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The Pathway From Intimate Partner Violence to Suicide Risk Through Traumatic Stress and Substance Use: An Analysis Using Structural Equation Model

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ABSTRACT

Introduction: A significant number of completed suicides lack clear underlying causes. This is largely attributed to potential data distortion or under-reporting influenced by religious, social, political, and other contextual factors. Additionally, many individuals who attempt suicide have been exposed to intimate partner violence (IPV), and that traumatic stress, alcohol and substance use are also among the associated variables. In this regard, the main purpose of this study is to determine the variables that predict the likelihood of suicide among women exposed to IPV. Thus, this study developed a structural equation model in which traumatic stress, exposure to IPV, and levels of addiction serve as predictors of suicide risk.

Methods: The study sample consisted of 126 women who applied to a publicly funded psychiatric clinic. Clinical Global Impression Scale, Composite Abuse Scale Revised–Short Form, Risk Screening Questionnare for alcohol and drug use (BAPIRT), Fagerström Test for Nicotine Dependence, Posttraumatic Stress Disorder Checklist for DSM-5, and Suicide Probability Scale are the data collection tools.

Results: Results show that IPV influences suicide likelihood indirectly through addiction severity and traumatic stress. Further, several indirect pathways were found to be statistically significant: IPV significantly predicted addiction severity; IPV significantly predicted trauma-related stress; addiction severity significantly predicted suicide probability; trauma-related stress significantly predicted suicide probability ($p < 0.05$).

Conclusions: The present study highlights the links between IPV, traumatic stress, substance use, and suicide risk. These findings emphasize the need for a multidimensional approach in clinical assessments. Routine screening for IPV in psychiatric evaluations is essential. Future research should examine these pathways in diverse populations to inform prevention and intervention strategies.

Keywords: Addiction, intimate partner violence, suicide, woman's health

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INTRODUCTION

Between 2000 and 2022, the incidence of suicide cases has shown a documented increase of approximately 36%. According to data from the year 2022, a completed suicide occurred every 11 minutes, and the total number of individuals who lost their lives to suicide throughout the year exceeded 49,000 (1). Despite this alarming trend, the underlying causes of a significant proportion of completed suicides remain unidentified (2). This ambiguity is believed to be associated with the influence of religious, social, and political factors on suicidal behavior, the societal reluctance to openly discuss the topic of suicide, and the potential distortion or underreporting of data due to various reasons (3,4). Understanding the risk factors and mechanisms underlying suicidal behavior is therefore critical for both prevention and clinical intervention.

Highlights

- **IPV is associated with increased risk of suicide, substance use and traumatic stress.**
- **CASR–Short Form Turkish version is a valid and reliable measurement tool.**
- **IPV should be routinely screened in mental health services.**

Exposure to intimate partner violence (IPV) has emerged as a significant risk factor for suicide. According to the findings of a study conducted in the United Kingdom, 49.7% of individuals who attempted suicide had been exposed to IPV prior to their suicide attempt (5). The results show that those who had been exposed to IPV were 2.82 times more likely to commit suicide than those who had not been exposed to IPV. An other research suggested that women exposed to any adverse childhood experiences (ACE), nonpartner violence (NPV), and IPV throughout the life course compared to unexposed women are significantly more likely to have any mental health diagnosis, suicidal thoughts, and suicide

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attempts (6). Additionally, the results of the same study showed that 54.7% of participants had been exposed to IPV. This situation highlights the prevalence of IPV. Intimate partner violence refers to behaviors that cause physical, sexual, or psychological harm by an intimate partner or former partner, including physical violence, sexual violence, psychological violence, and controlling behaviors. Another study focusing on different types of IPV revealed that individuals subjected to sexual violence experience more severe post-traumatic stress symptoms than those who have faced psychological or physical abuse (7). A study conducted across Türkiye with 492 women participants reached through social media, investigating IPV against women, found that 73.6% of participants had experienced IPV (8). The same study emphasized a significant relationship between exposure to IPV and PTSD symptoms. Hence, another factor associated with suicidal ideation and attempts is the experience of traumatic stress. Research shows that patients receiving psychiatric treatment due to suicidal ideation or attempts tend to exhibit higher levels of PTSD symptoms compared to those treated for other mental health issues, such as substance abuse or major depression. In fact, these patients are about four times more likely to receive a possible PTSD diagnosis (9). Additionally, studies have found that as PTSD symptoms worsen, the intensity of suicidal thoughts also increases (9). Exposure to IPV has been linked to elevated PTSD symptoms, which in turn increase suicidal ideation and attempts, highlighting the need to consider trauma when assessing suicide risk.

