Alcohol use and mental health among young mexican adults during COVID-19: The impact of interpersonal and intimate violence

Uso de álcool e saúde mental entre adultos jovens mexicanos durante a COVID-19: O impacto da violência interpessoal e íntima

Uso de alcohol y salud mental entre adultos jóvenes mexicanos durante la COVID-19: El impacto de la violencia interpersonal e íntima

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ABSTRACT

Although the COVID-19 pandemic triggered an increase in interpersonal and intimate violence, mental health problems, and harmful alcohol use in low- and middle-income countries, the relationship between these behaviors and symptoms during the pandemic in Mexico remains unclear. This study describes the directionality of the relationship between interpersonal and intimate violence, mental health symptoms, and harmful alcohol use among young adults during COVID-19 in Mexico. Participants were 1,939 Mexicans aged 25 to 29 in a cross-sectional design. The results suggest that young adults who have experienced interpersonal and intimate violence are more likely to perpetrate violence and experience symptoms of depression, anxiety, and harmful alcohol use. The path model involves victimizing interpersonal and intimate violence as predictors of harmful alcohol use through the perpetration of interpersonal violence, depression, and anxiety, serving as moderators. Perpetrating intimate violence is associated with harmful alcohol use through the covariation of perpetrating interpersonal violence. Findings indicate a directional relationship where experiencing interpersonal and intimate violence leads to perpetrating violence, mental health risks, and harmful alcohol use. The public policy perspective is to incorporate the recognition of interpersonal and intimate violence into the government agenda to improve mental health and prevent harmful alcohol use among Mexicans. .

Keywords: Violence, Depression, Anxiety, Alcohol Drinking, Young Adult.

RESUMO

Embora a pandemia de COVID-19 tenha provocado um aumento na violência interpessoal e íntima, problemas de saúde mental e uso nocivo de álcool em países de baixa e média renda, a relação entre esses comportamentos e sintomas durante a pandemia no México permanece incerta. Este estudo descreve a direcionalidade da relação entre violência interpessoal e íntima, sintomas de saúde mental e uso nocivo de álcool entre jovens adultos durante a COVID-19 no México. Os participantes foram 1.939 mexicanos com idades entre 25 e 29 anos, em um desenho transversal. Os resultados sugerem que os adultos jovens que sofreram violência interpessoal e íntima têm maior probabilidade de perpetrar violência e apresentar sintomas de depressão, ansiedade, e uso nocivo de álcool. O modelo proposto envolve a vitimização de violência interpessoal e íntima como preditores do uso nocivo de álcool, com a perpetração de violência interpessoal, depressão e ansiedade servindo como moderadores. A perpetração de violência íntima está associada ao uso nocivo de álcool, com a covariação da perpetração de violência interpessoal. Os achados indicam uma relação direcional em que sofrer violência interpessoal e íntima leva à perpetração de violência, problemas de saúde mental e uso nocivo de álcool. A perspectiva para a tomada de decisões em políticas públicas é incorporar o reconhecimento da violência interpessoal e íntima na agenda governamental para melhorar a saúde mental e prevenir o uso nocivo de álcool entre os mexicanos.

Palavras-chave: Violência, Depressão, Ansiedade, Consumo de Bebidas Alcoólicas, Adulto Jovem.

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Resumen

Aunque la pandemia de COVID-19 desencadenó un aumento en la violencia interpersonal e íntima, los problemas de salud mental y el uso nocivo de alcohol en países de ingresos bajos y medianos, la relación entre estas conductas y síntomas durante la pandemia en México no está clara. Este estudio describe la direccionalidad de la relación entre la violencia interpersonal e íntima, los síntomas de salud mental y el uso nocivo de alcohol entre los adultos jóvenes durante la COVID-19 en México. Los participantes fueron 1,939 mexicanos de 25 a 29 años en un diseño transversal. Los resultados sugieren que los jóvenes adultos que han experimentado violencia interpersonal e íntima tienen más probabilidades de perpetrar violencia y de presentar síntomas de depresión, ansiedad, y uso nocivo de alcohol. El modelo de trayectoria involucra la victimización por violencia interpersonal e íntima como predictores del uso nocivo de alcohol, con la perpetración de violencia interpersonal, la depresión y la ansiedad sirviendo como moderadores. La perpetración de violencia íntima se asocia con el uso nocivo de alcohol a través la covariación con la perpetración de violencia interpersonal. Los hallazgos indican una relación direccional en la que experimentar violencia interpersonal e íntima conduce a la perpretación de violencia, riesgos de salud mental y uso nocivo de alcohol. Desde una perspectiva de políticas públicas, se sugiere incorporar el reconocimiento de la violencia interpersonal e íntima en la agenda gubernamental para mejorar la salud mental y prevenir el uso nocivo de alcohol entre las y los mexicanos.

Palabras clave: Violencia, Depresión, Ansiedad, Consumo de Bebidas Alcohólicas.

Highlights of Clinical Impact

• This study highlights the importance of identifying the relationship between interpersonal and intimate violence as a significant predictor of harmful alcohol use and mental health issues, such as depression and anxiety, among young adults.
While young women experience higher risks as both victims and perpetrators, it is important to acknowledge that men also face significant risks.
• These findings emphasize the need for gender-sensitive approaches in CBT-based interventions and policy responses, reinforcing the necessity for comprehensive strategies to address these interconnected challenges and enhance the well-being of all young adults.

Emergencies, such as the COVID-19 pandemic, can lead to significant mental health problems, including depression and anxiety, expected to increase during humanitarian crises (World Health Organization [WHO], 2022c). The prevalence or incidence of violence, mental health conditions, and harmful alcohol use have been studied as related variables. Still, more robust information about the directionality and relationships between these factors is needed. Understanding the relationship between victimizing and perpetrating interpersonal and intimate violence, experiencing mental health problems, and harmful alcohol use is crucial for identifying patterns in the youth population and informing decision-making in the prevention or intervention of risk pathways during health emergencies.

