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ORIGINAL PAPER

Adverse Childhood Experiences Increase Risk for Prescription Opioid Misuse

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Abstract

The United States is in the midst of an opioid overdose epidemic, with a significant portion of the burden associated with prescription opioids. In response, the CDC released a *Guideline for Prescribing Opioids for Chronic Pain,* which promotes access to treatment for opioid use disorder. Decades of research have linked childhood adversity to negative health and risk behavior outcomes, including substance misuse. Our present study builds upon this work to examine the relationship between adverse childhood experiences (ACEs) and prescription opioid misuse. We compiled data from the Behavioral Risk Factor Surveillance System implemented by Montana and Florida in 2010 and 2011, respectively. Logistic regressions (run in 2017) tested the associations between ACEs and subsequent prescription pain medicine/opioid misuse outcomes in adulthood. ACEs were prevalent, with 62.7% of respondents in Montana and 50% in Florida reporting at least one ACE. The presence of ACEs was positively associated with prescription opioid misuse across both samples. Respondents reporting three or more ACEs had increased odds of taking opioids more than prescribed, without a prescription, and for the feeling they cause. Our results support a strong link between ACEs and prescription opioid misuse. Opportunities to prevent opioid misuse start with assuring safe, stable, nurturing relationships and environments in childhood and across the lifespan to prevent ACEs from occurring, and intervening appropriately when they do occur. Substance use prevention programs for adolescents, appropriate pain management and opioid prescribing protocols, and treatments for opioid use disorder can address ACEs by enhancing treatment safety and effectiveness and can reduce the intergenerational continuity of early adversity.

Keywords Adverse childhood experiences · Opioids · Child maltreatment · Pain medication

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Introduction

Reducing the devastation of the opioid overdose epidemic in the U.S. requires the identification and mitigation of factors that place individuals at elevated risk of prescription opioid misuse. From 1999 to 2016, over 200,000 people died from overdoses involving prescription opioids (Seth, Rudd, Noonan, & Haegerich, 2018). In 2016, an estimated 11.5 million people aged 12 or older misused prescription opioids in the past year, and 1.8 million had an opioid use disorder related to prescription opioids. There were an estimated 178 opioid-related emergency department visits per 100,000 population in 2014, which reflected a 99% increase since 2005, with an 8% average annual growth rate (Weiss et al., 2017). The prescription opioid overdose epidemic has affected some areas and segments of the population more than others, with greater impact seen among people aged 45 to 54 years, non-Hispanic (NH) White residents, men, and people living in the southern and northeastern regions of the U.S. (Rudd, Seth, David, & Scholl, 2016).

Researchers have successfully identified system-level factors at the outer layers of the social-ecological model that have contributed to the opioid overdose epidemic. For example, opioid pain reliever prescribing has increased dramatically since 1999 and recently experienced a slight downward trend; trends in opioid pain reliever sales have been associated with parallel trends in overdose death rates (CDC, 2011, 2017). Significant gaps between treatment need and delivery capacity of medication-assisted treatment (MAT) services for opioid use disorder have also been identified (Jones, Campopiano, Baldwin, & McCance-Katz, 2015). Accordingly, the U.S. Department of Health and Human Services has prioritized advancing the practice of pain management and improving access to treatment and recovery services. However, to advance prevention, we must identify other social and environmental factors that are associated with prescription opioid misuse. Early onset of prescription opioid misuse is associated with opioid use disorder later in life (McCabe, West, Morales, Cranford, & Boyd, 2007). Thus, factors that emerge early in life and those upon which health systems and community organizations can effectively intervene early hold great promise for preventing opioid misuse.

Adverse childhood experiences (ACEs), including child abuse and neglect and various forms of household challenges (e.g., substance abuse by household member, parental separation/divorce), are common and can affect lifelong health and health risk behaviors (Felitti et al., 1998; Finkelhor, Shattuck, Turner, & Hamby, 2013; Gilbert et al., 2015). A recent international meta-analysis found that across 37 retrospective studies, 57% of participants reported at least one ACE and 13% reported at least four (Hughes et al., 2017). Studies that assess ACEs among youth reveal higher prevalence, with 65.5% in a nationally representative normative sample (Finkelhor et al., 2013), 91% in a sample of children reported or at risk for child abuse and neglect (Flaherty et al., 2013), and 99% in a nationally representative child welfare sample reporting at least one ACE (Stambaugh et al., 2013). ACEs have been found to have a graded, dose-response impact on

