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Sexual Abuse and Future Mental Health Hospitalization in a Swedish National Sample of Men Who Use Opioids

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Objective: Experiences of trauma, specifically sexual abuse, have been linked to both mental health and substance use disorders. This study used 14 years of Swedish health registry data to select a sample of adult men who reported frequent opioid use and assessed if those with a self-reported history of sexual abuse had a higher likelihood of hospitalization for a mental health disorder.

Methods: A Swedish longitudinal (2003–2017) registry study linked Addiction Severity Index (ASI) assessments completed with individuals who sought treatment for substance use disorders with data on hospitalizations for mental health disorders, and assessed associations with self-reported histories of sexual abuse among men who reported sustained and frequent use of opioids ($n = 1862$). Cox regression methods tested associations and controlled for age, and the 7 ASI composite scores: family and social relationships, employment, alcohol use, drug use, legal, physical health, and mental health.

Results: The ASI composite score for mental health (hazard ratio [HR] 16.6, $P < 0.001$) and a history of sexual abuse (HR 1.93, $P < 0.001$) were associated with an elevated risk of future mental health hospitalization.

Conclusion: Both the ASI composite scores for mental health and self-reported history of sexual abuse reflected complex needs among men who used opioids and increased risk for mental health hospitalization. Treatment providers should strive to provide integrated care and address the negative aspects of victimization.

Key Words: men, mental health, opioids, sexual abuse

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Over the past 20 years, use of opioids has increased substantially in Europe and the United States (European Monitoring Centre for Drugs and Drug Addiction [EMCDDA], 2017). The use of opioids can be associated with individual, medical, and social problems (Leshner, 1998; Sullivan et al., 2005; Wu et al., 2010) including mental illness (Rodriguez-Llera et al., 2006; Johnsson, 2010; Davis et al., 2017). Research suggests that mental health disorders are more common among individuals using opioids than in the general population (Grant et al., 2004; Grant et al., 2005; Grella et al., 2005), and especially among people with experiences of sexual abuse (Hser et al., 2015; Svensson and Karlsson, 2018). A history of sexual abuse is a risk factor for both substance use disorder and mental health disorder independently and together (EMCDDA, 2016). Research on sexual abuse history, substance use disorder, and concurrent mental health disorders has primarily focused on women (Lundgren et al., 2013). The lack of research on men is problematic because sexually abused men may, compared with women, experience greater stigma, more severe psychiatric symptomology, worse treatment outcomes, and poorer health in combination with greater complexity for clinical health practitioners (Valderas et al., 2009; Whiteford et al., 2013).

Women and men with substance use disorders and a history of sexual abuse report significantly fewer social contacts, more family problems, poorer quality of life, and more substance use-related problems compared with people with substance use disorders and no experience of sexual abuse (Martínez-Raga et al., 2002; Branstetter et al., 2008; Marshall et al., 2008). People with sexual abuse histories and co-occurring mental health disorders may be more likely to report long-term use of opioids (Branstetter et al., 2008; Hser et al., 2015). Men with an opioid use disorder and a history of sexual abuse were more likely (60%) to report co-occurring psychiatric symptoms compared with men without experience of sexual abuse (40%) (Schafer et al., 2014).

A US analysis using the Addiction Severity Index (ASI) found that nearly a fourth of men (28%) with comorbid mental health and substance use disorders reported a sexual abuse history at baseline, had elevated drug use composite scores, more days with drug use problems, and were more troubled by their drug problems relative to those without a history of abuse (Makin-Byrd et al., 2011). Similarly, a Swedish study suggested strong relationships between psychiatric problems and

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sexual abuse among men assessed for substance use disorder; ASI mental health composite scores were associated with a 14-fold increased likelihood of having experienced sexual abuse (Lundgren et al., 2013).

A challenge when treating men with a history of sexual abuse and comorbid mental health disorders and substance use disorders is to identify which care system (ie, mental health or addiction treatment) can provide care and how to integrate care (EMCDDA, 2016). Men with co-occurring disorders and a history of sexual abuse may be more difficult to treat due to multifaceted problems and the organization of the treatment system. A specific concern is that treatment programs for substance use disorders may not assess mental health disorders and rarely have staff or evidence-based practices for patients with sexual abuse histories. Overall, care needs to be taken in asking men about trauma because men may perceive significant stigma in discussing sexual abuse experiences.

