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Past-year use of prescription opioids and/or benzodiazepines among adults in the United States: Estimating medical and nonmedical use in 2015–2016

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ABSTRACT

Background: The growing use of prescription opioids and benzodiazepines has become a major health threat in the United States, so it is important to document their use among adults to inform health policies or interventions.

Methods: This study included 81,186 adults ages 18 and older from 2015 and 2016 National Survey on Drug Use and Health. Participants' self-reported medical and nonmedical use of prescription opioids and/or benzodiazepines in the past year was assessed along with their demographic characteristics.

Results: In 2015–2016, 41.13% of adults reported using prescription opioids and/or benzodiazepines in the past year; 8.24% reported both, 28.59% reported prescription opioids only, and 4.30% reported benzodiazepines only. The majority of adults used the drugs for medical purposes, including 71.35% of participants who reported both drugs in the past year, 90.36% of those who reported prescription opioids only, and 86.24% of those who reported benzodiazepines only. Younger adults ages 18–34 were more likely to use prescription opioids and/or benzodiazepines for nonmedical purposes compared to adults ages 35 and over.

Conclusions: In the United States, the proportion of adults who used prescription opioids and/or benzodiazepines in the past year was high; most of them reported using these drugs for medical purposes. Special attention is needed to prevent potentially unnecessary medical co-prescribing of these drugs, particularly among younger adults, who were more likely report nonmedical use of both drugs than older adults.

1. Introduction

In the past two decades, the rate of prescription opioid use and benzodiazepine use have increased substantially in the United States (Bachhuber et al., 2016; Dart et al., 2015; García et al., 2018; Kolodny et al., 2015). The combination of opioids with sedative drugs, such as benzodiazepines, is a major public health concern in the United States and elsewhere (Jones et al., 2012; Sun et al., 2017). Concomitant use of these drugs can increase the risk of a fatal overdose due to their sedative properties that can suppress breathing (Jones and McAninch, 2015). Studies in recent years showed that opioids were involved in over three-quarters of fatal overdoses related to benzodiazepines, and benzodiazepines were involved in around one-third of deaths related to opioids (Jones et al., 2013; Jones and McAninch, 2015; Kandel et al., 2017). The risk of fatal overdose due to concurrent use of opioids and benzodiazepines increases with higher benzodiazepine daily dosage (Park et al., 2015).

Clinical guidelines warn against co-prescribing opioids and benzodiazepines (Crawford, 2016; Dowell et al., 2016a; Manchikanti et al., 2012; Paone et al., 2011; Rolfs et al., 2010). In 2016, the Centers for Disease Control and Prevention (CDC) recommended avoiding prescribing benzodiazepines concurrently with opioids whenever possible (Dowell et al., 2016a). These guidelines reflected concerns related to the prevalent concomitant prescription and use of opioids and benzodiazepines in the United States (Hwang et al., 2016; Jones and McAninch, 2015; Jones et al., 2012; Park et al., 2015; Stein et al., 2017; Sun et al., 2017). For example, a study based on insurance claim data showed that 9% of the United States privately insured individuals ages 18–64 who received opioids concurrently received benzodiazepines in 2001; the proportion increased to 17% by 2013 (Sun et al., 2017). Records from the IMS Health Total Patient Tracker, a widely used source of prescription activity in outpatient retail setting, showed that the proportion of people who were concomitantly prescribed both opioids and benzodiazepines increased from 6.8% to 9.6% between

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2002 and 2014 in the United States (Hwang et al., 2016). Parallel to the increase in the concomitant prescription and use of opioids and benzodiazepines, there has been an increase in the rate of emergency department visits involving nonmedical use of both drugs (from 11.0 to 34.2 per 100,000), and an increase in the rate of fatal overdoses involving both drugs (from 0.6 to 1.7 per 100,000) between 2004 and 2011 (Bachhuber et al., 2016; Jones and McAninch, 2015; Lembke et al., 2018).