Interpersonal and intimate violence refers to behaviors within a relationship causing physical, sexual, or psychological harm and including acts of physical aggression, sexual coercion, psychological abuse, and controlling behaviors (Alexander & Johnson, 2023; Kourti et al., 2023; Oram et al., 2022; WHO, 2023). Interpersonal and intimate violence encompasses a range of behaviors, from less severe forms of violence to severe mixed violence, including sexual and psychological abuse. This violence can occur both inside (i.e., intimate) and outside (i.e., interpersonal) the home, involving traits of victimization or the perpetration of abuse. Specifically, interpersonal and intimate violence refers to victimizing and perpetrating physical assault (i.e., being attacked, hitting, slapping, kicking, beating up, threatening, isolating, or intimately abusing), assault with a weapon (e.g., being shot, stabbed, threatened or threatening with a knife, gun, or bomb), sexual assault (e.g., being raped or raping, attempting rape, or performing any type of sexual act through force or threat of harm), and any other unwanted or uncomfortable sexual experience (Breiding et al., 2015; Holtzworth-Munroe & Stuart, 1994; Johnson, 2008).

In 2019, the Pan American Health Organization (2020) reported that interpersonal violence accounted for 73.7 years lived with disability (YLD) per 100,000 population (85.7 years per 100,000 population in men and 61.7 years per 100,000 population in women) among the 25-29 years-old population in Mexico. Data from the National Institute of Statistics and Geography (2021b) reported that from October 2020 to October 2021, 42.8% of women aged 15 and older experienced some form of violence. Psychological violence had the highest prevalence (29.4%), followed by sexual violence (23.3%), economic, property-related, or discrimination (16.2%), and

physical violence (10.2%). According to data from the National Survey of Victimization and Perception of Public Safety, an estimated 21.2 million victims aged 18 and older were reported in Mexico, representing a rate of 23,520 victims per 100,000 inhabitants during 2020 (National Institute of Statistics and Geography, 2021a).

Based on a systematic review, the prevalence of depression varied between 5.2% to 86.6%, and anxiety symptoms 11.9% to 93.7% in the Mexican population during the first and second years of the pandemic (Hernández-Díaz et al., 2022). Findings from the National Health and Nutrition Survey Continuous 2022 revealed that the prevalence of harmful alcohol use in the past 12 months in the Mexican adult population was 40.4%. Prevalence was higher in men (53.5%) than in women (28.5%; Ramírez-Toscano et al., 2023).

Reports suggested rising trends of violence (Boserup et al., 2020), mental health conditions (e.g., 25% increase in depression and anxiety worldwide; WHO, 2022a, 2022b), and harmful alcohol use (Barrera-Núñez et al., 2022). Furthermore, systematic reviews suggested a directionality relationship between these variables, aiming to understand perspectives on service and support responses to victimizing violence to address mental health needs better (White et al., 2023).

The research conducted during the pandemic suggests directionality relationships between violence, mental health symptoms, and harmful alcohol use. Findings from Cunha et al. (2024) suggest a mediating role for anxiety and depression in perpetrating intimate violence, while Glowacz et al. (2022) find that anxiety and depression are associated with both victimizing and perpetrating violence. Foell et al. (2021) highlight how victimization of interpersonal violence among young adults mediates the effects on depressive symptoms and mental health in youth, and (Domínguez-Espinosa et al., 2023) suggest depression as a moderator of harmful alcohol use. Sunami et al. (2019) showed that harmful alcohol is related to victimizing intimate violence. These findings reveal the complex interaction between violence and mental health, suggesting that experiences of violence may influence mental health symptoms, such as depression and anxiety, and could potentially moderate other aspects of these relationships.

Harmful alcohol use is associated with an increased risk of both victimization and perpetration of intimate violence (Caldentey et al., 2016). Findings from Low et al. (2017) also suggest that harmful alcohol use is associated with a higher incidence of victimizing or perpetrating intimate violence, while dos Santos et al. (2020) found that a history of alcohol use was linked to being a victim of psychological, physical, and sexual intimate partner violence. These findings suggest that using a dyadic approach can provide a more accurate understanding of the role of alcohol use in intimate partner violence, emphasizing the need for more studies that consider these interdependencies. Although these findings indicate a strong link between alcohol use and violence, it appears that interpersonal violence, rather

than specifically intimate violence, is often the result of alcohol use. Nonetheless, alcohol use contributes significantly to poor mental health outcomes related to both victimization and perpetration of intimate violence (Bosch et al., 2017).

Victimizing interpersonal and intimate violence was a significant global and public health concern even before the COVID-19 pandemic (Sánchez et al., 2020). Although it predominantly affects women, men can also experiment with it (Mazza et al., 2020). Research during the pandemic has mainly focused on individual and relational factors that influence the course and dynamics of violence, revealing an urgent need for comprehensive studies about it (Neufeld et al., 2020). For instance, Glowacz et al. (2022) highlighted sex-related differences in the prevalence of intimate violence, with men more likely to experience physical assault and women more prone to psychological violence. Similarly, Scott-Storey et al. (2023) emphasized the importance of addressing various forms of violence, noting that men often perceive victimization as intimate violence in terms of emotional and sexual abuse rather than physical abuse. Social determinants like sex can illuminate the role of each factor in these connections, and validating these concepts within a predictive model is essential for comprehending the dynamics of a pandemic (Morales Chainé et al., 2022).

The objective of this study is to describe the directional relationships between victimizing and perpetrating interpersonal and intimate violence, mental health indicators, and harmful alcohol use within the context of young Mexicans during the COVID-19 pandemic by using a Structural Equation Modeling (SEM) to examine these relationships. Specifically, we hypothesize that victimizing interpersonal and intimate violence will serve as a predictor for perpetrating interpersonal and intimate violence. Moreover, we hypothesize that anxiety and depression will moderate the pathways in the SEM representing the relationships between victimization and perpetration of interpersonal and intimate violence, alongside harmful alcohol use.