Beyond IPV and traumatic stress, other psychosocial factors, such as substance use, contribute to suicide risk. In completed suicide cases, individuals experiencing conflicts in intimate partner relationships and/or other interpersonal relationships are reported to be more prone to substance-related problems compared to those who do not experience conflicts in any relational domain (10). Studies have demonstrated a strong association between alcohol use disorder and experiences of physical IPV (7). Additionally, victims are more likely to exhibit symptoms of PTSD, depression, anxiety, somatization, and alcohol/substance use disorders (11). Moreover, in a study comparing those with and without suicidal thoughts, bivariate tests indicated that individuals reporting suicidal thoughts were more likely to female, been approached by someone selling illegal drugs, and completed less than high school (12). Current guidelines recommend the inclusion of sex and gender considerations in medical research (13). In this context, examining the phenomenon of suicide through gender-specific variables for women and men is of particular importance. The primary aim of the present study is to examine the relationship between IPV and suicide risk. Specifically, the study aims to investigate the roles of traumatic stress symptoms and alcohol and substance use in this relationship. Therefore, to better understand the nature of the relationship between IPV and suicide risk, it is suggested that multivariate models incorporating variables such as traumatic stress, alcohol, and substance use are necessary. Based on previous literature, the following hypotheses were formulated:

H1: Higher exposure to IPV predicts increased suicide risk.

H2: Traumatic stress mediates the relationship between IPV and suicide risk.

H3: Alcohol and substance use mediate the relationship between IPV and suicide risk.

Accordingly, this study developed a structural equation model in which traumatic stress, exposure to IPV, and levels of addiction serve as predictors of suicide risk.

METHODS

Participants

The criterion sampling method was employed for the study sample. The study population consisted of women aged 18 to 65 who were receiving mental health services and had an ongoing or past intimate relationship lasting longer than one month, initiated after the age of 16. Participants included those who were literate enough to complete the questionnaire independently, had no diagnosis of mental retardation, organic mental disorder, or dementia, and scored 3 or below on the Clinical Global Impression Scale (14). Patients exhibiting active and severe psychiatric symptoms, as well as women who had never been in an intimate partner relationship, were excluded from the study.

The sample size was calculated based on an assumed effect size. Since the study aimed to evaluate the relationships among variables considered to affect the dependent variable (suicide risk)—namely intimate partner violence (IPV), substance use, and traumatic stress—a power analysis was conducted according to a linear regression model. The power analysis was performed with the alternative hypothesis assuming an effect size (p^2) of 0.10 against the null hypothesis. It was planned to include at least 124 participants in the study, and ultimately, 126 female patients participated.

The mean age of the participants was 35.63±12.62. Of the participants, 57 (45.2%) were single, 52 (41.3%) were married, 12 (9.5%) were divorced, and 5 (4%) had lost their partner. Regarding educational background, 17 participants (13.5%) were primary school graduates, 8 (6.3%) completed middle school, 31 (24.6%) completed high school, 61 (48.4%) were university graduates, 6 (4.8%) held a master's degree, and 3 (2.4%) had completed a doctoral degree. Participants' self-perceived health status, current diagnoses, and lifetime suicide attempts are presented in detail in Table 1.

Data Collection Tools

Sociodemographic-Clinical Data Form: Created by the researchers, it includes questions to determine sociodemographic and clinical information. Information about the participants' age, education level, psychiatric symptoms, and past suicide attempts were obtained through this form.