Although prior findings show an increased rate of misuse of opioids and benzodiazepines among adults in the United States, the information on drug use behaviors based on data at the national level is limited (Maree et al., 2016). The examination of sociodemographic differences involving medical and nonmedical use of opioids and/or benzodiazepines could inform policies and interventions to improve prescribing protocols and to reduce the risks of adverse health outcomes in the population. In this study, we aimed to examine past-year use of prescription opioids and benzodiazepines among adults in the United States, differentiating any medical and nonmedical use.

2. Material and methods

2.1. Sample and procedures

We included data from 86,186 adults ages 18 and over who were respondents in the 2015 and 2016 National Survey on Drug Use and Health (NSDUH) public use files (Substance Abuse and Mental Health Services Administration, (SAMHSA, 2016, 2017). The survey used a multistage area probability sample for each state and the District of Columbia, and included non-institutionalized people ages 12 and older. In-person interviews were conducted by a trained interviewer using computer-assisted interviewing (CAI) methodology. Questions about sensitive behaviors such as drug use were administered more privately using audio computer-assisted self-interviewing (ACASI) to increase the level of honest reporting of these behaviors. The response rate for household screening and completed interviews ranged between 70–80% and 68–78%, respectively (SAMHSA, 2016, 2017).

Among participants included in this study, the majority was non-Hispanic white (64.56% vs. Non-white = 35.44%), with some college education or above (61.15% vs. high school education or below = 38.85%), married (52.20% vs. not married = 47.80%) and full- or part-time employed (62.25% vs. unemployed or not in workforce = 37.75%), and women (51.78% vs. men = 48.22%). Detailed information about the sample design and survey methods of NSDUH can be found in the NSDUH annual reports from the Substance Abuse and Mental Health Services Administration (SAMHSA, 2016, 2017).

2.2. Measures

Past-year use of prescription opioids included endorsing the use of any prescription opioids at least once during the previous 12 months, including hydrocodone, oxycodone, tramadol, morphine, fentanyl, buprenorphine, oxymorphone, Demerol, hydromorphone, and methadone products. Past-year use of benzodiazepines included endorsing the use of any benzodiazepine tranquilizers or sedatives, including alprazolam, lorazepam, clonazepam, diazepam, cyclobenzaprine, Soma products, flurazepam, temazepam, and triazolam products. Based on self-reported past-year use of prescription opioids and/or benzodiazepines, we differentiated four mutually-exclusive categories of past year use: prescription opioid and benzodiazepine use, prescription opioid use only, benzodiazepine use only, and neither prescription opioid nor benzodiazepine in the past year.

Nonmedical use of prescription opioids or benzodiazepines was defined as use of these substances in any way not directed by a doctor, including use without a prescription of one's own medication; use in greater amounts, more often, or longer than told to take a drug; or use in any other way not directed by a doctor. If the participant did not report any nonmedical use, indicating the medications were used as directed, the use was considered to be “for medical purposes”.

Sociodemographic characteristics included age (18–25, 26–34, 35–49, 50–64, and 65 years and older); gender (women vs. men); race/ethnicity (dichotomized as non-Hispanic white vs. others, which included Black, Asian, American Indian/Alaska Native, Hispanic, and two or more races); marital status (dichotomized as married vs. not married because of similar drug use patterns among non-married subgroups, including divorced, separated, and widowed participants) (Perlmutter et al., 2017); education (categorized as: less than high school, high school, some college, and college graduate); employment status (categorized as: full-time, part-time, unemployed, and other not in the workforce (e.g., retired, disabled)).

2.3. Statistical analyses

Descriptive analyses were conducted to estimate weighted proportions of participants with past-year use of prescription opioids and/or benzodiazepines and to summarize participants' sociodemographic characteristics. Bivariate and multivariable logistic regression models were used to examine the association between use of prescription opioids and/or benzodiazepines in the past-year with selected sociodemographic characteristics, compared to no use in the past year. Then, we repeated the procedures to examine the association between nonmedical vs. medical use within each category of prescription opioid and/or benzodiazepine use by sociodemographic characteristics. Participants who reported medical use of these substances were used as the reference group in each analysis. To take into account the complex sampling design, all analyses utilized Taylor series approximations (Chromy and Abeyasekera, 2005) using the provided person-level analysis weights, strata and cluster information (“svy” commands in Stata) (STATA, 2013). All analyses were carried out in Stata 15SE (STATA, 2017).

