

# Interpersonal Violence and Mental Health, Drug use, and Treatment Utilization among Patients with Co-Occurring Opioid use and Mental Health Disorders

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## Abstract

Interpersonal violence is a common type of trauma experienced by people with opioid use disorder (OUD), especially for people with co-occurring OUD and mental illness (COD). However, little is known about demographic and clinical characteristics of individuals with COD who have experienced an interpersonal violence traumatic event compared to those who have experienced a non-violent trauma, and how experiences of interpersonal violence are associated with treatment utilization. Data presented are from a randomized clinical trial testing collaborative care for COD in primary care. Of the 797 patients enrolled in the larger study, 733 (92%) were included in this analysis because they reported a traumatic event. In this sample, 301 (41%) participants experienced a traumatic event involving interpersonal violence. Participants who experienced interpersonal violence were more likely to be younger and female. Among the 301 people who experienced interpersonal violence, 30% experienced child sexual abuse, 23% experienced physical violence, 19% experienced domestic violence, and 28% experienced sexual assault. Those who experienced physical violence were significantly less likely to be female (28.6% vs 74.2% to 88.2% in other groups). Those who reported domestic violence had significantly fewer days of drug use (4.1 days vs 9.0 to 11.5 in the other groups) and lower opioid use severity scores (mean = 13.0 vs 16.6 to 19.5 in the other groups). Multivariable regression results examining the associations between interpersonal violence experiences on treatment utilization revealed no statistically significant differences. Rates of receipt were high for medication for opioid use disorder (~80%) in this sample while rates of mental health counseling were around 35% and rates of receiving mental health medication around 48%. These findings make an important contribution to understanding the associations between patient characteristics and traumatic experiences, and receipt of treatment for OUD and mental health problems among a sample of patients with COD.

**Clinical trial registration:** clinicalTrials.gov ID: NCT04559893

## Keywords

trauma, interpersonal violence, co-occurring disorders, opioid use disorder, depression, posttraumatic stress disorder

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## Introduction

An estimated 6.7 to 7.6 million adults<sup>1</sup> in the United States live with opioid use disorder (OUD). There were 80,411 reported opioid overdose deaths in 2021,<sup>2</sup> and rates of OUD and opioid related fatalities are rising.<sup>3</sup> Almost all people with OUD have experienced one or more traumatic events.<sup>4,5</sup> One study shows that over 90% of people with OUD report a traumatic event in their lifetime.<sup>6</sup> Interpersonal violence, an important subset of traumatic events in which harm is intentionally inflicted on a person by another (in

contrast to traumatic events without violence such as experiencing an overdose), can worsen or contribute to opioid use.<sup>7–10</sup> Research shows that using opioids may be an

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attempt to cope with the overwhelming, painful emotions that result from such traumas.<sup>7</sup> More than half of people in treatment for OUD report using opioids to lessen their symptoms of anxiety and sadness.<sup>11,12</sup> Interpersonal violence can lead to developing PTSD, and therefore, it is not surprising that OUD and PTSD commonly co-occur.<sup>3,6,13,14</sup>

The bi-directional relationship between interpersonal violence experiences and substance use disorders (SUD) is well established.<sup>10</sup> Exposure to interpersonal violence is associated with the development of SUDs<sup>9</sup> and individuals with SUD are at greater risk of experiencing these types of events.<sup>15–17</sup> Sexual violence,<sup>18</sup> childhood sexual abuse,<sup>18–24</sup> physical abuse,<sup>7</sup> and intimate partner violence<sup>24</sup> are all associated with opioid use and the development of OUD. Patients with co-occurring OUD and mental health problems are at particularly high risk of interpersonal violence, as mental illness may make individuals more vulnerable to such events.<sup>25</sup> One study found that 60% of patients with co-occurring disorders had a history of interpersonal violence, a higher rate than patients with a mental disorder or SUD alone.<sup>16</sup> Compared to patients with a mental disorder or SUD alone, patients with co-occurring disorders have more severe and persistent mental health and SUD,<sup>16,26</sup> are more likely to have experienced homelessness and incarceration,<sup>16,27,28</sup> are more difficult to treat for mental health and SUD,<sup>16,26,29</sup> and face significant barriers to care (eg, limited service availability/provision, poor disorder identification, insufficient provider training, racial/ethnic health disparities, and restricted insurance).<sup>28</sup>