Composite Abuse Scale Revised–Short Form (CASR-SF): The Composite Abuse Scale (CAS) is a self-report instrument developed to assess multiple forms of intimate partner violence experienced within the past 12 months in a multidimensional manner (15,16). The scale is rated on a 6-point Likert-type format ranging from 0 (Not in the past 12 months) to 5 (Daily/almost daily). Higher scores on the scale indicate higher levels of IPV. During the development of the CAS, an extensive initial item pool was used, which was subsequently reduced to a 30-item standard version based on psychometric analyses (16). Factor analytic studies demonstrated that the scale consists of four subscales: severe combined abuse, physical abuse, emotional/psychological abuse, and harassment (16). Internal consistency coefficients for the total score and subscales were reported to be above 0.85 (16).

The Composite Abuse Scale Revised–Short Form (CASR-SF) was developed to enhance the feasibility and applicability of the original CAS in both clinical and research settings (17). Based on studies conducted with a large sample of women in Canada, the scale was refined into a 15-item measure. The CASR-SF demonstrates a three-factor structure consisting of psychological abuse, physical abuse, and sexual abuse (17). Confirmatory factor analyses indicated that this three-factor model exhibited good model fit indices. Factor loadings ranged from 0.63 to 0.93, suggesting that the items strongly represent their respective factors (17). The Cronbach's alpha coefficient for the total score was reported as α=0.94, while the internal consistency coefficients for the subscales ranged from acceptable to high levels (17).

In the present study, the most recent 16-item version of the CASR-SF was used, which was obtained from the original authors with permission. Consistent with the original version, the scale retains a three-factor

Table 1. Sample characteristics of the participants

Variable		Mean ± SD or Frequency (%)
Age		35.63±12.62
Marital status	Single	57 (45.2%)
	Married	52 (41.3%)
	Divorced	12 (9.5%)
	Widowed	5 (4.0%)
Education level	Primary school	17 (13.5%)
	Middle school	8 (6.3%)
	High school	31 (24.6%)
	University	61 (48.4%)
	Master's degree	6 (4.8%)
	Doctorate	3 (2.4%)
Perceived general health status	Poor	14 (11.1%)
	Fair	40 (31.7%)
	Good	58 (46.0%)
	Very good	14 (11.1%)
Current psychiatric or psychosomatic diagnosis	Yes	119 (94.4%)
	Subthreshold psychological distress	18 (14.3%)
Psychiatric diagnoses among patients with active diagnosis (n=119)	Depression disorders	59 (46.8%)
	Anxiety disorders	41 (32.5%)
	Attention deficit hyperactivity disorder	8 (6.3%)
	Obsessive-compulsive disorder	2 (1.6%)
	Post-traumatic stress disorder	2 (1.6%)
	Adjustment disorder	2 (1.6%)
	Conversion disorder	2 (1.6%)
	Dissociative disorder	1 (0.8%)
	Eating disorder	1 (0.8%)
Lifetime suicide behavior	At least one suicide attempt	22 (17.5%)
	No suicide attempt	104 (82.5%)
Methods used by participants with suicide behavior (n=22)	Medication overdose	14 (63.6%)
	Cutting	3 (13.6%)
	Jumping from height	1 (4.5%)
	Multiple methods	4 (18.2%)

