



Understanding the Role of Adult Mental Health and Substance Abuse in Perpetrating Violent Acts: In the Presence of Unmet Needs for Mental Health Services

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Accepted: 12 February 2022

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Abstract

This study explored the association between unmet need for mental health services, health insurance, substance abuse, major depressive episode (MDE), and suicidal ideation in perpetrating violent acts. Cross-sectional data from a population-based study National Survey on Drug Use and Health of Adults ($n=42,567$) in the US 2019 was used. Survey logistic regression was conducted to determine the predictive factors associated with attacks intended to seriously hurt others. This study found that prevalence of violent acts was only 1.1%. The odds of committing violent attacks were higher in those reported unmet needs for mental health services, suicidal ideation, MDE, alcohol, and other illicit drug abuse. In the presence of unmet need for mental health services, there were significant interaction terms between predictors and violence perpetration. Study findings highlight the importance of developing future targeted substance use and major depression treatment efforts among violent adults.

Keywords Violence · Epidemiology · Adults · Aggression · Suicidal ideation

Violence is defined as “the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results, or has a high likelihood of resulting, in injury, death, psychological harm, maldevelopment, or deprivation” (Rutherford et al., 2007). In 2019, the rate of violent crime incidents was 367 per 100,000 population, and approximately 0.4% above levels were seen in 2015 (Federal Bureau of Investigation, 2020). Violence has often been viewed from the criminal justice perspective lens rather than a public health problem. The current view of violence as a public health concern is based on the perception that violence is a result of complex and

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interconnected, biological, systemic, environmental, and social risk factors (Dahlberg & Mercy, 2009). Therefore, a public health-based approach to violence needs to be advocated for, due to its significant consequences on long-term health and impact on economic burden (Senior et al., 2020).

Research linking violent acts to mental health disorders has been evolving in the last two decades (Harris & Lurigio, 2007), yet high rates of criminalization in people with severe mental illness continue to need attention (Beaudoin et al., 2019). According to the National Survey on Drug Use and Health (NSDUH), there is a growing burden of unmet need for mental health services among adults suffering from mental health illness, with around 26% of adults reported unmet mental health needs in 2019 (Substance Abuse and Mental Health Services Administration, 2020). Despite increase in the number of Americans covered by some form of health insurance, coverage can be limited and does not always cover mental health treatment. In fact, the most common reported reason for unmet need for mental health services is the insufficient finances to cover associated costs (Substance Abuse and Mental Health Services Administration, 2020). Furthermore, there is a reported shortage of psychiatrists, and many undiagnosed individuals face limited treatment options (Senior et al., 2020). Given the potential association between mental health and violent acts, it is important to examine the co-occurring unmet needs for mental health services. To our knowledge, there is limited research that has examined the role of unmet need for mental health services as predictor of violence.

In psychiatric practices, the identification and management of risk for perpetrating violence has become increasingly important. Despite the popular belief that people with mental health disorders are prone to being violent, literature actually suggests that the majority of individuals with mental health disorders are not violent and are less likely to commit violent acts (Watson et al., 2001). It is argued that substance use, which is more prevalent in mental health disorders, is primarily responsible for one's risk of violence rather than just mental disorders alone (J. W. Swanson et al., 2006; Varshney et al., 2016). In fact, about half of patients with a mental illness during their lives will also experience a substance use disorder and vice versa (National Institute of Mental Health, 2020). Moreover, the role of substance use as a predictor of violence has been supported in the literature (Duke et al., 2017). Despite the evidence of an overall association between substance use and violence, much of literature has not focused on the general population. Rather, most existing research focuses on investigating intimate partner violence, domestic violence, and violence among male prisoners (U.S. Department of Justice, 2019).

Given the interrelationship between substance use, mental health disorders, and violent acts, further research is needed to understand the association between these factors to provide a better understanding of the interrelationship and potentially prevent unnecessary stigmatization of people suffering from mental health disorders (Varshney et al., 2016). The purpose of this study is to describe the association between unmet need for mental health services and perpetration of violent acts. We also examined the relationship between health insurance status, substance abuse, and mental health problems and violence. The second aim was to determine if unmet need for mental health services is an effect modifier in the relationship between predictors and violence perpetration.

Methods

The National Survey on Drug Use and Health (NSDUH) is an annual, nationally representative survey that provides estimates of drug use and mental health for the civilian, non-institutionalized population aged 12 years or older in the USA (U.S. Department of Health and Human Services, 2019). A representative sample was obtained through a multistage area probability sampling process. Adults ages 18 years and older who completed the 2019 NSDUH were included in the study. Adolescents (12–17 years) were excluded because they were asked different questions about mental health services use and symptoms (U.S. Department of Health and Human Services, 2020).