Sexual abuse experiences are associated with both mental health and substance use disorders, independently and together. Previous research has emphasized sexual abuse experiences, mental health disorders, and substance use disorders among women. The analysis presented in this study uses ASI data from the Swedish public care system to explore the association between self-reported history of sexual abuse and subsequent hospitalization with a primary diagnosis of a mental health disorder among men who used opioids—an understudied area of research in Sweden and internationally.

METHODS

Sample

The secondary analysis used a national registry of 15,061 individuals assessed for a substance use disorder between 2003 and 2017 from 65 Swedish municipalities. The analysis was restricted to adult men (18 years of age and older) with complete demographic data who reported use of heroin and/or other opioids at least 3 times a week for more than 1 year ($n = 1862$). “Other opioids” were defined in the ASI as opium, oxycodone, fentanyl, morphine, codeine, tramadol, and so on. Note, the medications commonly used in opioid agonist treatment—buprenorphine and methadone—were not included in the definition. The ASI dataset did not include an International Classification of Diseases (ICD)-10 or a Diagnostic and Statistical Manual of Mental Disorders-5 diagnosis for an opioid use disorder.

Dataset

The study linked Cause of Death Registry data, the National Patient Registry data, and the ASI assessments (McLellan et al., 1992) completed during intake in public care offices and available from The National Board of Health and Welfare. The Regional Ethical Review Board at Umeå University and the University of Denver Institutional Review Board reviewed and approved the study protocol as meeting criteria for exemption because study data were de-identified.

Dependent Variable

The dependent variable—mental health hospitalization (yes/no)—was created using data from The Swedish National

Patient Registry. ICD-10 primary diagnosis codes identified individuals with hospitalization due to a mental health disorder: schizophrenia, schizotypal, and delusional disorders (F20-F25 and F28-F29); mood (affective) disorders (F30-F34 and F38-F39); neurotic, stress-related, and somato form disorders (F40-F45); disorders of adult personality and behavior (F60-F63 and F68-F69); behavioral and emotional disorders with onset usually occurring in childhood and adolescence (F90-F95); and unspecified mental disorder (F99-F99).

Independent Variable and Covariates

The independent variable was whether or not the men reported a history of sexual abuse in response to an ASI question, “*Has anyone ever abused you sexually in your life (No/Yes)?*” Age in years was a continuous measure. The ASI composite scores (family and social relationships, mental health, physical health, employment, legal problem, alcohol use, and drug use) assessed problem severity. Questions within each ASI domain were weighted equally and adjusted for the answer range, and a selected number of questions included in the composite score using the standard procedure for calculating composite scores (McGahan et al., 1986; McLellan et al., 1992). The 7 composite scores ranged from 0 to 1, where 0 indicated no problems/needs and 1 indicated severe problems/needs.

The family and social composite score measured how bothered the individual was by his or her family and overall social situation, and the individual’s perceived level of treatment need. The employment composite score assessed both the ability to get to work (eg, driving license, access to car), years of education, days worked in the past 30 days, and amount of money earned. The alcohol and drug composite scores focused on the problems arising from alcohol use and drug use, and how important the individual felt it was to get help to address those problems. The legal composite score measured the individual’s involvement with the criminal justice system and their self-reported need for help with legal issues. Finally, the composite scores for physical and mental health measured the individual’s perception regarding his or hers physical and mental health status, and the individual’s sense of being bothered and needing help to address these concerns (McGahan et al., 1986; McLellan et al., 1992).

Clinical social workers in municipal social service agencies conducted the assessments after completing the Swedish National Board on Health and Welfare’s ASI training. Clients were referred for an assessment of a substance use disorder by primary care offices, family, police, hospitals, and courts, or were self-referred.

The ASI psychometric properties have been tested extensively, in many countries and with a large range of populations, generally demonstrating good to excellent reliability and validity (McLellan et al., 1992; Samet et al., 2007; Armelius et al., 2009; Nystrom et al., 2010; Pankow et al., 2012; Padyab et al., 2018; Lundgren et al., 2019). In international studies, however, the employment composite score was less reliable and the mental health composite score was less valid and reliable (Makela, 2004; Nystrom et al., 2010; Pankow et al., 2012).