METHOD

PARTICIPANTS

Participants were 1,939 young Mexicans, 68.59% women and 31.41% men, aged 25 to 29 (*M*=26.74, *SD* =1.40). Participants were invited to voluntarily enroll in a web-based application and complete an evaluation of their mental health status to receive feedback and treatment when accepted and required. Each participant accessed the platform individually from their location using an internet-connected electronic device. All participants accepted informed consent. As the system prevented unanswered questions, all participants were volunteers who submitted completed questionnaires. Inclusion criteria were having at least finished high school and residing in

Mexico. Exclusion criteria were being under 25 or over 30, not having completed high school, or being a healthcare provider. The data collection period was from September 1st, 2021, to August 31st, 2022.

For ethical considerations, we followed the criteria for internet E-surveys (e.g., data protection, development, testing, contact mode, advertising the survey, compulsory/voluntary participation, completion rate, cookies used, IP check, log file analysis, registration, atypical timestamp considerations, asymmetrically encrypted, and database securely in the university domain; (Eysenbach, 2004). The University Ethics Committee approved the protocol, coded FPSI/422/CEIP/157/2020, through the Institutional Review Board of the National Autonomous University of Mexico.

INSTRUMENTS

We used the survey on the web-based application as described by (Morales Chainé et al., 2023). We collected data as sociodemographic data (i.e., sex and age) and the four self-completed psychological tests: (a) the Life Events Checklist 5th edition (LEC-5; Weathers, Blake, et al., 2013) to screen interpersonal and intimate violence from the Posttraumatic Checklist (PCL-5, A criterion; Weathers et al., 2013a); (b) the WHO Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) to determine harmful use of alcohol (WHO, 2010); (c) the Major-Depressive-Episode (MDE) checklist to detect depression (American Psychiatric Association, 2013); (d) and the Generalized Anxiety Test (GA; adapted from Goldberg et al., 2017).

The survey platform removes respondents who do not complete the survey, ensuring we only have complete response rates. The survey specified that the findings would be used for epidemiological research and that they could refuse data requests and withdraw from the study at any time. No incentives were offered. However, participants received immediate feedback through psychoeducational tools (e.g., multimedia and Moodle® courses on COVID-19, self-care, relaxation techniques, problem-solving, and socioemotional management skills). At the end of the survey, participants received information about accessing remote psychological care from public health services.

DATA ANALYSIS

For the present study, the statistical procedure involved several analytical steps. Before conducting SEM, it is recommended to assess the factor structure of each scale and the validity of the relationships between variables (Morales Chainé et al., 2023). We used the Confirmatory Factor Analysis (CFA) using the maximum likelihood (ML) and the diagonally weighted least squares (DWLS) procedures (Elhai & Palmieri, 2011; Li, 2021; West et al., 2012). Additionally, the overall fit of

the models was evaluated using the chi-square goodness of fit test (West et al., 2023). We calculated the Comparative Fit Index (CFI) and Tucker-Lewis Index (TLI). Both are goodness-of-fit indices in a proportion fit metric. In contrast, the Root Mean Square Error of Approximation (RMSEA) and the Standardized Root Mean Square Residual (SRMR) are badness-of-fit indices that are not in proportion metric. Models with CFI and TLI values greater than 0.90 and RMSEA and SRMR values of less than 0.08 and 0.06 were considered indicators of data fit (Browne & Cudeck, 1993; Li, 2021; West et al., 2012/2023). The SRMR index was not considered for categorical data, as (Li, 2021) recommended. Additionally, we calculated their Cronbach's alpha reliability once we determined each scale's final structure model.

We obtained the scores for each scale and classified subjects who met the violence (LEC-5), harmful alcohol use (ASSIST), depression (MDE), and anxiety (GA) criteria for risk. We calculated the average scores of the scales and classified participants into at-risk or not-at-risk groups for each dimension (see Morales Chainé et al., 2023). Chi-squared tests were calculated by sex, considering p-values under 0.05, on the distribution of participants by groups of risk from violence (victimizing interpersonal and intimate violence, perpetrating interpersonal and intimate violence), depression, anxiety, and harmful use of alcohol.

Additionally, relative risks (odds ratios) with 95% confidence intervals were calculated for victimizing interpersonal and intimate violence over harmful alcohol use, depression, anxiety, and perpetrating interpersonal and intimate violence for the total sample. Furthermore, odds ratios (with 95% confidence intervals) were calculated for harmful alcohol use, over-victimizing interpersonal and intimate violence scales, and mental health symptoms for the total sample.

Finally, we analyzed structural models of the association directionality from victimizing interpersonal and intimate violence to perpetrating interpersonal and intimate violence and mental health symptoms and harmful alcohol use. The SEM analysis involved specifying expected relationships based on prior research. This analysis was based on the results of the odds ratios, evaluating the predictive models among factors using chi-square tests and fit indices (RMSEA, CFI, TLI). Path coefficients were evaluated to assess the strength of the relationships, indicating the direction and magnitude of the effects among the variables. Additionally, coefficients of determination (R-squared values) were reported to reflect how much variance is explained for each factor, incorporating a mixture of continuous and categorical variables for the entire sample (Li, 2021). All analyses were conducted using Lavaan 0.6-11 in the integrated development environment RSTUDIO® 2022.02.0 (R Core Team, 2018). Additionally, we ran data in the Statistical Package for the Social Sciences (SPSS ®) 25.0 (IBM Corp, 2017).

RESULTS

CONFIRMATORY FACTORIAL ANALYSES AND CRONBACH'S ALPHA

Results from the factor models of the LEC-5, ASSIST, MDE, and GA scales are shown in Table 1. Data fitting was reliable, with *CFIs* and *TLIs* > 0.90, *RMSEAs* < 0.08, and *SRMRs* < 0.06. As noted, the categorical CFA indicated a good fit for the four LEC-5 scales: victimizing and perpetrating interpersonal and intimate violence. The CFA also obtained a good fit for the ASSIST alcohol, MDE, GA. The reliability range of the scales went from 0.45 for perpetrating intimate violence to 0.97 for the MDE scale.

