits have been linked to POM in other studies (Cochran et al., 2014; Jones and McAninch, 2015). For example, a recent study (Rigg and Monnat, 2015b) found that being treated in an ED in the past year was a predictor of using both heroin and POs. Another study (Rigg and Monnat, 2015a) found that visiting the ED at least once in the past year was a significant risk factor POM. That ED visits would be related to POM is not surprising, but the finding that they are a risk factor for urban, but not for rural AAs is somewhat unexpected given that rural residents tend to have greater frequency of ED use due to shortages in primary and specialty care providers (Haggerty et al., 2014, 2007).

A few methodological issues are worth noting. First, the NSDUH is a household sample of the non-institutionalized population of the US and therefore may not necessarily represent persons not permanently attached to one particular household. For example, it is unlikely for persons who experience excessive housing instability or are serious long-term substance users to appear in the NSDUH. Second, this study utilized cross-sectional data, which prohibited us from being able to establish temporal order and ascribe causality. Third, the data used are based on self-reports of substance use and may be subject to under-reporting due to recall and/or social desirability bias. These effects are believed to have been mitigated, however, through the use of a trained interviewer. Fourth, as the question regarding prescription drug misuse in the NSDUH was recently updated in 2015, our results should be interpreted with this in mind. Last, we acknowledge as a limitation our inability to distinguish residents in large nonmetropolitan counties that are adjacent to metro counties from those living in small remote rural counties. Further, counties are heterogeneous geographic units where many outlying residents of an urban county (e.g., exurban or urban fringe) may experience a life that is more rural in character than residents living in the city core of an urban county. Unfortunately, NSDUH does not allow for a more fine-grained geographic analysis. These more nuanced definitions of rural vs. urban may lead to different findings.

These limitations notwithstanding, our research begins to provide answers to the question of whether rural-urban differences in POM exist among AAs, and more important, which factors might be driving these differences. This study is the first to examine rural-urban differences specifically among AAs using nationally representative data. Overall, we were able to show that rural and urban AAs have comparable prevalence rates of POM, which is somewhat unexpected given that opioid-related fatalities are very low among rural AAs and considerably higher among urban AAs (Rigg et al., 2018). We were also able to demonstrate that AA nonmedical PO users are not a monolith and have distinct demographic, clinical, and psychosocial profiles based on their rural status. Because AAs are more likely to experience negative outcomes related to their drug use, the lack of POM research on AA is concerning. Our findings invite additional investigation into AA POM (e.g., initiation patterns, poly-drug use, barriers to treatment) and encourage researchers to consider rural status in their analysis of POM among AAs.

Role of funding source

Nothing declared.

Contributors

Khary Rigg was responsible for the conception of the study, drafted the manuscript and contributed to the critical interpretation of results. Harvey Nicholson helped in the writing of the manuscript and conducted the statistical analysis. All authors contributed to and have approved the final manuscript.

Conflict of interest

No conflict declared.

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