TABLE 1. The Distribution of Baseline Characteristics and Mental Health Hospitalization 13 Years After Baseline Assessment Among Opioid-using Men (N = 1862)

Baseline Characteristics	N	% or mean (SD)
Age (yrs)	1862	35.33 (10.98)
History of sexual abuse	1768	
No	1650	93.33%
Yes	118	6.67%
ASI composite scores		
Family and social relationships	1742	0.30 (0.24)
Employment	1672	0.84 (0.25)
Alcohol use	1627	0.22 (0.27)
Drug use	1636	0.27 (0.15)
Legal	1683	0.25 (0.28)
Physical health	1837	0.45 (0.35)
Mental health	1723	0.36 (0.24)
Dependent variable		
Post-ASI mental health hospitalization	1862	
No	1595	85.66%
Yes	276	14.34%

ASI, Addiction Severity Index; SD, standard deviation.
The ASI composite scores range from 0 to 1.

Statistical Analysis

Descriptive statistics summarized sample characteristics (eg, mean, percent). Multivariable Cox proportional-hazards regression modeling estimated crude and adjusted hazard ratios (HRs; AHRs) with 95% confidence intervals (CIs), and assessed the associations between sexual abuse and mental health hospitalizations postbaseline controlling for ASI composite scores and descriptive variables that were statistically significant in bivariate analyses. Clients were followed until date of first mental health hospitalization, or the latest date for which they were known to be alive through December 31, 2016, whichever came first. Those who were alive and did not have a mental health hospitalization during the course of the study were treated as censored data. The proportionality of hazards assumptions was tested using the Schoenfeld residuals. All statistical analyses were performed

using STATA version 15.1 (StataCorp, College Station, TX). Results were considered significant at $P < 0.05$.

RESULTS

Sample Characteristics

The study cohort included 1862 men who used opioids and sought treatment for a substance use disorder (mean age 35 ± 11 years); 7% ($n = 118$) reported a history of sexual abuse. Baseline characteristics are summarized in Table 1.

Bivariate Associations

Men who reported history of sexual abuse had significantly elevated risk (HR 2.44, 95% CI 1.71–3.48, $P < 0.001$) of future mental health hospitalization within 14 years after baseline assessment. Composite scores for mental health (HR 7.31, 95% CI 4.38–12.21, $P < 0.001$), family (HR 1.85, 95% CI 1.12–3.07, $P < 0.001$), and alcohol use (HR 1.62, 95% CI 1.04–2.52, $P < 0.05$) were significantly associated with subsequent mental health hospitalization. The drug composite score (HR 2.32, 95% CI 0.95–5.65), however, was not significantly associated with increased risk of mental health hospitalization (Table 2).

Multivariable Associations

The variables with significant bivariate associations with mental health hospitalization were entered into a multivariable model. History of sexual abuse (AHR 1.93, 95% CI 1.31–2.85, $P < 0.001$) and the ASI-composite score for mental health (AHR 16.6, 95% CI 6.8 – 40.3, $P < .001$) remained significantly associated with subsequent mental health hospitalization. The family and alcohol composite scores were no longer associated with mental health hospitalization (Table 3).

The Schoenfeld residual tests confirmed that residuals were not correlated with survival time for all variables except for ASI-composite score for mental health, suggesting that the proportional hazards assumption was satisfied for most variables. The nonproportional relationship between the hazards

TABLE 2. Bivariate Associations Between Baseline Characteristics, ASI Composite Scores and Subsequent Mental Health Disorder Hospitalization Postbaseline

Baseline Characteristics	Post-ASI Mental Health Hospitalization, No	Post-ASI Mental Health Hospitalization, Yes	Crude HR (95% CI)
Age	35.51 (11.07)	34.27 (10.37)	0.99 (0.98–1.00)
History of sexual abuse			
No	86.67	13.33	(reference)
Yes	70.34	29.66	2.44 (1.71–3.48)*
ASI composite scores			
Family and social relationships	0.30 (0.24)	0.32 (0.24)	1.85 (1.12–3.07) [†]
Employment	0.84 (0.25)	0.83 (0.25)	0.78 (0.47–1.28)
Alcohol use	0.21 (0.27)	0.25 (0.27)	1.62 (1.04–2.52) [‡]
Drug use	0.27 (0.15)	0.28 (0.14)	2.32 (0.95–5.65)
Legal	0.25 (0.28)	0.23 (0.27)	0.81 (0.50–1.29)
Physical health	0.45 (0.35)	0.46 (0.35)	1.12 (0.80–1.58)
Mental health	0.34 (0.24)	0.45 (0.24)	7.31 (4.38–12.21)*

ASI, Addiction Severity Index; CI, confidence interval; HR, hazard ratio; SD, standard deviation.

* $P < 0.001$.

[†] $P < 0.01$.

[‡] $P < 0.05$.