SD: Standard deviation

structure and is rated on a 6-point Likert-type scale ranging from 0 (Not in the past 12 months) to 5 (Daily/almost daily), with higher scores indicating greater levels of IPV. The scale was obtained via direct communication with the developers through email for the purpose of conducting validity and reliability analyses. The validity and reliability study of the CASR-SF for clinical sample groups within Turkish language and cultural context was conducted by the researchers. For the Turkish adaptation of the scale used in this study, permission was first obtained from the corresponding author of the original scale. In the initial stage of the adaptation process, the original scale was independently translated into Turkish by two philologists who were graduates of English Language and Literature and proficient in both languages. The two translated versions were then compared by a subject-matter expert with advanced proficiency in English and strong linguistic competence. Based on evaluations of linguistic appropriateness and conceptual equivalence, a preliminary Turkish version of the scale was developed. In the second stage, the preliminary Turkish version was back-translated into English by a professional English translator who was blind to the original version of the scale. When the back-translated version was compared with the original scale, a high level of consistency was observed in terms of semantic integrity and conceptual content of the items. In light of these evaluations, the final Turkish version of the scale was established and deemed ready for administration for psychometric analyses. According to the findings, the validated Turkish version of the scale for clinical sample groups was found to be unidimensional, with a Cronbach's alpha coefficient of 0.85. To be able to have acceptable reliability tresholds 3 items were removed from the scale due to item-total correlations falling below the acceptable threshold of 0.30. These items are: Item 5: "Followed me or loitered around my home or workplace,"; Item 11: "Punched, kicked, or bit me, or hit me with an object,"; Item 13: "Locked me in a room or another place." The exclusion of these items likely reflects their low variability or limited occurrence within the clinical sample rather than a flaw in the original scale design. Therefore, the Turkish version of the form consists of a total of 13 items (Items; 1, 2, 3, 4, 6, 7, 8, 9, 10, 12, 14, 15, 16). Similar to the original form, the scale contains no reverse items. Increasing scores on the scale indicate an increased level of IPV experienced. Detailed information regarding the adaptation process, sample characteristics, and psychometric analyses is provided in the Appendix.

Clinical Global Impression Scale (CGI): The scale was developed to enable clinicians to provide a brief and objective evaluation of patients' overall functioning and the degree of change observed since the beginning of treatment in clinical studies (14). It consists of two items, each rated on a 7-point scale, designed for these two purposes. In the present study, only the item assessing participants' overall functioning was utilized. According to the functioning-based scoring of the scale, a score of 1 indicates normal functioning with no signs of illness. A score of 2 reflects borderline mental illness or questionable pathology. A score of 3 corresponds to mild illness, characterized by minimal or no impairment in social and occupational functioning. A score of 4 represents moderate illness, in which symptoms cause noticeable but moderate functional impairment or distress. A score of 5 indicates marked illness, with symptoms leading to significant distress or impairment in social or occupational functioning. A score of 6 reflects severe illness, where pathology is disruptive and behavior and functioning are frequently affected by symptoms. Finally, a score of 7 corresponds to among the most extremely ill patients, in whom pathology severely interferes with multiple areas of daily life.

Risk Screening Questionnaire for alcohol: The questionnaire was developed to identify risky alcohol use among individuals who consume alcohol. It is derived from the broader Addiction Profile Index (API) (18). The scale consists of 6 items and is administered by an interviewer. Participants respond using a three-point Likert scale: "never," "sometimes," and "very often." A total score of 3 or higher indicates a high risk for problematic alcohol use. Cronbach's alpha coefficient for internal consistency was calculated as 0.70.

Risck screening Questionnaire for drug use: The questionnaire was developed from the original Addiction Profile Index (API) to assess the risk level associated with substance use among individuals who report using drugs (18). The scale comprises 7 items and is administered by an interviewer. Each item is rated on a three-point Likert scale: "never," "sometimes," and "very often." A total score of 4 or higher indicates a high risk of problematic substance use. Cronbach's alpha coefficient for internal consistency was calculated as 0.88.

Fagerström Test for Nicotine Dependence (FTND): The Fagerström Test for Nicotine Dependence (FTND), developed by Fagerström and Schneider, is a valid and reliable instrument designed to measure the level of nicotine dependence (19). The Turkish adaptation, including validity and reliability

studies, was conducted by Uysal et al. (20). The scale consists of 6 items. The total score is used to determine the level of nicotine dependence, with scores ranging from 0 to 2 indicating very low dependence, 3 to 4 low dependence, 5 moderate dependence, 6 to 7 high dependence, and 8 or above indicating very high dependence. Cronbach's alpha coefficient for internal consistency was calculated as 0.56.

Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5): The Posttraumatic Stress Disorder Checklist for DSM-5 (PCL-5) was developed by Weathers et al. (21) based on PTSD symptoms and classification criteria. The Turkish adaptation, including validity and reliability studies, was conducted by Boysan et al. (22). The scale consists of 20 items rated on a 5-point Likert scale (0–4). Consistent with DSM-5, four factors were identified: re-experiencing (RE), avoidance (AV), negative alterations in cognition and mood (NEG), and hyperarousal (HYP). The Cronbach's alpha internal consistency coefficients were 0.94 for the clinical group and 0.97 for the control group.

Suicide Probability Scale (SPS): The Suicide Probability Scale (SPS) was developed by Cull and Gill (23). The Turkish adaptation, including validity and reliability studies, was conducted by Batigün and Şahin (24). The scale consists of 36 items across four factors: Hopelessness, Suicide Ideation, Negative Self-Evaluation, and Hostility. These factors were suggested in the adaptation study to Turkish language and culture as hopelessness/loneliness (HOPELESS), suicidal ideation (SUICIDE), social support/self-perception (SUPPORT), and anger/impulsivity (ANGER), respectively, instead of the old factors. The Cronbach alpha internal consistency coefficient of the scale is 0.89.

Procedure

Prior to commencing the study, approval was obtained from the Non-Interventional Clinical Research Ethics Committee of [Blinded for Peer Review] University Faculty of Medicine, dated 27 February 2024, with decision number 49 and the research was conducted in accordance with the ethical standards laid down in the Declaration of Helsinki. Following the acquisition of ethical approval and the necessary administrative permissions, data collection began in June 2024 and was completed in October 2024. Interviews with participants were conducted in an empty room at the psychiatry outpatient clinic of [Blinded for Peer Review] University Hospital, with no one present other than the participant and the researcher. Participants were included in the study after providing their informed consent.

Analysis Strategy

Descriptive statistics were analyzed using IBM Statistical Package for Social Sciences (SPSS) program version 23.0, and structural equation modeling was performed using Lisrel version 8.80. Since the study data did not meet the assumption of normal distribution, mediation effects were reported using bootstrap analysis conducted with AMOS version 28.0. Spearman correlation analysis was carried out among the observed variables. Due to the lack of normal distribution, the asymptotic covariance matrix was used, and the Maximum Likelihood method was applied. A two-step approach was adopted, where first the measurement model was tested, followed by testing of the structural model, and the results were reported accordingly.

RESULTS

Measurement Model Test

The measurement model test was conducted to examine the relationships among the following constructs: a single-factor Composite Abuse Scale Revised–Short Form (CASR-SF) measuring the frequency of intimate partner violence [IPV]; a four-factor (re-experiencing (RE), avoidance (AV), negative alterations in cognition and mood (NEG), and hyperarousal (HYP)) Posttraumatic Stress Disorder Checklist for (PCL-5) assessing trauma-related stress [STRESS]; a four-factor (hopelessness/loneliness (HOPELESS), suicidal ideation (SUICIDE), social support/self-perception (SUPPORT), and anger/impulsivity (ANGER) Suicide Probability Scale (SPS) evaluating suicide risk [SUI]; and a latent construct defined as Substance Use [SUBS]. The latent variable of substance use [SUBS USE] was indicated by three observed variables: risky psychoactive substance use (SUBS), risky alcohol use (ALC), nicotine dependence (NICO). These were measured using the total scores from Addiction Profile Index– Alcohol Scale (API–Alcohol Subscale), Addiction Profile Index– Substance Use Scale (API–Substance Use Subscale), Fagerström Test for Nicotine Dependence (FTND), respectively. For the single-factor Composite Abuse Scale Revised–Short Form (CASR-SF), item parceling was applied based on factor loadings of the items. Item parceling is commonly employed in single-factor scales to reduce measurement errors and improve model fit (25).