3. Results

Overall, 41.13% of NSDUH adult participants reported any use of prescription opioid and/or benzodiazepines in the past year. Specifically, 8.24% reported the use of both prescription opioids and benzodiazepines, 28.59% reported prescription opioids only, and 4.30% reported benzodiazepines only (Table 1). Among participants who reported using both prescription opioids and benzodiazepines in the past year, 71.53% used both drugs for medical purposes and 28.47% used either prescription opioids or benzodiazepines for nonmedical purposes. Among participants who reported using only one of the two drugs, the majority used the drug for medical purposes (i.e., 90.36% of prescription opioids and 86.24% of benzodiazepines).

Table 2 shows the crude association between each drug use category (i.e., prescription opioids and benzodiazepines, prescription opioids only, and benzodiazepines only) and each of the selected sociodemographic characteristics, compared to no past-year use of prescription opioids or benzodiazepines. Older participants were more likely to use these drugs compared to participants ages 18–25. For example, participants ages 50–64 were more likely to use both prescription opioid and benzodiazepines in the past year than participants ages 18–25 (OR: 1.68, 95% CI 1.53–1.85). Other characteristics, including sex, race/ethnicity, marital status, education, and employment, were significantly associated with any past-year use of prescription opioids and/or benzodiazepines in bivariate analyses. Similar patterns of associations between any past-year use of prescription opioids and/or benzodiazepines and sociodemographic characteristics were observed in multivariable logistic regressions (Supplementary Table 1). For example, participants who were 50–64 years old, women, non-Hispanic white, unmarried, with some college education, and not in workforce were more likely to use both prescription opioids and benzodiazepines in the past year compared to their counterparts.

Table 1
Selected sociodemographic characteristics by past-year use of prescription opioids (POs) and/or benzodiazepines (BZDs) among 2015 and 2016 NSDUH participants ages 18 and older (N = 86,186).

	POs and BZDs		POs only		BZDs only		Neither	
	N	%[a]	N	%[a]	N	%[a]	N	%[a]
Total	6865	8.24	24203	28.59	3425	4.30	51693	58.87
Medical use								
Yes	4232	71.53	21281	90.36	2743	86.24	–	–
No	2633	28.47	2922	9.64	682	13.76	–	–
Age (in years)								
18-25	1861	11.44	7443	12.76	991	11.90	17918	15.55
26-34	1429	15.24	5127	15.74	641	13.73	10638	16.11
35-49	2004	25.07	6436	24.65	936	23.63	13154	25.03
50-64	1007	29.99	3107	26.86	486	27.42	5798	24.24
65+	564	18.26	2090	19.99	371	29.99	4185	19.07
Sex								
Women	4395	63.35	13760	52.77	2208	63.69	26142	48.81
Men	2470	36.65	10443	47.23	1217	36.31	25551	51.19
Race/ethnicity								
Non-white/Hispanic	1795	20.37	9536	34.62	803	20.99	22058	39.00
Non-Hispanic White	5070	79.63	14667	65.38	2622	79.01	29635	61.00
Marital status								
Unmarried	4359	53.92	14097	47.83	2058	50.19	30155	46.75
Married	2506	46.08	10106	52.17	1367	49.81	21538	53.25
Education								
<High school	867	11.32	3277	13.44	315	9.50	7329	14.15
High school	1839	26.38	6677	26.09	745	22.01	13827	25.06
Some college	2636	35.77	8799	33.63	1201	32.92	16303	28.42
College graduate	1523	26.53	5450	26.84	1164	35.57	14234	32.37
Employment								
Full-time	2956	38.43	12290	47.74	1728	45.14	27261	51.41
Part-time	1051	13.10	3658	12.52	598	15.05	8430	13.47
Unemployed	504	5.09	1582	4.67	167	4.10	3222	4.59
Not in workforce	2354	43.38	6673	35.08	932	35.71	12780	30.53

*Frequencies are unweighted and proportions are weighted to derive nationally representative estimates.

[a] In the row of 'Total', it shows row percentage; others are column percentage.