VIOLENCE, DEPRESSION, ANXIETY, AND HARMFUL ALCOHOL USE IN THE TOTAL SAMPLE

Table 2 shows the distribution of youths at risk for violence, depression, anxiety, and harmful alcohol use criteria in the total sample and by sex. In the overall sample and according to the cutoff score in the corresponding scales, 51.06% of participants were at risk for victimizing interpersonal violence, 42.96% for victimizing intimate violence, 37.39% for perpetrating interpersonal violence, and 25.01% for perpetrating intimate violence. Moreover, 39.92% of the total were at risk for depression, 54.82% for anxiety, and 27.02% for harmful use of alcohol. All factors except for perpetrating interpersonal violence and anxiety resulted in p-values less than 0.05, indicating statistically significant differences by sex.

Table 1. Chi-squared Analysis, Degrees of Freedom, P-Values, Fit Indices, and Cronbach's Alpha by Scales for the Total Sample.

Scales-Factors	X²	*df*	p≤	RMSEA	Confident Interval	SRMR	CFI	TLI	Alpha de Cronbach
LEC-5									
Victimizing Interpersonal Violence	4.431	1	0.035	0.042	0.009 - 0.085	-	0.997	0.982	0.56
Victimizing Intimate Violence	1.017	2	0.601	0.000	0.000 - 0.037	-	1.000	1.000	0.57
Perpetrating Interpersonal Violence	0.022	1	0.881	0.000	0.000 - 0.030	-	1.000	1.000	0.45
Perpetrating Intimate Violence	0	0	0.000	0.000	0.000 - 0.000	-	1.000	1.000	0.64
ASSIST									
Alcohol	47.419	8	0.000	0.050	0.037 - 0.065	0.017	0.990	0.981	0.82
MDE									
Depression	464.732	41	0.000	0.073	0.067 - 0.079	0.015	0.984	0.978	0.97
GA									
Anxiety	22.05	5	0.001	0.042	0.025 - 0.061	0.005	0.998	0.996	0.95

Note. Test: LEC-5 = Life Events Checklist; ASSIST = Alcohol, Smoking, and Substance Involvement Screening Test; MDE = Major Depressive Episode; GA = Generalized Anxiety.

Table 2. Percentage of Youths According to Violence, Depression, Anxiety, and Harmful Alcohol Use.

Factor	Men		Women		Total	
	n	%	n	%	n	%
Victimizing interpersonal violence	238	39.08	752	56.54**	990	51.06
Victimizing intimate violence	189	31.03	644	48.42**	833	42.96
Perpetrating interpersonal violence	210	34.48	515	38.72	725	37.39
Perpetrating intimate violence	119	19.54	366	27.52**	485	25.01
Depression	218	35.80	556	41.80*	774	39.92
Anxiety	317	52.05	746	56.09	1063	54.82
Harmful Use of Alcohol	216	35.47**	308	23.16	524	27.02
Total Sample	609	31.41	1330	68.59	1939	100

Note. **Significant differences between groups < 0.01 or * <0.05 according to the chi-squared analysis.

RELATIVE RISKS BETWEEN VIOLENCE, HARMFUL ALCOHOL USE, AND MENTAL HEALTH SYMPTOMS

The significant relative risks, with their respective 95% confidence intervals from the odds ratio analysis, are shown in Figure 1. Victimizing interpersonal violence led to increases in perpetrating interpersonal and intimate violence, depression, anxiety, and harmful alcohol use (between 2.249 and 8.347-fold). Victimizing intimate violence resulted in increases in perpetrating interpersonal and intimate violence, depression, anxiety, and harmful alcohol use (between 1.948 and 7.466-fold). Perpetrating interpersonal violence led to increases in depression, anxiety, and harmful alcohol use (between 2.317 and 3.103-fold increases). Perpetrating intimate violence resulted in increases in depression, anxiety, and harmful alcohol use (between 1.978 and 3.077-fold). Anxiety led to increases in depression and harmful alcohol use by 16.853 and 2.386-fold, respectively.
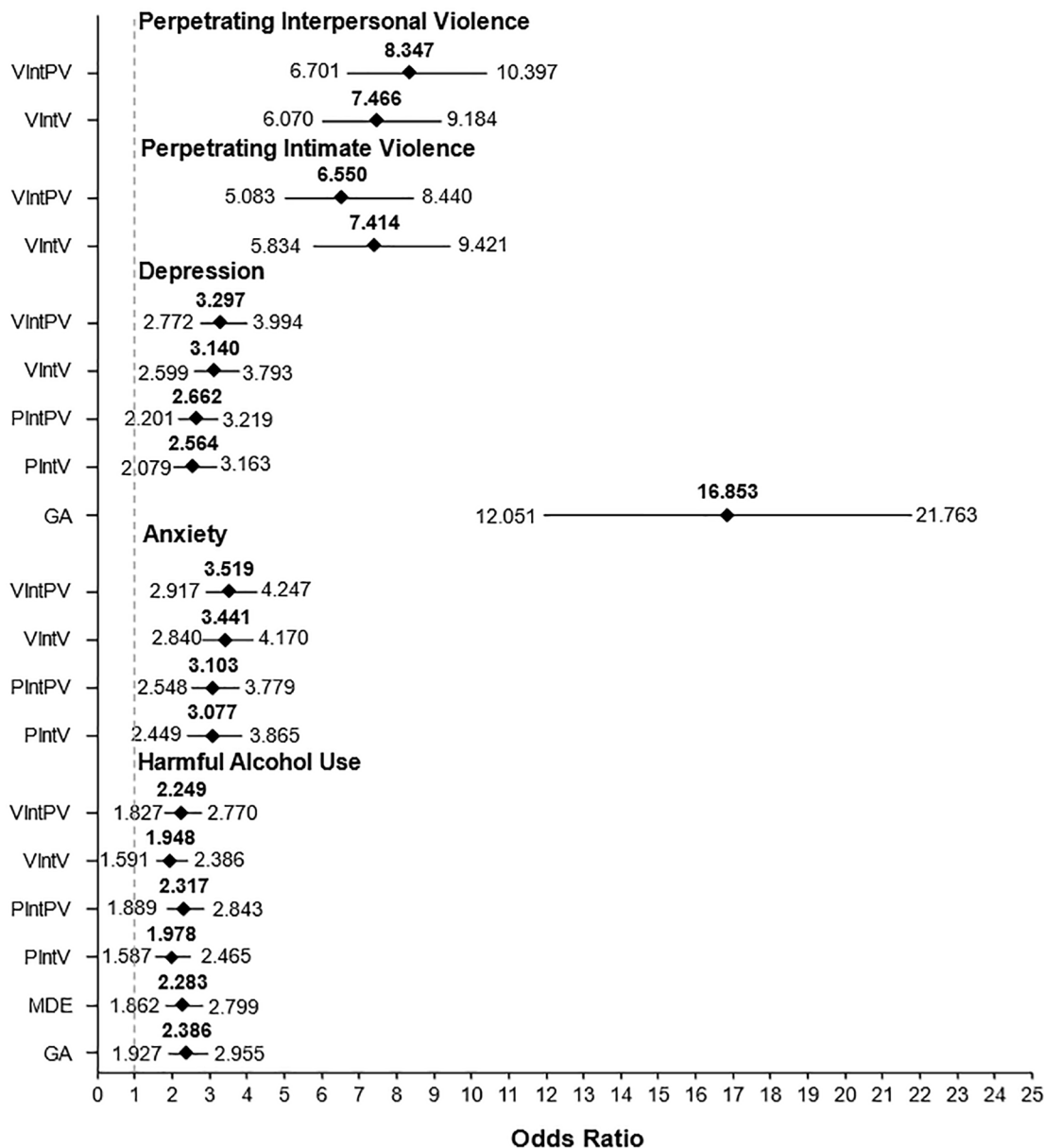