Spearman correlation analysis results for the observed variables are presented in Table 2. Statistically significant correlation coefficients ranged from 0.18 to 0.83. Based on modification indices, error covariances were specified between the observed variables of risky psychoactive substance use and nicotine dependence, and between social support/self-perception and hopelessness/loneliness, to improve model fit. The relationships

Table 2. Spearman correlation values between variables

	PAR1	PAR2	ALC	SUBS	NICO	RE	AV	NEG	HYP	SUPPORT	ANGER	HOPELESS	SUICIDE
PAR1													
PAR2	0.81**												
ALC	0.18*	0.21*											
SUBS	0.37**	0.35**	0.57**										
NICO	0.26**	0.27**	0.41**	0.38**									
RE	0.51**	0.45**	0.21*	0.26**	0.28**								
AV	0.40**	0.37**	0.16	0.16	0.27**	0.80**							
NEG	0.52**	0.51**	0.15	0.21*	0.29**	0.83**	0.82**						
HYP	0.39**	0.39**	0.09	0.02	0.32**	0.74**	0.73**	0.79**					
SUPPORT	0.31**	0.38**	0.20*	0.38**	0.30**	0.42**	0.38**	0.53**	0.38**				
ANGER	0.35**	0.35**	0.22*	0.39**	0.16	0.43**	0.40**	0.42**	0.44**	0.42**			
HOPELESS	0.34**	0.43**	0.17	0.37**	0.29**	0.46**	0.47**	0.59**	0.44**	0.77**	0.38**		
SUICIDE	0.26**	0.27**	0.23*	0.41**	0.27**	0.39**	0.33**	0.41**	0.34**	0.54**	0.26**	0.43**	

*p<0.05. **p<0.01

PAR1: CASR-SF 1. parcel; PAR2: CASR-SF 2. parcel; ALC: API–Alcohol; SUBS: API–Substance Use; NICO: FTND; RE: PCL-5 re-experiencing; AV: PCL-5 avoidance; NEG: PCL-5 negativity; HYP: PCL-5 hyperarousal; SUPPORT: SPS social support; ANGER: SPS anger; HOPELESS: SPS hopelessness; SUICIDE: SPS suicidal ideation.

among latent variables and the factor loadings were found to be statistically significant. The measurement model is illustrated in Fig. 1.

The chi-square difference was found to be statistically significant upon adding two error covariances to the model ($\Delta\chi^2$=19.44, p=0.00), indicating an improved model fit. The fit indices for the revised measurement model demonstrated acceptable to good fit: CFI=0.97, indicating good fit; IFI=0.97, indicating good fit; SRMR=0.056, indicating acceptable fit; RMSEA=0.08 with a 90% confidence interval of [0.05; 0.10], also indicating acceptable fit

Structural Model

The structural model demonstrated acceptable to good fit across multiple indices: Comparative Fit Index (CFI)=0.97, indicating good fit; Incremental Fit Index (IFI)=0.97, also reflecting good fit; Standardized Root Mean Square Residual (SRMR)=0.056, within the acceptable threshold (≤0.08); Root Mean Square Error of Approximation (RMSEA)=0.078, with a 90% confidence interval of [0.052, 0.10], indicating acceptable fit; The chi-square to degrees of freedom ratio (χ^2/df) was approximately 1.76, which is indicative of good model fit (values between 1 and 3 are considered acceptable). These indices suggest that the structural model fits the observed data well and is suitable for further interpretation of path coefficients and latent variable relationships.

The direct effect of IPV on suicide probability was found to be positive and statistically significant (β=0.53, p <0.05). However, as illustrated in Fig. 2, when mediating variables were included in the structural model, the direct effect of IPV on suicide probability was no longer significant (β=0.09, p >0.05). In contrast, several indirect pathways were found to be statistically significant: IPV significantly predicted substance use (β=0.41, p <0.05); IPV significantly predicted trauma-related stress (β=0.46, p <0.05); Substance use significantly predicted suicide probability (β=0.44, p <0.05); Trauma-related stress significantly predicted suicide probability (β=0.58, p <0.05). These results suggest that the relationship between IPV and suicide probability is partially mediated by substance use and trauma-related stress. That is, IPV increases both substance use and trauma-related stress, which in turn elevate the likelihood of suicide.