Table 3 shows the crude association between each of demographic characteristics and using each of the drugs for nonmedical purposes based on bivariate logistic models. Among participants who reported past-year use of both prescription opioids and benzodiazepines, the proportion of medical use of both drugs increased with age, from 31.35% among participants ages 18–25 to 90.76% among participants ages 65 and older (Table 3, Fig. 1). Nonmedical use was less likely among older participants (50–64 years vs. 18–25 years: OR: 0.10, 95% CI 0.08-0.13). Odds of nonmedical use were also lower among non-Hispanic white (OR: 0.80, 95% CI 0.66-0.96), married individuals (OR: 0.40, 95% CI 0.34-0.47), and participants who were not in the workforce (vs. to full time) (OR: 0.44, 95% CI 0.36-0.53) (Table 3). In contrast, odds of nonmedical use of both drugs were higher among men (OR: 2.01, 95% CI 1.73–2.32) and those who were unemployed (vs. full time) (OR: 2.02, 95% CI 1.46–2.80).

Nonmedical past-year use of prescription opioids only was significantly associated with being 18–25 years (vs. 35 and older), male (OR: 1.70, 95% CI 1.52–1.91) and being unemployed (vs. full-time employed) (OR: 1.67, 95% CI 1.37–2.04). In addition, nonmedical past-year use of prescription opioids was associated with being white (vs. non-white) (OR: 0.86, 95% CI 0.76-0.97), and married (OR: 0.57, 95% CI 0.51-0.64), (Table 3). Similar associations were observed for nonmedical past-year use of benzodiazepines only. Associations observed in bivariate models were consistent with those in the fully adjusted multivariable models, with the exception of race/ethnicity, which was no longer significantly associated with odds of nonmedical use in fully adjusted models (Supplementary Table 2).

4. Discussion

Based on national surveys conducted in 2015–2016, we estimated the prevalence of prescription opioid and benzodiazepine use in the past year, as well as use of each of the substances separately, among adults ages 18 and older in the United States. We found that over four in ten adults in the United States used prescription opioids and/or benzodiazepines in the past year. More importantly, one in twelve adults reported past-year use of both prescription opioids and benzodiazepines. Among users of these drugs, over 70% of adults reported using prescription opioids and benzodiazepines as directed by their doctor(s). Although past-year use of prescription opioids and benzodiazepines does not necessarily suggest co-use of both drugs in the same occasion, our results indicated that 22.1 million adults in the United States were at the risk of concomitant use in 2015-2016.

We found distinct sociodemographic characteristics of participants reporting past year use of prescription opioids and benzodiazepines in the past year. Older adults, especially who ages 35–64 years, were more likely to report the past-year use of prescription opioids and/or benzodiazepines compared to younger adults ages 18–25. This is consistent with results from previous studies (Centers for Disease Control and Prevention (CDC, 2011; Han et al., 2015; Hirschtritt et al., 2017; Olfson et al., 2015). Women were more likely to use both drugs in the past year compared to men, consistent with results from another study (Maust et al., 2017). Such finding could be partly explained by higher psychiatric care utilization among women than men (for example, 1.6% vs 1.0% for any treatment of DSM-IV disorders (Wang et al., 2005)) and higher prevalence of mental health conditions (e.g., 33.3% vs. 22.7% for lifetime anxiety (McLean et al., 2011)) for which benzodiazepines are often prescribed. Unmarried participants including both men and women or those who were not in the workforce had higher odds of reporting the past-year use of both drugs, also consistent with results from other studies (Han et al., 2017; Maust et al., 2017; Olfson et al., 2015).

Adults in the United States who used prescription opioids and/or benzodiazepines for medical and nonmedical purposes also had distinct sociodemographic characteristics. Among past-year users of prescription opioids and/or benzodiazepines, we found that participants ages 35 and over reported using them for medical purposes, while younger participants were more likely to report nonmedical use. Among participants using both drugs, over half of those who were 18–35 years used at least one of the drugs for nonmedical purposes. This suggests that education programs aiming to reduce harms associated with nonmedical opioid and benzodiazepine use should target young adult audiences. Other characteristics, including being unmarried and being unemployed, were associated with the use of prescription opioids and/or benzodiazepines for nonmedical purposes, which is consistent also with other study findings (Chhatre et al., 2017; Han et al., 2017, 2015). This information shows sub-groups of the population who could also be targeted for prevention programming.