Figure 1. Relative Risks Between Violence, Mental Health Symptoms, and Harmful Alcohol Use *Note*. VIntPV = Victimizing Interpersonal Violence; VIntV = Victimizing intimate violence; PIntPV = Perpetrating Interpersonal Violence; PIntV = Perpetrating intimate violence; MDE = Major Depressive Episode; GA = Generalized Anxiety.

STRUCTURAL EQUATION MODELING

All relationships derived from the odds ratios were considered in the SEM analysis, resulting in a fully saturated model with poor fit indices. Variables were removed based on prior literature, and modification indices were used to identify further adjustments, leading to six calculations before the model was finalized.

The best-restricted model tested after odds ratios is shown in Figure 2. The final model included paths from victimizing interpersonal violence to perpetrating interpersonal and intimate violence, depression, and anxiety (b_{PIntPV} = 0.270, b_{PIntV} = 0.126, b_{MDE} = 0.076, b_{GA} = 0.156, respectively). The model includes a path from victimizing intimate violence to perpetrating interpersonal and intimate violence, depression, and anxiety (b_{PIntPV} = 0.251, b_{PIntV} = 0.307, b_{MDE} = 0.066, b_{GA} = 0.112, respectively). Victimizing interpersonal and intimate violence affects harmful alcohol use indirectly: victimizing interpersonal violence through anxiety, and both types through perpetrating interpersonal violence and depression (combined $b_{PIntPV,Alc}$ = 0.138, $b_{MDE,Alc}$ = 0.099, $b_{GA,Alc}$ = 0.093). There is a path from perpetrating interpersonal violence through anxiety, and this path continues through depression (combined $b_{PIntPV, GA}$ = 0.013, $b_{GA, MDE}$ = 0.516). Covariances were between victimizing interpersonal and intimate violence (r = 0.752) and perpetrating interpersonal and intimate violence (r = 0.691)

The model fits well with the data from 43 iterations with 30 parameters (X^2 (5) = 16.144, p < 0.05. It resulted in a *CFI* = 0.998, a *TLI* = 0. 999, and an *RMSEA* = 0.034 (0.016 − 0.053), using a mixture of continuous and categorical observed variables from the total sample. All path coefficients were significant at p < 0.01.

Figure 3 displays SEMs for male and female samples. The SEM for men (upper panel) revealed the overall pattern; however, it did not validate the path from victimizing intimate violence to depression or anxiety. Furthermore, the model did not confirm depression as a moderator of harmful alcohol use. In contrast, the SEM for women (bottom panel) excluded the paths from victimizing interpersonal violence to depression, victimizing intimate violence to anxiety, as well as the moderator effect from anxiety to harmful alcohol use.