Despite the known association between OUD and interpersonal violence, there is little research describing the demographic and clinical characteristics of individuals with co-occurring disorders who have experienced interpersonal violence compared to non-violent traumatic events, and how these experiences are associated with mental health and OUD treatment utilization. Avoidant coping among those who experience interpersonal violence may decrease treatment utilization<sup>30</sup> and interfere with PTSD recovery.<sup>31</sup> Furthermore, interpersonal violence is often inflicted by people that the survivor knows,<sup>32–34</sup> which complicates care-seeking if that person is still in their lives.<sup>35</sup> Many studies focus on only one type of interpersonal violence at a time (eg, child sexual abuse) or analyze the association between interpersonal violence across all categories, without looking at sub-types.<sup>24</sup> This study fills a gap in the interpersonal violence literature by describing the characteristics of people with and without interpersonal violence experiences and the types of interpersonal violence, among those with COD. Furthermore, the study fills a gap in the literature by examining whether experiencing interpersonal violence is associated with medications for opioid use disorder (MOUD) and mental health treatment utilization among people with co-occurring OUD and mental illness.

For the current study, we analyze self-reported baseline data from a randomized clinical trial of collaborative care for co-occurring OUD and PTSD and/or depression.<sup>3</sup>

Collaborative care is a service delivery intervention in which a care coordinator works with patients and their primary care teams to support access to quality behavioral health care.<sup>3</sup> Among participants who reported an index trauma, we first compare those with and without interpersonal violence, and then further characterize the subsample of those who reported interpersonal violence by describing the specific type of violence experienced. We examine if the groups differ by demographics, mental health severity, drug use, and prior treatment utilization of medications and therapy for mental health problems and OUD.

Our study aims to answer three exploratory questions: What are the differences between individuals who have experienced trauma with and without interpersonal violence; is interpersonal violence associated with differences in OUD and mental health treatment utilization; and among individuals who have experienced interpersonal violence, are there differences in participant characteristics and OUD and mental health treatment utilization by type of interpersonal violence?

## Method

### *Participants and Procedures*

Data are from Collaboration Leading to Addiction Treatment and Recovery from other Stresses (CLARO), a randomized clinical trial of the effectiveness of collaborative care for COD in 14 primary care clinics in New Mexico and 4 clinics in California across 4 health care systems. Clinics serve a primarily low-income population and the majority of patients in the study are Hispanic. All study procedures were approved by the RAND's Institutional Review Board. Eligibility criteria for CLARO included: being 18 years or older, receiving primary care at a participating clinic, probable OUD with co-occurring depression and/or PTSD, English or Spanish fluent, capacity to give informed consent, and providing informed consent. Patients who required immediate medical or psychiatric intervention were excluded.<sup>3</sup> Eligibility criteria for the current study were enrolling in CLARO, reporting the experience of an index traumatic event, and completing the PCL-5<sup>36</sup> assessment for PTSD.

### *Measures*

*Characterization of Traumatic Event.* Patients who reported a history of trauma on a baseline survey were asked to identify an index traumatic event (if they experienced more than one trauma, assessors asked participants to select one event in which they had the worst experience). The first author classified traumatic events as trauma with or without interpersonal violence. Examples of non-violent events included losing a loved one to suicide and witnessing an overdose. Interpersonal violence events were those involving harm intentionally inflicted on the patient by another person.

Next, the interpersonal violence events were classified into 4 categories: child sexual abuse, physical violence, domestic violence, and sexual assault. Child sexual abuse included events where a person reported experiencing sexual violence when they were under the age of 18. Physical violence included events where a person's body was intentionally harmed by a perpetrator (excluding intimate partners or family), including gunshots, stabbings, robbery/burglary, bullying, etc. Domestic violence included events where a person reported that an intimate partner or family member physically or emotionally abused them. Finally, sexual assault included events where a person reported experiencing sexual violence as an adult, and included experiences of rape, sex trafficking, and stalking/harassment. Two authors (GH & LM) classified events into the interpersonal violence categories to ensure coding consistency.

After categorizing traumatic events into experiences of interpersonal violence or not, we explored differences between the groups for five sets of variables: (1) demographics, (2) social determinants of health, (3) mental health, (4) drug use, and (5) treatment utilization.

**Demographics.** The five demographic measures were age (in years), sex (coded as a binary indicator for female vs male), race/ethnicity scored as three categories (white, non-Hispanic; Hispanic, all races; or non-Hispanic), education scored as three categories (less than high school, high school or equivalent, or some college or more), and marital status in three categories (never married; married or living with a partner; or widowed, divorced, or separated).