Previous studies have demonstrated that concomitant use of prescription opioids and benzodiazepines increases the risk of drug overdose and other adverse health outcomes (Dasgupta et al., 2016; Grossbard et al., 2014; Nielsen et al., 2015; Park et al., 2015; Saunders et al., 2012; Sun et al., 2017). Our results, combined with findings from these studies, highlight the need to reduce the exposure to these drugs. In this study, the vast majority of people reported that they used prescription opioids and benzodiazepines as directed by doctors. Although this does not necessarily mean doctors concomitantly prescribed these drugs, this finding highlights the need to follow tighter prescriber

Table 2
Unadjusted association between sociodemographic characteristics and past-year use of prescription opioids (POs) and/or benzodiazepines (BZDs) among 2015 and 2016 NSDUH participants ages 18 and older.

	POs and BZDs (n = 6865) vs. Neither*		POs only (n = 24203) vs. Neither*		BZDs only (n = 3425) vs. Neither*	
	OR	95% CI	OR	95% CI	OR	95% CI
Age (in years)						
18-25	Ref	–	Ref	–	Ref	–
26-34	1.29	1.18-1.40	1.19	1.12-1.27	1.11	1.00-1.24
35-49	1.36	1.24-1.49	1.20	1.13-1.27	1.23	1.11-1.37
50-64	1.68	1.53-1.85	1.35	1.27-1.44	1.48	1.30-1.68
65+	1.30	1.16-1.47	1.28	1.19-1.37	1.60	1.38-1.85
Sex						
Women	Ref	–	Ref	–	Ref	–
Men	0.55	0.51-0.60	0.85	0.82-0.89	0.54	0.49-0.60
Race/ethnicity						
Non-white/Hispanic	Ref	–	Ref	–	Ref	–
Non-Hispanic White	2.50	2.26-2.76	1.21	1.15-1.27	2.41	2.15-2.70
Marital status						
Unmarried	Ref	–	Ref	–	Ref	–
Married	0.75	0.69-0.81	0.96	0.91-1.01	0.87	0.78-0.97
Education						
<High school	Ref	–	Ref	–	Ref	–
High school	1.32	1.13-1.53	1.10	1.01-1.19	1.31	1.10-1.55
Some college	1.57	1.39-1.78	1.25	1.16-1.34	1.73	1.45-2.05
College graduate	1.02	0.88-1.20	0.87	0.82-0.93	1.64	1.37-1.95
Employment						
Full-time	Ref	–	Ref	–	Ref	–
Part-time	1.30	1.17-1.45	1.00	0.94-1.06	1.27	1.07-1.51
Unemployed	1.48	1.29-1.71	1.09	1.00-1.20	1.02	0.81-1.28
Not in workforce	1.90	1.75-2.06	1.24	1.17-1.31	1.33	1.19-1.49

* Participants who used neither prescription opioids nor benzodiazepines (n = 51693) in the past year were used as the reference group.

Table 3
Unadjusted associations between sociodemographic characteristics and nonmedical vs. medical use of prescription opioids (POs) and/or benzodiazepines (BZDs) among 2015–2016 NSDUH participants ages 18 and older (N = 33,493).