DISCUSSION

The present study aimed to analyze the relationship between victimizing and perpetrating interpersonal and intimate violence, mental health conditions, and alcohol use among Mexican youth. The study has validated measurements and models comparing levels of violence, depression, anxiety, and harmful alcohol use severity during the context of the pandemic. Findings suggest a good structure of violence, depression, anxiety, and harmful use of alcohol. SEM is an effective strategy for validating the relationship between the study variables and
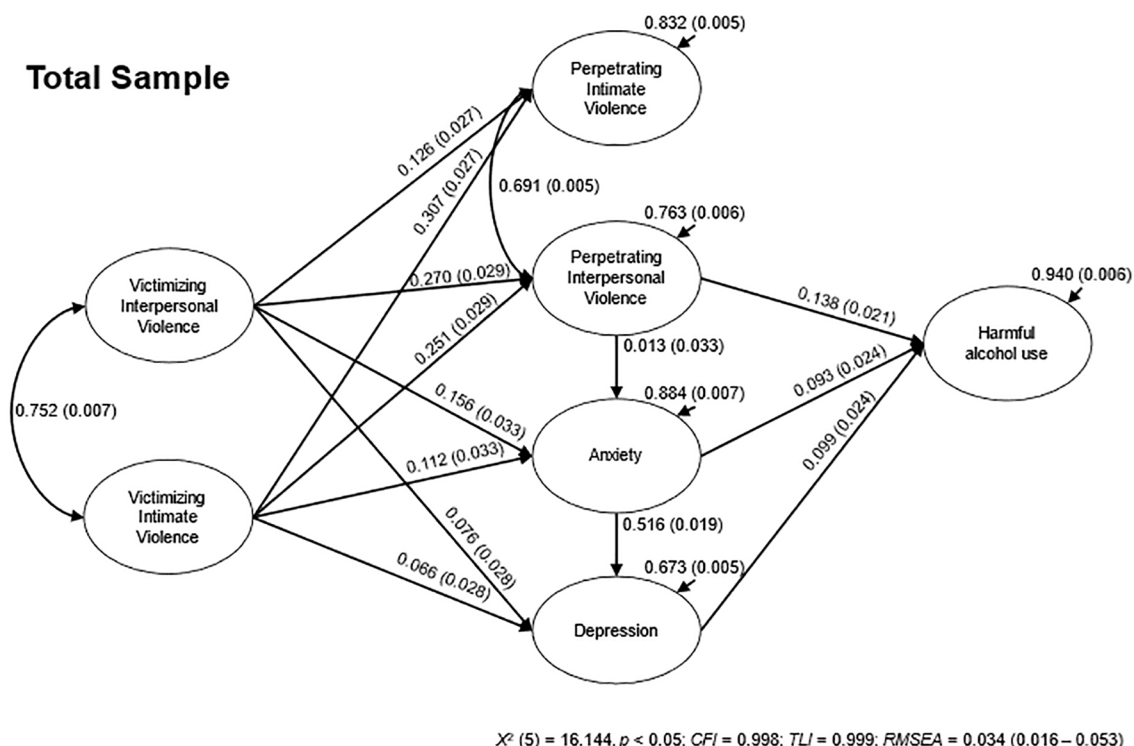

Figure 2. Variables from SEM, Path Coefficients, and Residual Variances for the Total Sample.
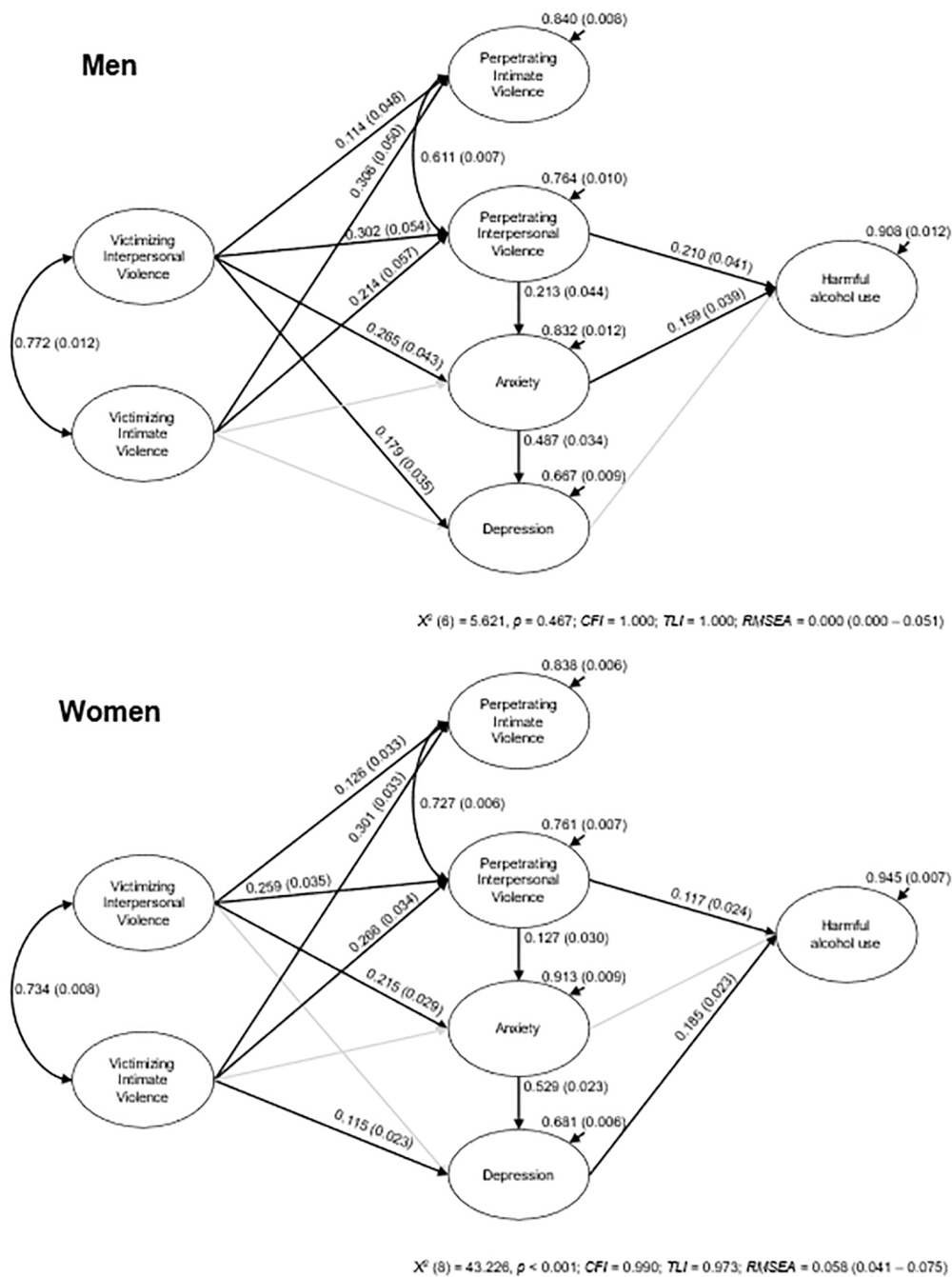
Figure 3. Variables from SEM, Path Coefficients, and Residual Variances by Sex.

the odds ratio analysis, which is the standard assessment method in these studies.