**Social Determinants of Health.** Housing status was assessed with a binary indicator for living in stable housing in the past 3 months. Criminal justice system involvement was measured with a binary indicator for presently awaiting charges, trial, or sentencing; or having been on probation, parole, or supervised release from prison in the past 12 months.

**Mental Health.** General mental health was measured using The Veterans RAND 12-item Health Survey (VR12) mental health component score,<sup>37</sup> which aggregates 12 items to create a total score ranging from 0-100, with a higher score indicating better psychological functioning. PTSD symptoms were measured with the 20-item Posttraumatic Stress Disorder Checklist<sup>36</sup> for DSM-V (PCL-5) anchored to the index traumatic event. We measured depression symptoms with the 9-item Patient Health Questionnaire (PHQ-9).<sup>38</sup> Both sets of items are rated on a 0-4 scale symptom frequency scale. Items are summed to create total scores ranging from 0-80 for PTSD and 0-36 for depression; higher scores indicate greater symptomatology. We also included a binary indicator of suicidal ideation in the past 30 days from the Columbia Suicide Severity Rating Scale.<sup>39</sup>

**Drug use.** Alcohol use severity was measured with the 10-item AUDIT anchored to the past three months.<sup>40</sup> Opioid use severity was assessed with the PROMIS Substance Use Short Form for the past 30 days.<sup>41</sup> We measured overdose risk using items from the Opioid Overdose Risk Assessment.<sup>42</sup> We assessed drug use frequency by taking the maximum value of the number of days of reported use of heroin, cocaine/crack, methamphetamine/other stimulants, and/or tranquilizers/sedatives in the past 30 days using items from the National Survey of Drug Use and Health (NSDUH).<sup>43</sup>

**Treatment Utilization.** We measured treatment utilization in the past 30 days with three binary indicators: (1) receipt of medications for opioid use disorders (MOUD), (2) receipt of medication for depression/PTSD, and (3) therapy or counseling for depression/PTSD.

## Data Analysis

**Data Cleaning and Imputation.** Missingness in our baseline data is generally very low (less than 5%). In instances where responses were missing due to valid survey skip logic, we performed a series of logical imputations to impute zeros. For example, when cleaning up data on suicidal thoughts, participants who indicated not having suicidal thoughts were given an imputed score of "no" for the variable that captures intention to act on them. Composite measures with item level missingness were scored following the measure scoring guideline's algorithm. If guidance for handling missing items in a composite measure was not reported in the literature, we calculated a scaled sum following the approach reported by Rezvan et al<sup>44</sup> (e.g., participants who completed more than 50% of items of the PCL-5 have non-missing items summed and then scaled up based on the number of missing items). For all other missing items, we mean imputed values within treatment assignment groups and health care system.

**Statistical Methods.** We stored and managed all trial data in SAS 9.4 and conducted all analysis using STATA version 17.0. To reduce the probability of type I error with multiple testing, we performed a Benjamini-Hochberg<sup>45</sup> correction with a false discovery rate (Q)=0.05 after all analyses to determine the statistical significance of individual comparisons. First, we explored differences in variables among those with and without interpersonal violence using t-tests for continuous variables and chi-square tests for categorical and binary variables, adjusting accordingly for multiple testing using Benjamini-Hochberg (Table 1). Next, within the subpopulation of participants who experienced interpersonal violence, we compared differences in variables by the type of interpersonal violence experienced (i.e., child sexual abuse, physical violence, domestic violence, and sexual assault) using one-way ANOVA for continuous variables and chi-square tests for categorical and binary