The main outcome variable of this study was violent behavior. To examine violent behavior, respondents were asked: “During the past 12 months, how many times have you attacked someone with the intent to seriously hurt them?” Consistent with recent literature using NSDUH data, respondents reporting one or more instances of violent behavior were categorized as “having violent behavior,” and respondents reporting 1 or more violent behaviors were categorized as “Do not have violent behavior” (Salas-Wright et al., 2016a, b). The primary predictor of interest in this study was the perceived unmet need for mental health services that was assessed by asking the participants if during the past 12 months there was time when they needed mental health treatment or counseling but did not get it? Answers were yes vs no. Coverage with health insurance was examined by asking participants if there was time they did not have health insurance or coverage in the past 12 months; answers were yes vs no.

Mental health variables included major depressive episode (MDE) and suicidal ideation. MDE was defined as the presence of at least one major depressive episode in the past 12 months or having a period of 2 weeks or longer in which participants experienced a depressed mood or loss of interest or pleasure in daily activities, and they had at least one of the following additional symptoms: problems with sleep, eating, energy, concentration, or self-worth. These criteria are consistent with DSM-V criteria (Center for Behavioral Health Statistics and Quality, 2020). For suicidal ideation, respondents were asked if they seriously thought about killing themselves in the past year; answers were yes vs no.

A participant is defined as having illicit drug abuse (alcohol, marijuana, cocaine, heroin, hallucinogen, inhalant, methamphetamine, pain reliever, tranquilizer, stimulant, or sedative abuse), if the respondent reported a positive response to one or more of the following four abuse criteria: (1) reported serious problems due to substance use at home, work, or school; (2) reported using substance regularly and reported doing something physically dangerous while under the influence; (3) reported substance use causing actions that repeatedly got them in trouble with the law; or (4) reported having problems continuing to use substance despite continued use substance was causing problems with family and friends (Center for Behavioral Health Statistics and Quality, 2020). Socio-demographic factors included age, gender, racial or ethnic group, education level, marital status, and income.

Considering the complex survey design of the NSDUH, sampling weights for the pooled data were adjusted, and weighted data were used to produce estimates and 95% confidence intervals (CIs). Frequencies and percentages were used to report the characteristics of the study sample overall and stratified by the levels of main outcome of interest. Multivariable weighted logistic regression analysis was used accounting for variance estimation. Interaction terms between unmet needs for mental health services and predictors were created to test for the effect modifying role of unmet needs for mental health services between predictors and outcome. All tests were two-sided, and the alpha level of significance was set at

0.05. Data analysis was conducted in IBM SPSS Statistics 24, using the complex samples module.

Results

Table 1 presents the descriptive analysis of the study sample stratified by reported violent behavior. Of the 42,567 adults aged 18 years and older in the 2019 NSDUH dataset, 469 (1.1%) reported attacking someone with the intent to seriously hurt in the last 12 months. Participants reporting violent attacks were more likely to be male, younger age, non-Hispanic Black, with low family income, lower education, and never married (see Table 1). Those with violent behavior in the last 12 months were also more likely to report unmet needs for mental health, time without health insurance, experienced suicidal ideation, MDE, and substance abusers (see Fig. 1 and Table 1).

The regression analyses demonstrated a significant association between unmet need for mental health services and violence perpetration ($aOR = 1.70$ (1.27, 2.27)). Additionally, after adjusting for socio-demographic characteristics, there were significant association between violence perpetration and suicidal ideation ($aOR = 2.37$ (1.77, 3.16)), MDE ($aOR = 1.74$ (1.55, 1.98)), alcohol abuse ($aOR = 1.75$ (1.18, 2.59)), and other illicit drug abuse ($aOR = 3.22$ (2.18, 6.15)) (see Table 2).

The interaction terms showed that in the presence of unmet need for mental health services, there was an amplified association for suicidal ideation ($aOR = 5.34$ (4.10, 6.59)), major depressive episode ($aOR = 1.95$ (1.46, 2.60)), and alcohol abuse ($aOR = 3.10$ (2.49, 3.85)), with violence perpetration. Other indicators of drug abuse, age, income, marital status, and gender all became non-significant (see Table 2).

Discussion

Unmet needs for mental health services are known to have a significant impact on individuals' health outcomes and overall quality of life, even though its impact on violence perpetration is not as clearly defined nor studied. Nonetheless, it makes innate sense that experiencing unmet needs for mental health services would be disadvantageous as it could amplify the already strong effects observed between predictors such as substance abuse and mental health problems, with violence perpetration. This study found that adults who carried out serious violent attacks were more likely to report unmet needs for mental health services, suicidal ideation, MDE, and substance abuse. Moreover, in the presence of unmet need for mental health services, there was an amplified association for suicidal ideation, MDE, and alcohol abuse, with violence perpetration.