TABLE 3. Hazard Ratios (95% CI) for the Association Between Sexual Abuse, Baseline ASI Composite Scores and Mental Health Hospitalization Postbaseline

Independent Variable and Covariates Significant on Bivariate Level	OR (95% CI)
History of sexual abuse	
No	(Reference)
Yes	1.93 (1.31–2.85)*
ASI composite scores	
Alcohol use	1.32 (0.82–2.11)
Family and social relationships	0.54 (0.29–1.0)
Mental health	16.62 (6.84–40.3)†

ASI, Addiction Severity Index; CI, confidence interval; OR, odds ratio.

* $P < 0.01$.† $P < 0.001$.

of future mental health hospitalization and the composite score for mental health varied over time. A time-interaction effect was added to the model. The parameter estimate (0.9) suggested that the effect of the mental health composite score decreased over time.

Missing Data Analysis

Among the 1862 men included in the analysis, 94 had missing data on the sexual abuse question (our key independent variable). An additional 614 individuals had missing data on at least 1 of the ASI composite scores, resulting in 1154 complete cases in the dataset. Among the missing cases, 13.6% had a mental health hospitalization compared with 14.8% among complete cases (the difference was not statistically significant). To evaluate the impact of missing data on the final results, all bivariate analyses were repeated and compared with bivariate results based on complete cases. Results were highly comparable with the analysis based on complete cases.

DISCUSSION

The multivariable Cox proportional-hazards regression model found 2 variables significantly associated with subsequent mental health hospitalization; reporting a history of being sexual abused and the ASI mental health composite score. More severe ASI mental health composite scores were associated with an increased likelihood of a future mental health hospitalization. The elevated risk corresponds well with previous research suggesting that co-occurring mental health disorders are common among individuals suffering from opioid use disorder (Schafer et al., 2014). The ASI-composite score for mental health appears to be a good predictor of subsequent hospitalization for a mental health disorder.

The multivariable analysis further suggests that a history of sexual abuse almost doubled the risk of hospitalization for a mental health disorder. Previous research found that a history of sexual abuse is related to both mental health and substance use disorders, independently and together (EMCDDA, 2016; Hser et al., 2015). The present study shows that experience of being sexually abused is associated with an increased risk of mental health hospitalization among men. A finding that corresponds with a prior Swedish study that found sexual abuse experiences was strongly associated with more

severe psychological symptomatology (Lundgren et al., 2013). Compared with women, men may be more hesitant to report abuse in general and sexual abuse in particular and may experience greater stigma (Roberts et al., 2010). Even though there may be actual differences in the frequency of experience of abuse between men and women, these differences can partly be explained by men's reticence to talk about and report experience of sexual abuse due to greater stigma in admitting to having been sexually abused (ie, victimization). Being victimized is associated with feelings of anger depression, guilt, grief, and loss of self-esteem (Harrison et al., 1989). Altogether resulting in resistance to seek care (because of stigma surrounding sexual abuse) and an increased risk of future mental health related problems (Lisak, 1994; Valentin et al., 1996).

Limitations

There are several limitations in the analysis that call for caution when interpreting the results. The question regarding history of sexual abuse in the ASI is vague and does not disclose any details (eg, whether or not it occurred in childhood, adolescence or adulthood, the frequency or duration of occurrence, and if it was a 1-time event or more frequent). It may have occurred after drug use onset. The Swedish ASI dataset, moreover, does not include information on whether the men were clinically diagnosed using ICD-10 or Diagnostic and Statistical Manual of Mental Disorders-5. Dependent use of opioids, however, emerges rapidly (Darke and Ross, 2001; Luty, 2003; Darke, 2011; Sharma et al., 2016), and the individuals were being assessed for substance use disorder. The reported frequency (at least 3 times per week) and duration of opioid use (past year) suggest that they had at least a moderate opioid use disorder. The lower reliability and validity regarding the composite scores for employment and mental health in international settings (Makela, 2004; Nystrom et al., 2010; Pankow et al., 2012) calls for caution when interpreting the results. Finally, the study is a retrospective cohort analysis that cannot assess causal relationships.

CONCLUSIONS

The analysis suggests a clinical need to coordinate treatment efforts between the substance use treatment system and the psychiatric treatment system. Given that a history of sexual abuse was associated with hospitalization for a mental health disorder, men with both an opioid use disorder and a history of sexual abuse may benefit from integrated treatment. The Swedish public care system should implement standardized screening to assess sexual abuse histories to better address untreated trauma. Clinical staff training in screening for sexual abuse also can help dispel myths and improve care for men who have a history of sexual abuse.

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