**Table 1.** Characteristics for patients with and without interpersonal violence experiences, N = 733.

Baseline characteristic, n (%) or Mean (SD)	Total	No IPV	IPV	p
<b>Demographics</b>				
Age (years)	39.8 (11.5)	41.2 (12.0)	37.9 (10.5)	<.001
Female	403 (55.0)	195 (45.2)	208 (68.9)	<.001
Race/Ethnicity				0.762
White, non-Hispanic	172 (23.5)	97 (22.5)	75 (24.8)	
Hispanic, all races	500 (68.2)	298 (69.1)	202 (66.9)	
Other/more than one race, non-Hispanic	61 (8.3)	36 (8.4)	25 (8.3)	
Education				0.376
Less than high school	224 (30.6)	124 (28.8)	100 (33.1)	
High school or equivalent	205 (28.0)	127 (29.5)	78 (25.8)	
Some college or more	304 (41.5)	180 (41.8)	124 (41.1)	
Marital Status				0.186
Never married	267 (36.4)	164 (38.1)	103 (34.1)	
Married/living with partner	271 (37.0)	163 (37.8)	108 (35.8)	
Widowed/divorced/separated	195 (26.6)	104 (24.1)	91 (30.1)	
<b>Social Determinants of Health</b>				
Stable housing past 3 months	639 (87.2)	377 (87.5)	262 (86.8)	0.775
Criminal involvement in past 12 months	115 (15.7)	76 (17.6)	39 (12.9)	0.084
<b>Mental Health</b>				
VR12 mental health component score (range: 0-100)	32.9 (12.6)	33.5 (12.9)	32.1 (12.1)	0.120
PTSD symptom score (range: 0-80)	38.2 (16.9)	37.0 (17.3)	39.9 (16.0)	0.023
Depressive symptom score (range: 0-24)	13.8 (5.8)	13.7 (6.0)	14.0 (5.5)	0.631
Suicidal ideation (past 30 days)	230 (31.4)	135 (31.3)	95 (31.6)	0.945
Suicidal behavior (past 3 months)	23 (3.1)	10 (2.3)	13 (4.3)	0.129
<b>Drug Use, 30 days prior to baseline</b>				
Alcohol use severity (range: 0-46)	5.2 (8.9)	5.7 (9.3)	4.4 (8.2)	0.060
Opioid use severity (range: 0-35)	16.9 (9.5)	16.9 (9.4)	16.8 (9.7)	0.862
Opioid overdose risk behaviors	13.5 (6.2)	13.8 (6.4)	13.2 (5.9)	0.201
Days with any drug use	9.5 (12.3)	9.6 (12.5)	9.3 (12.2)	0.735
<b>Treatment Utilization, 30 days prior to baseline</b>				
Medication for OUD	596 (81.3)	350 (81.2)	246 (81.5)	0.932
Counselling for MH	260 (35.5)	145 (33.6)	115 (38.1)	0.216
Prescription for MH	355 (48.4)	206 (47.8)	149 (49.3)	0.681

Abbreviations: IPV: interpersonal violence; OUD: opioid use disorder; MH: mental health.

variables. We used the Benjamini-Hochberg correction to account for multiple hypothesis testing (Table 2). Finally, we sought to understand whether treatment utilization of mental health and MOUD rates varied by group, over and above demographic characteristics. We ran adjusted multi-variable logistic regression analyses with treatment utilization measures as the dependent variables. The adjusted regression models controlled for the listed set of demographic characteristics, mental health diagnosis (i.e., depression, PTSD, or both), and health system. We report recycled predicted means with 95% confidence intervals for experience of any violence (Figure 2) and by violence category (Figure 3).

## Results

Figure 1 provides an overview of the sample flow for this study. Of 797 patients enrolled in the larger CLARO study

733 (92%) were included in this analysis. We excluded 64 (8%) participants because they did not report experiencing an index traumatic event. Of the 733 participants in this study's sample, 301 (41%) experienced a traumatic event involving interpersonal violence and 431 (59%) experienced a traumatic event without interpersonal violence.

### *Comparing Individuals with Traumatic Events with Versus Without Interpersonal Violence*

Table 1 shows the results comparing baseline characteristics for participants who experienced traumatic events with and without interpersonal violence. Participants who had experienced interpersonal violence were, on average, 3.3 years younger ( $p < .001$ ) and more likely to be female (68.9% vs 45.2%,  $p < .001$ ) compared with those who had not experienced interpersonal violence. After adjusting for multiple