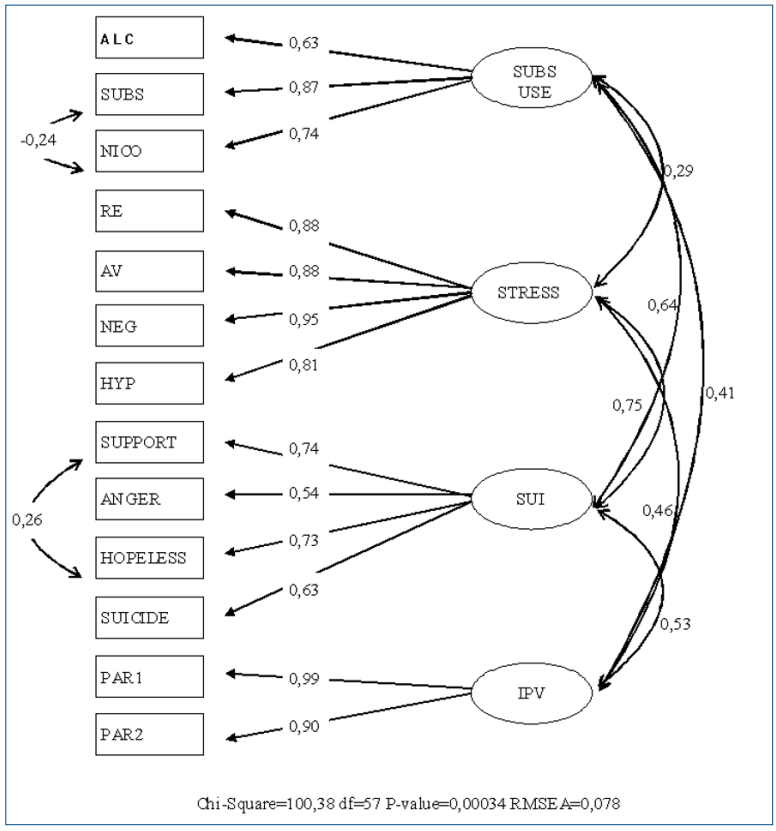

Figure 1. Measurement model.

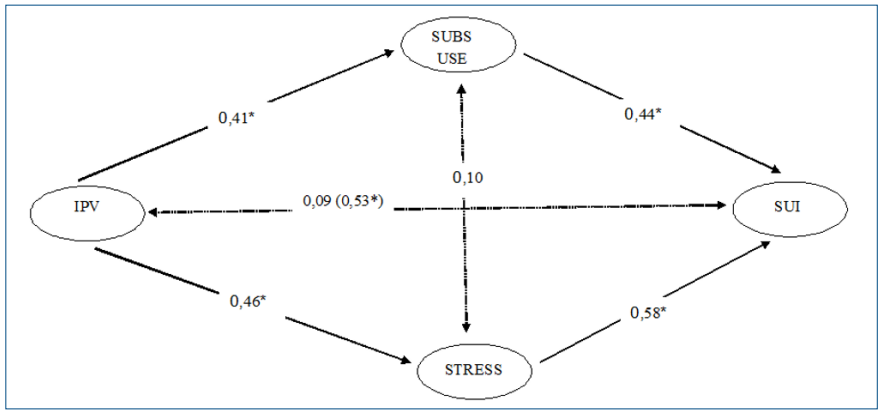

Figure 2. Structural model. IPV: Intimate partner violence.

The effect of IPV on substance use was found to be positive and statistically significant (β=0.41, p <0.05), accounting for 17% of the variance in substance use. Similarly, the effect of IPV on trauma-related stress was also positive and significant (β=0.46, p <0.05), explaining 21% of the total variance in trauma-related stress.