The main predictor, perceived unmet needs for mental health services, showed a significant association with attacks intended to seriously hurt others. Although there is a lack of research investigating the role of unmet need for mental health services and violence perpetration, researchers investigated the role of untreated mental illness in predicting violence. Violence perpetration was significantly higher in patients with absence of recent contact with a mental health provider (Swanson et al., 1997), untreated (Large & Nielssen, 2011), non-compliant with medication, and lack awareness of illness (Alia-Klein et al., 2007; Fazel et al., 2014). Given the documented unmet need of mental health services in the USA, along with our study findings, improving access to mental

Table 1 Weighted characteristics of study sample by attacks intended to seriously hurt others and overall ($n = 42,567$)

Characteristics $N = 42,567$	Attacks to seriously hurt others NO (No. = 42,098)	98.9%	Attacks to seriously hurt others YES (No. = 469)	1.1%	Total	%	<i>P</i> -value
Socio-demographics							
Age							< 0.001
18–25 years	13,871	32.9%	281	59.9%	14,152	33.2	
26–34 years	8483	20.2%	82	17.5%	8565	20.1	
35–49 years	11,036	26.2%	66	14.1%	11,102	26.1	
50+ years	8708	20.7%	40	8.5%	8748	20.6	
Race							< 0.001
White	24,950	59.3%	221	47.1%	25,171	59.1	
Non-Hispanic Black	5337	12.7%	101	21.5%	5438	12.8	
Hispanic	7534	17.9%	83	17.7%	7617	17.9	
Other	4277	10.2%	64	13.6%	4341	10.2	
Income							< 0.001
< \$20,000	7596	18.0%	148	31.6%	7744	18.2	
\$20,000–\$49,999	12,759	30.3%	159	33.9%	12,918	30.3	
\$50,000–\$74,999	6736	16.0%	64	13.6%	6800	16.0	
\$75,000 or more	15,007	35.6%	98	20.9%	15,105	35.5	
Education							< 0.001
Less high school	5076	12.1%	112	23.9%	5188	12.2	
High school grad	11,191	26.6%	179	38.2%	11,370	26.7	
Some college/associate degree	14,255	33.9%	143	30.5%	14,398	33.8	
College graduate	11,576	27.5%	35	7.5%	11,611	27.3	
Sex							< 0.001
Male	19,570	46.5%	264	56.3%	19,834	46.6	
Female	22,528	53.5%	205	43.7%	22,733	53.4	
Marital status							< 0.001
Married	16,869	40.1%	76	16.2%	16,945	39.8	
Widowed	1316	3.1%	12	2.6%	1328	3.1	
Divorced or separated	4459	10.6%	39	8.3%	4498	10.6	
Never been married	19,454	46.2%	342	72.9%	19,796	46.5	
Unmet need for mental health services	4081	9.7%	122	26.3%	4203	9.9	
Health insurance status (no)	2391	6.5%	43	11.5%	2434	5.7	
Mental health indicators							
Suicidal ideation	2929	7.0%	136	29.5%	3065	7.2	< 0.001
Major depressive episode (MDE)	4327	10.4%	139	30.7%	4466	10.5	< 0.001
Drug abuse indicators							
Alcohol abuse	1357	3.2%	43	9.2%	1400	3.3	< 0.001
Marijuana abuse	307	.7%	11	2.3%	318	0.7	< 0.001
Other illicit drugs abuse	155	.4%	17	3.6%	172	0.4	< 0.001

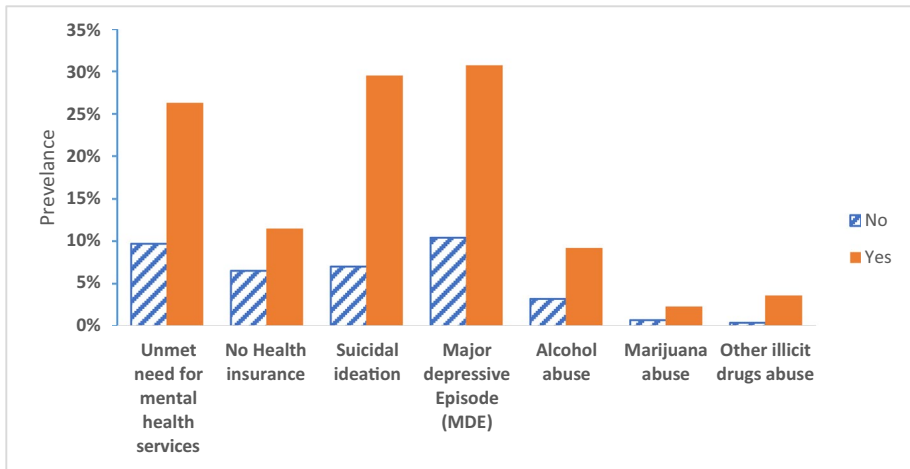


Fig. 1 Weighted characteristics of covariates by attacks intended to seriously hurt others ($n=42,567$)

health services might be associated in reduction in violent crime rates in the nation. Additionally, unmet need for mental health services was a significant effect modifier in the relationship between suicidal ideation, MDE, alcohol abuse, and violence perpetration.