over 40 health and wellbeing outcomes. As early adversity increases, the risk for chronic diseases (Felitti et al., 1998; Gilbert et al., 2015), sexually transmitted diseases (Felitti et al., 1998), depression (Chapman et al., 2004), intimate partner violence (Whitfield, Anda, Dube, & Felitti, 2003), suicide attempts (Dube et al., 2001), smoking (Felitti et al., 1998; Ford et al., 2011), alcohol abuse (Dube, Anda, Felitti, Edwards, & Croft, 2002), sexual risk-taking (Hillis, Anda, Felitti, & Marchbanks, 2001), and youth violence (Fox, Perez, Cass, Baglivio, & Epps, 2015) also increases.

ACEs have also been directly associated with substance misuse and substance use disorder in adulthood, including illicit drug use, with a similar dose-response relationship (Choi, DiNitto, Marti, & Choi, 2017; Dube et al., 2003; Felitti et al., 1998; Wade et al., 2016). In an adolescent sample, ACEs were associated with an increased risk for the nonmedical use of prescription pain relievers (Forster, Gower, Borowsky, & McMorris, 2017). Further, in a sample of psychiatric inpatients, those who misused opiates had increased odds of also having histories of childhood sexual and physical abuse (Heffernan et al., 2000). Among those seeking MAT for opioid use disorder, the prevalence of childhood trauma is high (Sansone, Whitecar, & Wiederman, 2009; Stein et al., 2017). A case-control study demonstrated that prevalence of child maltreatment was greater among a sample of individuals with opioid use disorder than among a matched community sample (Conroy, Degenhardt, Mattick, & Nelson, 2009). Among those who sought treatment for opioid use disorder, ACEs were associated with age of opioid initiation, injection drug use, and lifetime overdose (Stein et al., 2017). Finally, an international meta-analysis found that although ACE scores of four or more were associated with each of 23 health outcomes, the relationship between ACEs and problematic drug use was among the strongest (Hughes et al., 2017).

Investigations examining the association between ACEs and opioid misuse have been limited due to inclusion of substances beyond prescription opioids in investigations, a narrow focus on child maltreatment, small sample sizes, and an emphasis on special populations. This has left a gap in our understanding of the relationships between ACEs and prescription opioid misuse within the general population that, if filled, assists in identifying those at highest risk for opioid-related harm and targeting prevention efforts for opioid use disorder and overdose. The Behavioral Risk Factor Surveillance System (BRFSS) presents an opportunity to address this gap. Given its large sample size and the representative nature of the survey methodology, the BRFSS supports the investigation of health risks such as prescription opioid misuse that are reported by a relatively small percentage of the population, such as prescription opioid misuse. While neither prescription opioid misuse nor ACEs are part of the core BRFSS questionnaire, Florida (FDH, 2010) and Montana (MDPHHS, 2011) included these topics, which supported the current investigation. We expected to find that ACE exposure would be positively associated with prescription opioid misuse.

Method

Participants

Sociodemographic Characteristics

Sociodemographic covariates included race/ethnicity (White non-Hispanic, Black non-Hispanic, Hispanic, Other non-Hispanic, Multiracial non-Hispanic), sex, and age group in years (18–24, 25–34, 35–44, 45–54, 55–64, 64 or older).

Measures

Adverse Childhood Experiences

Childhood adversity was measured on the Montana BRFSS using the BRFSS ACE module—a widely used surveillance instrument consisting of 11 items assessing exposure to 8 types of ACEs including verbal abuse, physical abuse, sexual abuse, household mental illness, household substance abuse, domestic violence, parental separation/divorce, and the presence of incarcerated family members prior to age 18. We summed the number of ACE exposures to create a composite ACE score, that ranged from 0 to 8 where a score of 0 indicated no exposure to ACEs and a score of 8 indicated exposure to all ACE types assessed.

Florida residents were assessed for exposure to the 5 ACE types before the respondent's 18th birthday. These types included parental divorce or death, household substance abuse, household mental illness, domestic violence, and any type of child abuse. ACE scores in this sample ranged from 0 to 5, where 0 indicated no exposure to ACEs and 5 indicated exposure to all 5 ACE types.