**Table 2.** Characteristics for patients with different types of interpersonal violence experiences, n = 301.

Baseline characteristic, n (%) or Mean (SD)	Child sexual abuse	Physical violence	Domestic violence	Sexual assault	p
<b>Demographics</b>					
Age (years)	38.2 (9.9)	37.6 (11.6)	36.2 (10.3)	38.9 (10.2)	.497
Female	66 (74.2) <sup>a</sup>	20 (28.6) <sup>b</sup>	46 (80.7) <sup>a</sup>	75 (88.2) <sup>a,c</sup>	<.001
<b>Race/Ethnicity</b>					
White, non-Hispanic	21 (23.6)	14 (20.0)	17 (29.8)	23 (27.1)	.806
Hispanic, all races	61 (68.5)	51 (72.9)	36 (63.2)	53 (62.4)	
Other/more than one race, non-Hispanic	7 (7.9)	5 (7.1)	4 (7.0)	9 (10.6)	
<b>Education</b>					
Less than high school	33 (37.1)	27 (38.6)	21 (36.8)	19 (22.4)	.089
High school or equivalent	20 (22.5)	21 (30.0)	16 (28.1)	20 (23.5)	
Some college or more	36 (40.4)	22 (31.4)	20 (35.1)	46 (54.1)	
<b>Marital Status</b>					
Never married	24 (27.0)	34 (48.6)	18 (31.6)	27 (31.8)	.157
Married/living with partner	37 (41.6)	18 (25.7)	21 (36.8)	32 (37.6)	
Widowed/divorced/separated	28 (31.5)	18 (25.7)	18 (31.6)	26 (30.6)	
<b>Social Determinants of Health</b>					
Stable housing past 3 months	76 (85.4)	59 (84.3)	54 (94.7)	73 (85.9)	.286
Criminal involvement in past 12 months	8 (9.0)	19 (27.1)	5 (8.8)	7 (8.2)	.001
<b>Mental Health</b>					
VR12 mental health component score (range: 0-100)	32.5 (12.1)	35.3 (12.5)	31.1 (11.6)	29.6 (11.6)	.029
PTSD symptom score (range: 0-80)	38.4 (16.4)	38.9 (16.0)	41.1 (14.9)	41.4 (16.6)	.564
Depressive symptom score (range: 0-24)	14.1 (5.1)	13.6 (5.5)	13.9 (6.0)	14.2 (5.7)	.898
Suicidal ideation (past 30 days)	25 (28.1)	21 (30.0)	15 (26.3)	34 (40.5)	.223
Suicidal behavior (past 3 months)	7 (7.9)	2 (2.9)	2 (3.5)	2 (2.4)	.266
<b>Drug Use, 30 days prior to baseline</b>					
Alcohol use severity (range: 0-46)	5.0 (8.8)	4.4 (8.4)	4.8 (8.6)	3.7 (7.2)	.754
Opioid use severity (range: 0-35)	17.2 (9.5) <sup>a</sup>	19.5 (10.3) <sup>a</sup>	13.0 (7.4) <sup>b</sup>	16.6 (10.0) <sup>a</sup>	.002
Opioid overdose risk behaviors	12.7 (5.1)	14.5 (7.2)	11.4 (4.8)	13.7 (5.9)	.018
Days with any drug use	9.0 (11.9) <sup>a</sup>	10.7 (12.7) <sup>a</sup>	4.1 (8.4) <sup>b</sup>	11.5 (13.2) <sup>a</sup>	.002
<b>Treatment Utilization, 30 days prior to baseline</b>					
Medication for OUD	74 (83.1)	53 (75.7)	49 (86.0)	69 (81.2)	.482
Counselling for MH	29 (32.6)	24 (34.3)	27 (47.4)	35 (41.2)	.262
Prescription for MH	46 (51.7)	33 (47.1)	33 (57.9)	37 (43.5)	.370

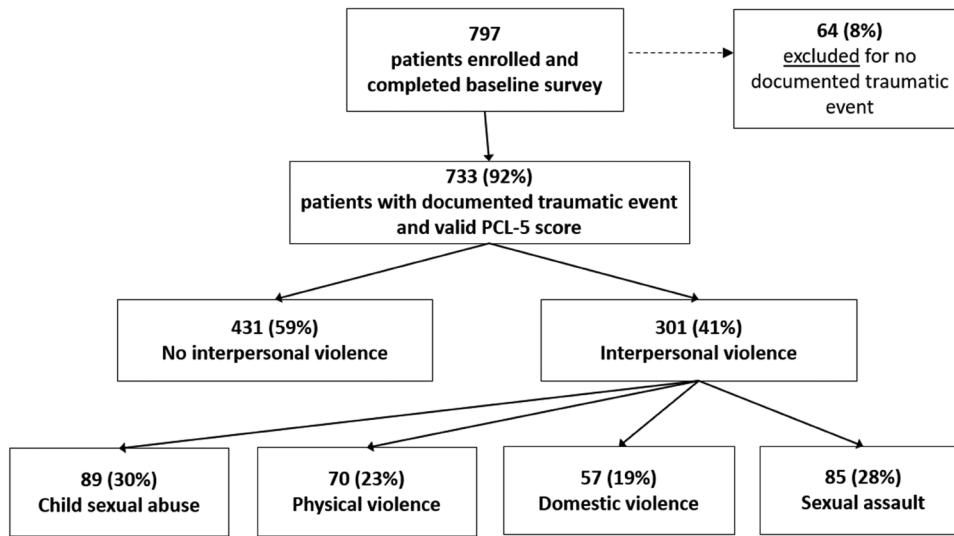
Abbreviations: IPV: interpersonal violence; OUD: opioid use disorder; MH: mental health.