MDE and suicidal ideation in the past year were independently associated with higher odds of perpetrating attacks of violence. Possible explanation is that people with mental health disorders like depression might tend to isolate, lose social support, and become impulsive (Dutton & Karakanta, 2013). Evidence from emerging literature utilizing cross-sectional and retrospective methodologies describes that the presence of major depression and suicidal ideation might be associated with aggression (Dutton & Karakanta, 2013; Jha et al., 2021). Furthermore, in a Swedish study, the authors found that even after adjustment for genetic and early environmental factors, a diagnosis of depression was associated with high risk of violent behavior (Fazel et al., 2015).

Consistent with prior research on violence, we found that adults who carried out violent attacks were more likely to be alcohol and other drug abusers (Ozkan, 2017; Pedersen & Skardhamar, 2010; Salas-Wright et al., 2016a, b). One study noted that many people who began substance use disorder treatment had reported that they had previously performed various acts of violence (Chermack et al., 2008). Recent meta-analysis of publications between years 1985 to 2014 documented the significant association between drug abuse and violence (Duke et al., 2017). Possible explanation of this association is that drug abuse can lead to heightened feelings of arousal that is combined with low impulse control and thus involve in high-risk behaviors including violence (Sinha, 2008). This highlights the importance of research in this area and considers management of substance abuse as a proxy in preventing future violence.

While this provides an insight to a huge gap in the literature, there are several limitations to be noted. First, NSDUH is cross-sectional data, and causal pathways cannot be directly assessed. Correspondingly, all data were derived from self-reported measures. There is a possibility of self-reported bias and recall bias of the respondents in their involvement in substance abuse, violence, and mental health indicators. Despite this, NSDUH is a national comprehensive household interview survey of substance use,

Table 2 Multivariate logistic regression for attacks intended to seriously hurt others (outcome)

Characteristics	<i>P</i> value	OR	95% CI for OR	
			Lower	Upper
<i>N</i> = 42,567				
Socio-demographics				
Age (ref = 18–25 years)				
26–34 years	.018	.68	.49	.94
35–49 years	.004	.58	.41	.84
50+ years	.000	.36	.23	.59
Race (ref = white)				
Non-Hispanic Black	.000	1.83	1.37	2.43
Hispanic	.882	.98	.715	1.33
Other	.018	1.47	1.07	2.02
Income (ref = < \$20,000)				
\$20,000–\$49,999	.425	.82	.69	1.17
\$50,000–\$74,999	.073	.72	.51	1.03
\$75,000 or more	.020	.69	.51	.94
Education (ref: = less high school)				
High school grad	.043	.74	.55	.99
Some college/associate degree	.000	.43	.32	.59
College graduate	.000	.22	.14	.34
Sex male (ref female)	.000	1.82	1.46	2.27
Marital status (Ref married)				
Widowed	.040	2.12	1.03	4.36
Divorced or separated	.042	1.57	1.02	2.43
Never been married	.111	1.32	.94	1.86
Unmet need for mental health services	.000	1.70	1.27	2.27
Health insurance status	.205	1.24	.89	1.73
Mental health indicators				
Suicidal ideation	.000	2.37	1.77	3.16
Major depressive Episode (MDE)	.000	1.74	1.55	1.98
Drug abuse indicators				
Alcohol abuse	.005	1.75	1.18	2.59
Marijuana abuse	.368	1.40	.67	2.94
Other illicit drugs abuse	.000	3.22	2.18	6.15
Unmet need for mental health services × suicidal ideation	.000	5.34	4.10	6.59
Unmet need for mental health services × MDE	.000	1.95	1.46	2.60
Unmet need for mental health services × alcohol abuse	.000	3.10	2.49	3.85

mental health, and the receipt of treatment services in the USA which makes our findings generalizable to the US population.

Our findings highlight the importance of providing mental health coverage for individuals experiencing substance abuse and mental health disorders, as proxy to prevent violence. Future studies should clarify the relationship between the role of unmet needs for mental health services and the association with specific types of violence perpetration. Hence, it is

valuable to have mental health experts highly involved in violence risk assessment among patients with mental health and substance abuse disorders.

Acknowledgements Special thanks go to Matthew S. Ellis, MPE, Department of Psychiatry, Washington University in St. Louis, School of Medicine, for his contributions and insightful comments.

Funding The author(s) received no financial support for the research, authorship, and/or publication of this article.

Data Availability This study used publicly available data.

Declarations

Conflict of Interest The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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