Prescription Opioid Misuse

In the Montana sample, prescription opioid misuse was assessed using the following two items: (a) *The last time you filled a prescription for pain medication, did you use any of the pain medication more frequently or in higher doses than directed by a doctor?* ["more than prescribed"]; and (b) *In the past year, did you use prescription pain medication that was NOT prescribed specifically to you by a doctor? We only want to know about prescription medication NOT medication that is available over the counter* ["without a prescription"]. This may be considered an indirect assessment of prescription opioid misuse, as specific pain medication classes were not posed to respondents. Given the status of the epidemic at the time of the survey and based on communications research, we interpret responses to the misuse of prescription pain medicine items in Montana to reflect opioid medication misuse.

In the Florida sample, prescription opioid misuse was assessed using the following item: *On how many occasions in the past year have you used a pain reliever (like OxyContin, Vicodin, Darvocet, Lortab, or Percocet) that was not prescribed*

for you or that you took only for the experience or feeling it caused? We are not interested in your use of "over-the-counter" pain relievers such as aspirin, Tylenol, or Advil that can be bought in drug stores or grocery stores without a doctor's prescription ["not prescribed or for the feeling it caused"]. In each sample, misuse was coded as yes if the respondent indicated using pain medication in this manner on one or more occasions and no if the respondent reported no usage.

Analysis

The BRFSS uses a complex sampling design and applies a weight to adjust for non-response and non-coverage biases. We applied this weight, along with stratum and primary sampling unit variables, in all analyses. Data analyses were conducted in 2017 using the survey package in R version 3.4.1 (R Core Team, 2018).

Descriptive statistics were calculated to examine the composition of the sample across key socio-demographic variables, including age, race/ethnicity, and sex. Bivariate logistic regression was used to determine group differences in opioid misuse status within each sample relative to a reference category. In the Montana sample, misuse was defined as having a positive response to either of the two items described above. Next, sequential logistic regression models were estimated to quantify the crude and adjusted associations between ACE exposure and each of the three opioid misuse outcomes: misuse by taking more than prescribed, misuse by taking without a prescription, and misuse without a prescription or for the feeling it caused. All adjusted models included age group, race/ethnicity, and sex as covariates. As such, Adjusted Odds Ratios (*AOR*s) are reported for the adjusted models. The composite ACE score was grouped into the following categories: 0, 1–2, and 3 or more ACEs to be consistent with prior ACE research and given the distribution of the data.

Results

Montana Sample

Participants included 8726 non-institutionalized U.S. adults residing in Montana who were surveyed during the 2011 BRFSS data collection year (MDPHHS, 2011). The final weighted sample comprised 89.4% White non-Hispanic, 2.3% Hispanic, 1.9% Multiracial, and 6.2% other. Respondents were adults aged 18 years old and older, and 50.3% of the sample being female.

Florida Sample

Participants included 27,545 non-institutionalized U.S. citizen adults residing in Florida who were surveyed during the 2010 BRFSS data collection period (FDH, 2010). The final weighted sample comprised 70.0% White non-Hispanic, 10.4%

Black non-Hispanic, 15.1% Hispanic, 1.4% Multiracial, and 3.1% other. The sample consisted of 51.4% females and participants were at least 18 years old.

In Montana, 37.3% reported experiencing 0 ACEs, 36.3% reported 1–2 ACEs, and 26.4% reported having 3 or more ACEs. In Florida, half of the respondents reported having no ACEs, with the distribution of 0, 1–2, and 3 or more ACEs being 50.0%, 37.5%, and 12.3%, respectively. Table 1 reports the percentage of each sample who reported misusing prescription opioids. In Montana, men were no more likely to report prescription opioid misuse than women, whereas significantly fewer women reported misuse compared to men in the Florida sample. The prevalence of misusing prescription opioids decreased incrementally as respondent's age increased across both samples. No significant differences in prevalence were found when comparing race/ethnicity categories with sufficient sample size to the White category.

ACEs were positively associated with misuse of prescription opioids by taking more than prescribed in the Montana sample (see Table 2). Respondents reporting 1–2 or 3 or more ACEs had 2.8 (95% CI [1.1, 7.5]) and 4.7 (95% CI [1.8, 12.5]) times the odds of reporting taking opioids more than prescribed than did respondents who did not report experiencing ACEs, respectively, after adjusting for age group, race/ethnicity, and sex.