testing, there were no additional statistically significant differences in the remaining variables.

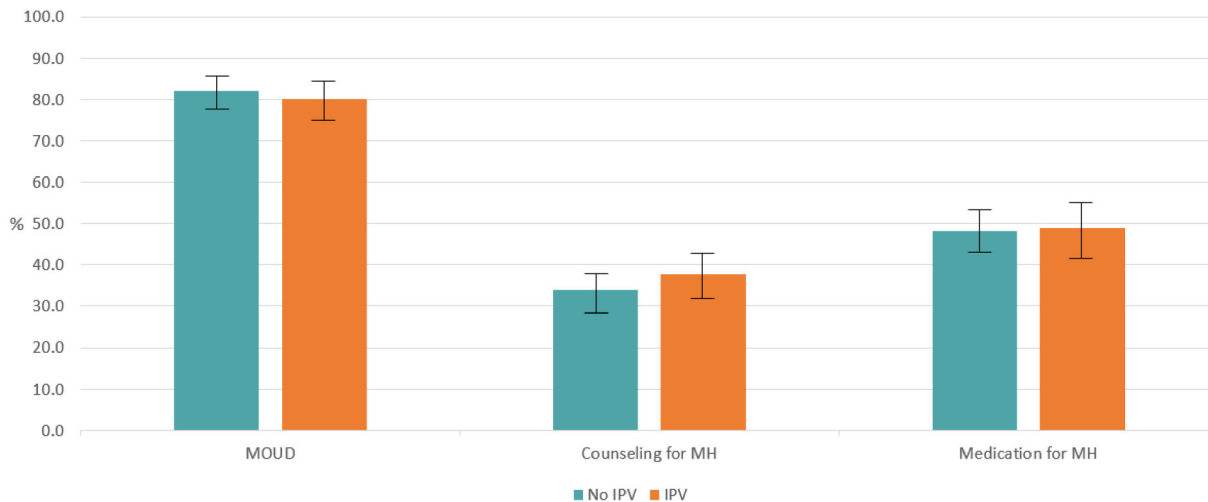
### Comparing Participant Characteristics by Type of Interpersonal Violence

Of the 301 people who experienced a traumatic event with interpersonal violence, 89 (30%) experienced child sexual abuse, 70 (23%) experienced physical violence, 57 (19%) experienced domestic violence, and 85 (28%) experienced sexual assault (Figure 1). Table 2 compares the characteristics of participants who experienced different types of interpersonal violence. Of note, participants reporting physical violence as their index traumatic event were less likely to be female (28.6%, all pairwise  $p < .001$ ) than the other

groups where higher proportions of participants reporting childhood sexual abuse (74.2%), domestic violence (80.7%), and sexual assault (88.2%) were female. Those who reported domestic violence as their index traumatic event reported fewer days of drug use (mean = 4.1 days, all pairwise  $p < .008$ ) compared to those reporting the other types of traumatic events: childhood sexual assault (mean = 9.0 days), physical violence (mean = 10.7 days), and sexual assault (mean = 11.5 days). Those with a domestic violence index event also reported lower opioid use severity scores (mean = 13.0, all pairwise  $p < .025$ ) than those with a child sexual assault (mean = 17.2), physical violence (mean = 19.5), and sexual assault (mean = 16.6) index event. After adjusting for multiple testing, there were no additional statistically significant differences in the remaining variables.



**Figure 1.** Sample flow diagram.



**Figure 2.** Regression adjusted means and 95% confidence intervals for reported receipt of treatment in the past 30 days for patients with and without violence experiences.

Note. IPV: Interpersonal violence; MOUD: Medications for opioid use disorder; MH: Mental health.