The validity of the variable structure was replicated as in previous studies (Goldberg et al., 2017; Morales Chainé et al., 2022; Tiburcio Sainz et al., 2016; Weathers et al., 2013b), considering it an essential practice during emergencies (Elhai & Palmieri, 2011). The findings suggest a valid and stable structure

of victimizing and perpetrating interpersonal and intimate violence among the Mexican youth population. Participants reported they experienced but also inflicted violent behaviors (i.e., physical assault, psychological abuse, sexual assault, and any other unwanted or uncomfortable sexual experiences among individuals who are not related by family ties or the current or former intimate partner) that align with the definitions

of violence by the (WHO, 2023) and previous studies (Alexander & Johnson, 2023; Breiding et al., 2015; Kourti et al., 2023; Lee et al., 2023; Morales Chainé et al., 2022).

The depression and anxiety symptoms were evaluated considering the criteria of the (American Psychiatric Association, 2013; Blevins et al., 2015; Goldberg et al., 2017). The validity of harmful alcohol use has also been considered in the WHO definition (2010). Harmful alcohol use refers to alcohol consumption in the past three months, leading to health, social, legal, and financial issues, along with an inability to meet expectations and reduce alcohol consumption. Friends and relatives have also expressed concern about the person's use within this framework.

From the last semester of 2021 to the first semester of 2022, approximately one out of every two young adults between the ages of 25 and 29 reported experiencing interpersonal violence in the past six months. However, a higher proportion of women reported being victims of interpersonal violence compared to men (i.e., approximately three out of every five women and two out of every five men). Additionally, about two out of every five individuals in this population reported experiencing intimate violence. Once again, more women reported experiencing intimate violence compared to men (i.e., approximately one out of every two women and one out of every three men). These rates from 2021-2022 were higher than those reported in the previous period from 2020-2021 (National Institute of Statistics and Geography, 2021b), as well as data from other studies (Cunha et al., 2024; Glowacz et al., 2022) or in different age groups (e.g., 18-24 years old; Morales Chainé et al., 2023), indicating a possible increase in the prevalence of violence against women as initially proposed at the onset of the pandemic (Boserup et al., 2020; Kourti et al., 2023; Sánchez et al., 2020).

Young Mexican individuals, both men and women, reported engaging in perpetrating interpersonal and intimate violence (i.e., approximately two out of every four youths and 1 out of every five youths, respectively). However, a higher number of women than men reported perpetrating intimate violence (i.e., approximately 1 out of every four women and 1 out of every five men, respectively). This finding replicates previous research conducted with other age groups (e.g., 18-24 years old; Morales Chainé et al., 2023) but partially contrasts with the findings that more men than women perpetrate physical intimate violence, while it replicates the findings that more women perpetrate psychological intimate violence (Glowacz et al., 2022). Our research underscores the complex gender dynamics in victimizing and perpetrating interpersonal and intimate violence among young adults in Mexico during the COVID-19 pandemic. While both men and women reported perpetrating both types of violence, women exhibited a higher prevalence of intimate violence while also experiencing more interpersonal and intimate violence.

In the present study, Mexican young adults aged 25 to 29 reported that two out of every five individuals experienced depression, with more women than men affected. Specifically, two out of every five women and one out of every three men reported experiencing depression in 2021 and 2022. The findings of the present study showed a lower prevalence compared to previous research conducted with other age groups (e.g., 18-24 years old; Morales Chainé et al., 2023) but fell within the ranges reported in a systematic review by Hernández-Díaz et al. (2022). Anxiety was found to be the most prevalent factor measured in our study, with approximately half of the young adults experiencing it. Both women and men reported similar levels of anxiety overall. However, within the total sample, more women than men reported higher levels of anxiety. Our findings regarding overall prevalence are consistent with previous research conducted with other age groups (e.g., 18-24 years old; Morales Chainé et al., 2023). However, we did not find higher anxiety levels among women compared to men. However, our data still fall within the ranges reported in a systematic review (Hernández-Díaz et al., 2022). These findings reveal significant rates of depression and anxiety. While depression affected a considerable proportion of women than men, anxiety appeared to affect both genders equally.

Harmful alcohol use was reported in one out of four Mexican youths aged 25-29 years old from 2021 to 2022. More men than women reported harmful alcohol use, with one out of three men and one out of four women reporting it. Our findings of harmful alcohol use appear to show a lower prevalence compared to the National Health and Nutrition Survey Continuous 2022 findings Ramírez-Toscano et al. (2023) but higher than previous studies with other age groups (e.g., 18-24 years old; Morales Chainé et al., 2023).

Odds ratios revealed the relationships between violence, mental health conditions, and harmful alcohol use from 2021 to 2022. Experiencing interpersonal violence increased the risk of perpetrating interpersonal violence by eight times, perpetrating intimate violence by six times, and experiencing symptoms of depression or anxiety by three times. Additionally, it doubled the risk of harmful alcohol use compared to those who did not experience it. Regarding victimizing intimate violence, it increased the risk of perpetrating interpersonal or intimate violence by seven times and experiencing symptoms of depression or anxiety by three times. It also nearly doubled the risk of harmful alcohol use compared to those who did not experience it. Suffering depression increased the risk of suffering anxiety by 16 times. Findings replicate previous studies, showing that perpetrating interpersonal and intimate violence doubles the risk of harmful alcohol use (Machisa & Shamu, 2018; Morales Chainé et al., 2023). The odds ratios for anxiety and depression replicate findings about their tendency to co-occur during the pandemic (e.g., Batterham et al., 2021). As noted by White et al. (2023), perpetrating intimate violence increases the risk of

depression. Furthermore, the results underscore the complex interplay between violence, mental health, and alcohol use, as highlighted by (Mazza et al., 2021). Exposure to violence not only contributes to the development of mental health conditions but also exacerbates existing problems, creating a detrimental cycle that traps victims and perpetuates violence.