Table 1 Descriptive statistics of sociodemographic characteristics by prescription opioid misuse status for each sample

Characteristic	Prescription opioid misuse					
	Montana sample			Florida sample		
	n	Weighted % (*n*)	95% CI	*N*	Weighted % (*n*)	95% CI
Sex						
Male	*3697*	*4.24 (123)*	*3.24, 5.25*	*10,227*	*2.90 (225)*	*2.07, 3.72*
Female	4494	3.56 (127)	2.69, 4.44	**17,179**	**1.86 (256)**	**1.32, 2.40**
Age group						
18–24	*436*	*8.43 (41)*	*5.17, 11.70*	*609*	*7.50 (46)*	*3.54, 11.46*
25–34	794	6.22 (51)	4.09, 8.35	**1698**	**3.11 (58)**	**1.28, 4.94**
35–44	**932**	**4.44 (40)**	**2.81, 6.07**	**2726**	**2.51 (62)**	**1.33, 3.68**
45–54	**1584**	**4.11 (62)**	**2.76, 5.45**	**4644**	**1.92 (99)**	**1.01, 2.83**
55–64	**2173**	**1.47 (35)**	**0.81, 2.13**	**6559**	**1.29 (85)**	**0.57, 2.00**
64 +	**2772**	**0.65 (21)**	**0.32, 0.98**	**11,426**	**1.65 (131)**	**1.06, 2.25**
Ethnicity						
White-NH	*7790*	*3.66 (205)*	*2.97, 4.35*	*23,508*	*2.26 (384)*	*1.76, 2.77*
Black-NH	*	*	*	1935	2.89 (46)	0.83, 4.92
Hispanic	*	*	*	1308	2.80 (37)	0.96, 4.63
Other-NH	567	5.71 (29)	3.05, 8.38	*	*	*
Multiracial-NH	186	8.49 (10)	2.59, 14.39	*	*	*

CI confidence interval

*Data suppressed due to small cell sizes; boldface indicates a statistically significant difference compared to the italicized reference category, $p < 0.05$

Table 2 Association between ACE exposure and prescription opioid misuse in higher frequency or dosages than prescribed (Montana sample)

ACE score (*n*)	Misuse: Used in higher frequency or dose than prescribed			
	n	Weighted % (95% CI)	*OR* (95% CI)	*AOR* (95% CI)
0 (736)	10	0.96 (0.19, 1.74)	Ref.	Ref.
1–2 (855)	28	3.06 (1.47, 4.65)	3.23* (1.22, 8.58)	2.82* (1.06, 7.46)
3 or more (802)	41	5.37 (2.89, 7.85)	5.77*** (2.23, 14.91)	4.73** (1.79, 12.51)

OR odds ratio; *AOR* adjusted odds ratio; *AOR* model adjusted for age group, race/ethnicity, and sex
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Table 3 Association between ACE exposure and opioid misuse without a prescription (Montana sample)

ACE score (*n*)	Misuse: Without a prescription			
	n	Weighted % (95% CI)	*OR* (95% CI)	*AOR* (95% CI)
0 (3557)	34	0.96 (0.56, 1.35)	ref.	ref.
1–2 (3091)	90	3.90* (2.78, 5.03)	4.19** (2.51, 7.00)	3.53** (2.11, 5.92)
3 or more (2043)	127	8.06* (6.20, 9.93)	9.02** (5.54, 14.66)	7.13** (4.32, 11.77)

OR odds ratio; *AOR* adjusted odds ratio; *AOR* model adjusted for age group, race/ethnicity, and sex
*$p < 0.05$; **$p < 0.001$

Similarly, ACEs were positively associated with taking opioids without a prescription in the Montana sample (see Table 3). Respondents reporting exposure to either 1–2 ACEs or 3 or mores ACEs compared to those reporting never experiencing any of the 8 ACE types had increased odds of reporting taking opioids without a prescription (*OR* model). This relationship remained statistically significant after including sociodemographic covariates in the model (*AOR* model). Respondents reporting 1–2 or 3 or more ACEs had 3.5 (95% CI [2.1, 5.9]) and 7.1 (95% CI [4.3, 11.8]) times the odds of reporting taking opioids without a prescription compared to respondents who did not report experiencing ACEs, respectively, after adjusting for covariates.

Finally, Table 4 reports the relationships of ACEs with taking opioids not prescribed or for the feeling they cause in the Florida sample. As with the other outcomes, respondents reporting exposure to either 1–2 or 3 or more ACEs compared to those reporting never experiencing any of the 5 ACE types presented had increased odds of reporting taking opioids not prescribed or for the feeling they cause (*OR* model). After adjusting for sociodemographic variables (*AOR* model), respondents reporting 3 or more ACEs were found to have 3.1 times the odds of reporting misuse compared to respondents who did not report experiencing ACEs, 95% CI [1.7, 5.8].