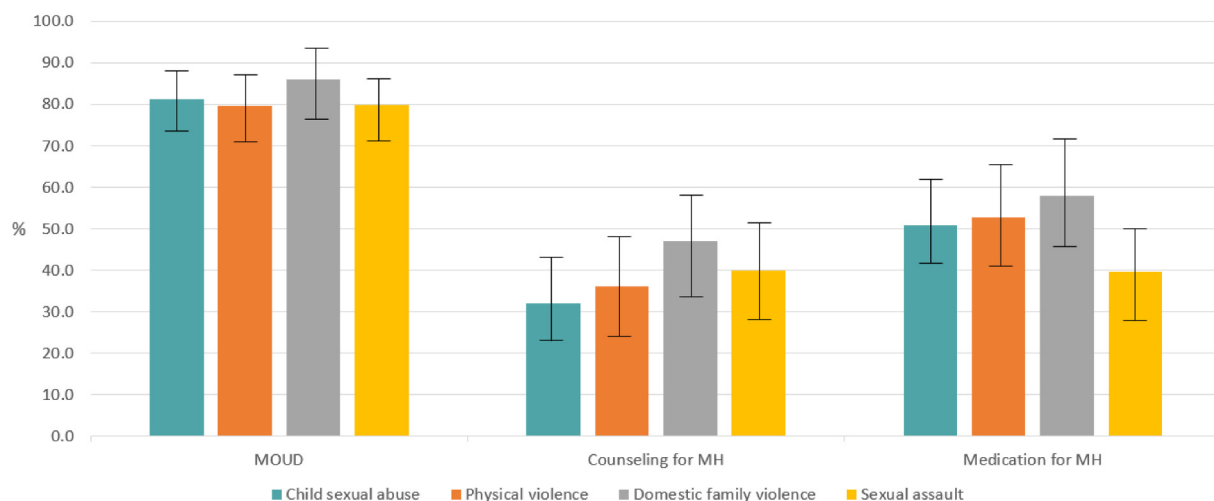
### Multivariable Logistic Regression Analysis of Treatment Utilization Variables

Adjusted multivariable regression results for examining the associations between interpersonal violence experiences on treatment utilization revealed no statistically significant differences (see Figure 2). As shown, the rates of receipt were generally high for MOUD (~80% in both groups) in this sample. In contrast, rates of mental health counseling were only around 35% and rates of receiving medication were around 48%. Adjusted multivariable logistic regression models examining the association between different types of interpersonal violence (with physical violence as the

reference group) on treatment utilization similarly revealed no statistically significant differences between groups (see Figure 3). Again, rates of receipt for MOUD were consistently high across groups ranging from 79% to 86%. Receipt of mental health counseling ranged from 32%-47% in the groups and ranged from 40%-58% for mental health medication.

### Discussion

This study compares demographic and clinical characteristics of individuals with COD who have experienced trauma with and without interpersonal violence and explores the



**Figure 3.** Recycled predictions and 95% confidence intervals for reported receipt of treatment in the past 30 days for patients by type of violence experiences.

Note. IPV: Interpersonal violence; MOUD: Medications for opioid use disorder; MH: Mental health.

association between interpersonal violence and mental health and OUD treatment utilization. Our findings indicate that among patients with COD, those who are younger and female are more likely to have experienced interpersonal violence. This is consistent with past research; for example, Santo, et al, showed that among people with OUD, sexual abuse is more prevalent among women than men.<sup>46</sup> In addition, a systematic review found that across 18 studies, the estimated prevalence of intimate partner violence perpetrated against women who use opioids is 36%-94% in the lifetime and 32%-75% in the past year, demonstrating the complex relationship between interpersonal violence and opioid use especially in women.<sup>10</sup>

Although overall rates of interpersonal violence in our study are higher for women than men, one exception to this pattern is that those who experienced physical violence are more likely to be male. This is consistent with a recent study categorizing interpersonal violence events among young people in SUD treatment into physical abuse, sexual abuse, or emotional abuse that found that the prevalence of all types of interpersonal violence was higher for women except for physical violence, which was higher in men.<sup>47</sup>

These patterns indicate that providers should consider gender when screening and developing treatment plans for patients with co-occurring substance use and mental health disorders. Williams, et al, found gender differences in the types of violence associated with misuse of prescription opioids: intimate partner violence for men, adverse childhood experiences (ACEs) for women, and the interaction between intimate partner violence and sexual assault for women. The authors also note that there may be additional gender differences, but the effects are confounded when controlling for multiple traumatic events of differing types.<sup>24</sup> Another important reason to consider gender in treatment plans is that men and women

may differ in *why* they misuse opioids. In one study, women more frequently report misusing opioids to cope with interpersonal stress, whereas men report misusing opioids to cope with pain and to increase euphoria.<sup>48</sup>