	POs and BZDs (n = 6865)			POs only (n = 24203)			BZDs only (n = 3425)		
	Medical use N, %*	Nonmedical vs. Medical use		Medical use N, %*	Nonmedical vs. Medical use		Medical use N, %*	Nonmedical vs. Medical use	
		OR	95% CI		OR	95% CI		OR	95% CI
Age (in years)									
18-25	615, 31.53	Ref	–	6198, 83.21	Ref	–	593, 56.87	Ref	–
26-34	792, 53.90	0.39	0.33-0.47	4375, 84.81	0.89	0.76-1.04	513, 78.72	0.36	0.28-0.46
35-49	1473, 73.67	0.16	0.14-0.20	5793, 88.72	0.57	0.50-0.65	833, 89.28	0.16	0.12-0.20
50-64	836, 82.25	0.10	0.08-0.13	2888, 92.48	0.40	0.34-0.48	446, 90.83	0.13	0.09-0.20
65+	516, 90.76	0.05	0.03-0.07	2027, 97.26	0.14	0.10-0.19	358, 97.18	0.04	0.02-0.08
Sex									
Women	2984, 75.92	Ref	–	12458, 92.54	Ref	–	1845, 89.40	Ref	–
Men	1248, 24.08	2.01	1.73-2.32	8823, 87.93	1.70	1.52-1.91	898, 80.69	2.02	1.58-2.58
Race/ethnicity									
Non-white/Hispanic	1022, 65.73	Ref	–	8320, 89.47	Ref	–	588, 80.87	Ref	–
Non-Hispanic White	3210, 71.77	0.80	0.66-0.96	12961, 90.84	0.86	0.76-0.97	2155, 87.67	0.59	0.44-0.80
Marital status									
Unmarried	2312, 61.80	Ref	–	12022, 87.83	Ref	–	1500, 78.97	Ref	–
Married	1920, 81.22	0.40	0.34-0.47	9259, 92.69	0.57	0.51-0.64	1243, 93.57	0.26	0.18-0.37
Education									
<High school	498, 69.79	Ref	–	2776, 87.43	Ref	–	242, 83.96	Ref	–
High school	1090, 71.25	0.93	0.73-1.20	5828, 90.15	0.76	0.65-0.88	594, 88.42	0.69	0.41-1.16
Some college	1594, 70.42	0.97	0.82-1.29	7755, 90.35	0.74	0.62-0.90	933, 84.20	0.98	0.56-1.71
College graduate	1050, 74.04	0.81	0.94-1.62	4922, 92.07	0.60	0.49-0.74	974, 87.39	0.75	0.43-1.32
Employment									
Full-time	1728, 66.16	Ref	–	10778, 89.00	Ref	–	1379, 84.47	Ref	–
Part-time	579, 62.18	1.19	0.97-1.46	3175, 89.33	0.97	0.80-1.16	457, 82.99	1.16	0.83-1.50
Unemployed	209, 49.18	2.02	1.46-2.80	1284, 82.87	1.67	1.37-2.04	115, 78.53	1.49	0.89-2.49
Not in workforce	1716, 81.73	0.44	0.36-0.53	6044, 93.59	0.55	0.47-0.63	92, 90.73	0.56	0.38-0.81

* Cell frequencies and proportions for participants reported using drugs for medical purpose; frequencies are unweighted and proportions are weighted to derive nationally representative estimates.

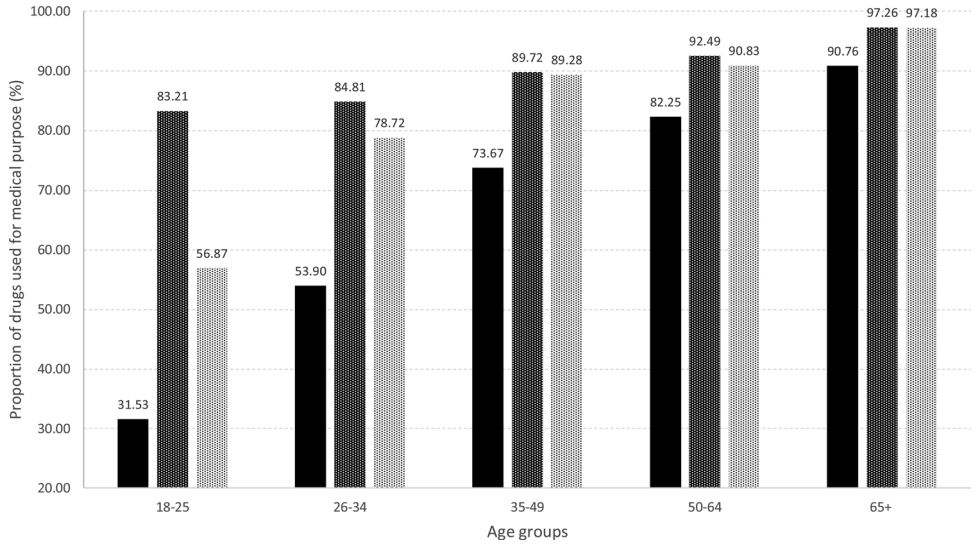

Fig. 1. Proportion of drugs used for medical purposes by age groups and past-year use of prescription opioids (POs) and/or benzodiazepines (BZDs) among 2015 and 2016 NSDUH participants over age of 18 years.