Table 4 Association between ACE exposure and use of prescription opioids not prescribed to you or for the feeling it caused (Florida sample)

ACE score (*n*)	Misuse: Not prescribed or for the experience/feeling			
	n	% (95% CI)	*OR* (95% CI)	*AOR* (95% CI)
0 (14,044)	173	1.57 1.04, 2.10)	Ref.	Ref.
1–2 (10,121)	196	2.59 (1.79, 3.38)	1.67* (1.06, 2.64)	1.55 (0.98, 2.45)
3 or more (3189)	112	4.79 (2.59, 7.00)	3.12** (1.74, 5.60)	3.08** (1.65, 5.75)

OR odds ratio; *AOR* adjusted odds ratio; *AOR* model adjusted for age group, race/ethnicity, and sex
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

Discussion

In both of our state samples, we found that ACE scores were associated with increases in misuse of prescription opioids (using them more than prescribed, using them without a prescription, or using them for the feeling that they caused). These findings are consistent with previous literature linking ACEs to increased risk of substance use disorders (Anda, Brown, Felitti, Dube, & Giles, 2008; Dube et al., 2003) and held true when run on the full distribution of the data. Our study provides insight into the impact of ACEs related to prescription opioid misuse – including misuse with and without a prescription. This finding, in conjunction with previous research identifying mechanisms by which ACEs may lead to substance misuse, can inform prevention efforts. Such mechanisms include neurobiological effects of adverse experiences, such as overactive stress response due to changes to hormone and neurotransmitter systems. These in turn may lead to psychological and physical health conditions (e.g., depression, anxiety, post-traumatic stress, and somatic conditions), for which substance use may serve as a coping mechanism (Anda et al., 2006).

Beginning in childhood, primary prevention strategies start with efforts to reduce risk for the development of ACEs. *Essentials for Childhood: Assuring safe, stable, nurturing relationships and environments for all children* is CDC's vision and framework for enhancing the positive development of children and families, and specifically preventing child abuse and neglect (NCIPC, 2014). *Essentials for Childhood* encourages creating the context for healthy children and families through norms change, programs, and policies. In support of these goals, CDC recently released a suite of technical packages to prevent violence. Strategies in the technical packages, including strengthening economic supports to families, changing social norms to support parents and positive parenting, providing quality care and education early in life, enhancing parenting skills to promote healthy child development, and intervening to lessen harms and prevent future risk, are based on the best available evidence and can help prevent multiple adverse experiences in childhood (Fortson, Klevens, Merrick, Gilbert, & Alexander, 2016). These strategies can also support healthy growth and development, modify risk and protective factors for child maltreatment and other ACEs, reduce childhood victimization, and help reduce the

negative consequences for victims, thereby also interrupting trajectories from early adversity to health risk behaviors such as prescription opioid misuse.

The findings also have implications for evidence-based strategies aimed at addressing the opioid overdose epidemic, including improvements in opioid prescribing for pain management and MAT for opioid use disorder. Child abuse and neglect is associated with increased reports of chronic pain in adulthood, potentially attributable to the neurobiological effects of adverse experiences noted previously, as well as dysregulation of the inflammatory system (Baumeister, Akhtar, Ciufolini, Pariante, Mondelli, 2015). Patients at the highest risk for opioid-related harm, including patients who have mental health conditions and those who have experienced ACEs, are more likely to receive opioid therapy for pain management (Austin, Shanahan, & Zvara, 2018; Davis, Lin, Liu, & Sites, 2017). Psychological distress and mental health conditions (also associated with ACEs) can interfere with improvements in pain and functioning in patients with chronic pain and increase risk for problematic opioid use. When prescribing opioids for chronic pain management, the *CDC Guideline for Prescribing Opioids for Chronic Pain* recommends that providers assess for the presence of anxiety, post-traumatic stress disorder, and depression; increase monitoring to lessen the risk for opioid use disorder; and ensure that treatment for mental health conditions is optimized, consulting with behavioral health specialists when needed (Dowell, Haegerich, & Chou, 2016). While tools intended to identify patients at highest risk for addiction may not be sufficiently accurate to classify specific patients (Dowell et al., 2016), such tools might incorporate ACE information when making pain treatment decisions (Webster & Webster, 2005). Thus, assessing for ACEs and mental health conditions, questioning patients about medication misuse, and adjusting treatment decisions accordingly are important steps for safer and more effective pain management and for the prevention of opioid use disorder (Stein et al., 2017). Evidence-based cognitive-behavioral therapy approaches could be particularly advantageous, given the ability of such approaches to improve pain management (Dowell et al., 2016), and to address stress response and substance use problems (McGovern et al., 2009).