Another key finding from our study is that a majority of participants who report experiencing interpersonal violence (58%) report an index traumatic event that involves either childhood sexual abuse (30%) or sexual assault (28%). This is consistent with a well-established association between ACEs and OUD.<sup>18-24</sup> One study reports that 80% of MOUD seeking patients with OUD report a history of childhood trauma, including sexual abuse;<sup>49</sup> another finds that people with OUD are significantly more likely to report childhood traumatic events than people with SUD involving cocaine or nicotine.<sup>17</sup> These findings are also consistent with associations between OUD and the reported experience of sexual assault.<sup>18,24,50,51</sup> For example, a study of patients with OUD reported that nearly 66% of women and 11% of men had experienced sexual violence and that sexual violence was associated with more complex clinical and social needs in both genders.<sup>52</sup>

Given these associations, increasing screening for ACEs and sexual assault would likely benefit patients presenting with OUD. Despite the strong association between ACEs and/or sexual assault and OUD, screening for history of sexual violence in medical settings is uncommon and ACEs assessments are not standard for patients presenting with OUD.<sup>7,53</sup> Other research has found that patients in treatment for OUD are generally not aware of the relationship between ACEs and current SUD, and that learning about the impact of ACEs provides relief and the belief that they are "normal".<sup>54</sup> Furthermore, Driscoll et al suggest that asking about trauma allows patients to learn about normal reactions to trauma and provides information to care teams to make referrals for mental health care.<sup>7</sup> A

different study successfully demonstrated that screening for ACEs in MAT clinics is an effective trauma-informed intervention that increases behavioral health referrals.<sup>55</sup> These studies suggest that screening for ACEs and trauma can be feasible for people with OUD, helps the patient feel understood, builds compassion between people with OUD and trauma and their providers, and increases access to behavioral health care. Of course, asking about sexual trauma is a highly sensitive topic that should be approached with great care and training on trauma informed practices.<sup>56</sup>

Although experts recommend integrating mental health and substance use treatment for individuals with co-occurring disorders, we found mental health treatment utilization was lower than MOUD utilization. Studies suggest that people with co-occurring PTSD and SUD may benefit from trauma-focused interventions to help lower the high rates of dropout from treatment among people with co-occurring PTSD and SUD<sup>57</sup> and increase buprenorphine retention.<sup>58</sup> Despite the potential benefit of receiving integrated care for people with COD, many individuals with PTSD who are receiving buprenorphine treatment do not receive concurrent PTSD treatment.<sup>58</sup> Given the high burden and prevalence of interpersonal violence among people with COD, at 41% in our sample, it is important to further study the impact of trauma-focused care as a part of OUD treatment.

There are limitations to this study. Data come from two states (14 clinics in New Mexico and 4 in California) and from patients who receive care in primary care clinics, the majority of whom are engaged with MOUD. Therefore, our findings may not reflect experiences of interpersonal violence among people with OUD across the country, particularly those who are not engaged with the health care system and/or on MOUD. The work is also exploratory and aims to describe the complexity of patients who have experienced interpersonal violence among those with COD and cannot make claims of causality nor fully explain how the nuanced relationship between interpersonal violence and COD functions. Similar to other existing studies,<sup>24</sup> it uses cross-sectional data and cannot establish temporality between measures of interpersonal violence and opioid use, which is important in understanding potential causality.

Despite limitations, these findings make an important contribution to understanding the associations between patient characteristics and interpersonal violence experiences and receipt of treatment for OUD and mental health problems among a sample of patients with COD. Future work will aim to better understand how interpersonal violence affects treatment of OUD and mental health conditions. Additional work will also examine causal associations between interpersonal violence, overdose and suicide attempts, and mental health and OUD treatment utilization using longitudinal data.

Our study is a start to exploring interpersonal violence among people with co-occurring disorders and aims to show the complexity of the lives of people experiencing these disorders. These findings highlight the importance of

compassion and trauma-informed care in health care settings for this population. We would be remiss to not mention the incredible resilience of people who have experienced interpersonal violence and are experiencing OUD and mental health problems. Our goal in conducting this work is to raise awareness about the challenges faced by people with COD and call for improvements to health service delivery for this population.

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