guidelines and enhance physician/patient education to reduce the risk of overdoses associated with the use of both drugs. (Dowell et al., 2016a; Lembke et al., 2018).

Because of the high prevalence of prescription opioid and/or benzodiazepine use, different approaches can be explored to address this problem: providers should be widely alerted to exercise caution in prescribing opioids for patients who are using benzodiazepines and vice versa; policy makers should focus efforts on opioid and benzodiazepine prescribing behaviors; people who report using either drug should be informed about the harm of co-use of both drugs. For example, several states have recently enacted policies to limit the days of prescription of opioids, but none, to date, have limited prescription of benzodiazepines (BallotPedia, 2017). When medically indicated, alternative medications with lower potential for abuse or overdoses should be considered. However, there are certain conditions for which it is clinically appropriate to co-prescribe these drugs under regular monitoring of physicians. Because of this, many states enacted policies to regulate prescription opioid prescribing and dispensing, including prescription drug monitoring programs (PDMPs), tamper-resistant prescriptions, pain clinic regulations, and other policies and regulations (Maree et al., 2016). Some studies show that more robust PDMPs are associated with reductions in opioids prescribing rates (Bao et al., 2016; Fink et al., 2018; Haffajee et al., 2015), increased treatment for opioid use disorder (Reifler et al., 2012), and with reductions in opioid-related death rates (Pardo, 2017; Patrick et al., 2016). Some states have also enacted policies requiring that PDMP be checked for recent opioid prescriptions and evidence of doctor shopping or opioid misuse before prescribing benzodiazepines (Dowell et al., 2016b; Haffajee et al., 2015). Future studies should examine the mechanisms needed to enact and enforce these laws and programs appropriately to ensure adequate care delivery.

Study limitations should be considered when interpreting results. First, past-month use of benzodiazepines was not collected in the NSDUH, therefore only past-year use of prescription opioids and benzodiazepines was examined. While we did not have data on whether these substances were taken together in one sitting, there is the potential for co-use as both substances were reported in the past year. Second, dose and duration of use of these substances were also not collected in the NSDUH; such information is important for examining the risk of potential concomitant use. Third, the repeated cross-sectional design limited inferences for associations between demographic characteristics and drug use behaviors. Forth, substantial methodological updates in the modules used to capture prescription opioids and benzodiazepine use in NSDUH in 2015, precluding the use of prior data to examine the trends over time. Fifth, medical use of prescription opioids and benzodiazepines could have been directed by one or more doctors; collecting data on the number of providers could generate useful information for drug prescription guidelines and polices. Lastly, as in most large-scale epidemiologic surveys, information was based on self-report, which could lead to underreporting of drug use behaviors (Substance Abuse and Mental Health Services Administration, (SAMHSA, 2016,2017). Despite limitations, this study provided valuable information on patterns of past-year use of prescription opioids and benzodiazepines both for medical and nonmedical purposes. These results are useful in describing how their use varies among the adult population with different characteristics in the United States.

5. Conclusion

Two in five adults in the United States used prescription opioids and/or benzodiazepines in 2015-16, and most reported the use of these drugs for medical purposes. Special attention is needed to prevent potentially unnecessary medical co-prescribing of these drugs (i.e., prescribing of opioids for short-term periods whenever possible, or identification of potential risk factors for nonmedical use prior to co-prescribing (Overton et al., 2018)). This is particularly important among younger adults who more often report nonmedical use of both drugs than older adults.

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Contributors

All authors participated in data analysis, study result interpretation, and manuscript preparation. All authors read and approved the final manuscript.

Declaration of Competing Interest

No conflict declared.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.drugalcdep.2019.04.029.

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