Individuals seeking treatment for substance/opioid use disorder report high rates of multiple forms of trauma, and these rates are higher than in primary care populations (Sansone et al., 2009; Stein et al., 2017; Wu, Schairer, Dellor, & Grella, 2010). A history of abuse has been associated with slower recovery times, less retention, and less recovery overall, particularly in women, for both MAT and residential treatment (Branstetter, Bower, Kamien, & Amass, 2008; Kumar, Stowe, Han, & Mancino, 2016; Sacks, McKendrick, & Banks, 2008). Also, literature suggests that ACEs are associated with younger age of opioid initiation, injection drug use, and lifetime overdose, three landmarks in the trajectory of opioid use (Stein et al., 2017). Thus, when treating opioid use disorder, providers could consider assessing for and addressing trauma to improve treatment outcomes and prevent further opioid misuse (Kumar et al., 2016; Stein et al., 2017).

Finally, given that opioid misuse in early adolescence is strongly associated with opioid use disorder later in life (McCabe et al., 2007), interventions that address developmental challenges during adolescence demonstrate promise for changing the trajectory toward opioid misuse, while concurrently reducing other ACE related

outcomes such as violence and delinquency. Particularly, school- and family-based positive youth development programs focused on nurturing skills that support children and adolescents, personal self-management, social skills, and community bonding, can simultaneously improve drug resistance skills, address the mental health consequences of adverse childhood experiences, and reduce prescription opioid misuse, with sustained effects and economic benefits (Spoth et al., 2013). Innovative strategies that link such school-based efforts with community organizations and public safety in a dynamic partnership that increases access to intensive family support using a trauma-informed care approach could hold further promise for preventing opioid misuse and overdose (The Martinsburg Initiative, 2018).

Limitations

There were several limitations of our study. We relied on cross-sectional, retrospectively self-reported information with all of the associated limitations of this methodology. Although reported exposure to ACEs occurred prior to any of the outcomes in adulthood, the study design does not allow for causal inferences beyond the associations reported above. The sensitive and potentially traumatic nature of childhood adversity and concern regarding the legal consequences of admitting drug misuse may have affected respondents' willingness to disclose exposure. However, previous studies provide evidence supporting the general validity of retrospective recall of childhood adversity (Hardt & Rutter, 2004).

Drug misuse outcomes were measured using single items and contextual information surrounding the drug misuse was not gathered. In Montana, respondents were asked about prescription pain medication and not opioids specifically; however, laypersons have reported unfamiliarity with the term "opioid" (Mangione & Crowley-Matoka, 2008), and the terminology "prescription pain medication" has been established in message testing to convey a focus on the types of medications in the opioid class. Although significant associations among ACEs and prescription opioid misuse were found across both samples, the geographic areas sampled in the study limited the representativeness of our findings. Therefore, these findings are not necessarily generalizable to the overall U.S. population. The cell sizes were also small for some subgroups; however, significant findings were consistently detected with a small number of respondents lending to greater confidence in the strength and meaningfulness of these relationships.

Conclusion

The U.S. is experiencing a devastating opioid overdose epidemic. Results from this study indicate a robust association between ACEs and indicators of prescription opioid misuse in adulthood. These results highlight the importance of multiple opportunities for prevention throughout the lifespan. Efforts to assure safe, stable, nurturing relationships and environments for all children are critical to preventing child abuse, neglect, and other early adversities. During adolescence, there are opportunities to

teach youth skills and to provide training and support to parents to reduce risk for youth substance abuse and other ACE-related outcomes. For patients with chronic pain, treatment effectiveness could be enhanced by improving how risks for opioid misuse, including ACEs, are assessed and by consulting with behavioral health specialists to improve the safety and effectiveness of pain management (Dowell et al., 2016; Stein et al., 2017). For individuals requiring treatment for opioid use disorder, providers can refine treatment protocols by understanding and addressing the consequences of childhood adversities. By working to reduce ACEs and more effectively preventing prescription opioid misuse, these strategies have the potential to protect generations of children from growing up in a home negatively impacted by prescription opioid misuse.

Compliance With Ethical Standards

Conflict of Interest The authors declare they have no conflict of interest.

Human and Animals Participants All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent For this type of study, formal consent is not required.

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