Based on the odds ratio analysis, which suggested an association between violence, mental health conditions, and harmful alcohol use, a global predictive model was developed. This model confirmed both the relationships and the directionality of these variables. The SEM analysis suggested that victimizing interpersonal and intimate violence predicted perpetrating interpersonal and intimate violence, depression, anxiety, and harmful alcohol use in Mexican youths from 2021 to 2022. It confirmed a path from perpetrating interpersonal violence to anxiety, depression, and harmful alcohol use, with each of these factors also independently leading to harmful alcohol use. However, no path was found from perpetrating intimate violence to anxiety, depression, and harmful alcohol use.

Our findings regarding victimizing interpersonal and intimate violence predicting mental health conditions and harmful alcohol use were replicated as in previous studies (Glowacz et al., 2022; Parvin et al., 2018; White et al., 2023). However, there is a discrepancy in the direction of the relationship when it comes to perpetrating interpersonal violence, as it predicts depression, anxiety, and harmful alcohol use, contrary to other studies (Cunha et al., 2024). Furthermore, perpetrating intimate violence did not emerge as a predictor for any other factor, as indicated by the odds ratio. Nonetheless, its relationship was in line with previous research (Morales Chainé et al., 2023), showing covariance with perpetrating intimate violence.

Considering the social determinant of gender, asymmetric path models were identified. For men, victimizing interpersonal violence emerged as the main predictor of perpetrating both interpersonal and intimate violence, depression, and anxiety. However, victimizing intimate violence was not identified as a predictor of depression or anxiety. Additionally, depression did not moderate alcohol use. For women, victimizing interpersonal violence was found to be the main predictor of perpetrating both interpersonal and intimate violence and anxiety, but not depression. Victimizing intimate violence was not identified as a predictor of anxiety. Additionally, anxiety did not moderate alcohol use. Previous studies have previously proposed gender-based disparities in models of violence (Glowacz et al., 2022; Scott-Storey et al., 2023). Our study further underscores the specific impact of experiencing interpersonal violence on the relationships within the men and women model of violence (Chatterji & Heise, 2021).

Our study, which employs cross-sectional data, reveals a significant prevalence of violence among Mexican young adults aged 25 to 29, with women disproportionately affected as both victims and perpetrators. High levels of depression, anxiety,

and harmful alcohol use were observed, manifesting differently across genders. While our use of SEM provides reliable insights into the associations between violence, drug use, and mental health conditions, the directionality of these relationships should be further investigated through longitudinal studies. Using these statistical techniques to analyze relationships can illuminate the relationships between violence, harmful alcohol use, and mental health symptoms among Mexican youth. This evidence-based approach allows for the development of cost-effective community policies during emergencies.

Longitudinal research (Batterham et al., 2021; Chatterji & Heise, 2021; Mercy et al., 2017) can confirm and elucidate the mechanisms underlying the effects of violence, depression, anxiety, and harmful alcohol use. Our study used validated screening measures, but these do not constitute a diagnosis of mental health or substance use disorders. Community-level screening can overestimate symptoms and reports (Goldberg et al., 2017). Future research should evaluate the consistency between screening and diagnosis, including the sensitivity and specificity of psychometric tools, to empirically validate the proposed model.

Future research should verify the processes linking social determinants, such as family size, family interaction, lockdown experiences, and the physical health of caregivers during health emergencies, to our model. Additionally, as in previous studies, variables such as post-traumatic stress disorder (PTSD) have also been integral components of predictive models. These studies have demonstrated that PTSD, along with depression and anxiety, significantly contributes to the understanding of how exposure to violence and traumatic events can impact mental health outcomes (Glowacz et al., 2022; Morales Chainé et al., 2023). Furthermore, improving the representativeness of the Mexican youth sample, as participants in this study were self-selected, could result in designing more effective preventive measures and interventions in Mexico.

The present study provides valuable insights into the complex dynamics of interpersonal and intimate violence, mental health conditions, and harmful alcohol use among Mexican youth. Through validated measurements and models, it was found that both victimizing and perpetrating violence are significant predictors of mental health issues and harmful alcohol use. The findings reveal a considerable prevalence of violence, especially among young adults aged 25 to 29, with women disproportionately affected both as victims and perpetrators, highlighting a notable gender disparity in the experience of violence. Additionally, high levels of depression, anxiety, and harmful alcohol use were observed among the participants, with these issues manifesting differently across genders. Women were more likely to experience mental health issues and harmful alcohol use because of violence compared to men, which so underscores the importance of considering gender dynamics in interventions and policy responses to violence (Boserup et

al., 2020). This study contributes to our understanding of the multifaceted nature of violence and its implications for mental health and substance use among Mexican youth. It underscores the necessity for comprehensive strategies to address these interconnected issues and support the well-being of young adults in Mexico.

FINAL CONSIDERATIONS

The findings of this study underscore the relationship between interpersonal and intimate violence, harmful alcohol use, and mental health among young adults. It is essential to develop and implement interventions that not only focus on treating the symptoms of mental health issues and substance use but also address underlying causes, such as interpersonal and intimate partner violence. Additionally, incorporating gender-sensitive approaches in cognitive-behavioral therapies and public policies is crucial to ensure that both men and women receive appropriate support. Future research should further explore gender dynamics in violence and their impact on mental health and substance use, as well as the effectiveness of various interventions in different social and cultural contexts.

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