Since the sample did not meet the assumption of normal distribution, mediation analyses were conducted in AMOS using the bootstrap method with 2,000 resamples. The indirect effect of IPV on suicide probability was found to be statistically significant (β=0.39, 95% CI [0.22, 0.65]). However, the correlation between substance use and trauma-related stress was not statistically significant (r=0.10, p >0.05). The analyses further indicated that while the direct effect of IPV on suicide probability was initially significant, this effect became non-significant upon inclusion of substance use and trauma-related stress as mediators. In conclusion, substance use and trauma-related stress play mediating roles in the relationship between IPV exposure and suicide probability. However, no significant association was found between substance use and trauma-related stress within this model.

DISCUSSION

The present study examined the relationship between intimate partner violence (IPV) and suicide risk by incorporating traumatic stress and substance use as mediating variables within a structural equation modeling framework. In addition, this study conducted the validity and reliability evaluation of the Composite Abuse Scale–Revised Short Form (CASR-SF) for clinical sample groups within the Turkish-speaking population, thereby providing a psychometrically sound instrument for use by clinicians and researchers working with Turkish-speaking clinical samples.

The present findings indicate that the relationship between IPV and suicide risk is partially mediated by substance use and traumatic stress. Clinically, this suggests that individuals exposed to partner violence who exhibit higher levels of substance use or traumatic stress may be at elevated risk for suicidal behavior. These results underscore the importance of comprehensive risk assessments in clinical settings, integrating evaluations of both psychological trauma and addictive behaviors. In particular, routinely inquiring about exposure to IPV during clinical assessments should be considered an essential component of patient evaluation, as it may help identify individuals at increased risk for suicidal behavior. Furthermore, the findings have practical implications for the design of targeted interventions, including psychosocial support and preventive strategies, aimed at mitigating suicide risk among survivors of IPV. The analyses revealed that IPV is associated with the likelihood of suicide; however, when substance use and traumatic stress—mediating variables—are included in the model, the relationship between IPV and suicide likelihood loses statistical significance. This indicates that IPV influences suicide likelihood indirectly through substance use and traumatic stress. All three hypothesized relationships—linking IPV, traumatic stress, and substance use to suicide risk—were supported by the findings. Nevertheless, the relationship between the mediators, substance use and traumatic stress, was not found to be significant. Therefore, these two variables contribute independently to the model. The literature includes studies reporting a positive association between interpersonal traumatic experiences and substance dependence. From this perspective, it can be argued that the findings of this study regarding traumatic stress and substance use are not entirely consistent with previous literature. On the other hand, prior research particularly highlights strong links between childhood trauma exposure and substance dependence (26,27). In this regard, the mean age of 35.63 years in this study may explain the non-significant relationship between substance use and traumatic stress. Moreover previous studies indicate that among individuals who attempted suicide within the past year, nearly half (49.7%) had experienced IPV at some point in their lives, with 23.1% reporting past-year exposure; prevalence was notably higher among women (34.8%) than men (9.4%). After controlling for demographic, socioeconomic, and lifetime adversity factors, lifetime IPV exposure was associated with a 2.82-fold increase in the odds of a past-year suicide attempt (5). Similarly, a study examining risk factors for suicide attempts among women experiencing recent IPV reported that individuals who attempted suicide were significantly more likely than non-attempters to exhibit elevated depressive symptoms, hopelessness, substance use, and histories of childhood abuse and neglect. Results from a cumulative risk model further indicated a linear relationship between the number of risk factors and the likelihood of a suicide attempt: compared to women with no identified risk factors, those with two, three, and four to five risk factors were approximately 10, 25, and 107 times more likely, respectively, to attempt suicide. These findings align with the present structural equation model, suggesting that the combined influence of multiple vulnerabilities—including IPV exposure, traumatic stress, and substance use—substantially increases suicide risk. This underscores the importance of examining both direct and indirect pathways, as individuals with co-occurring risk factors may be particularly susceptible to suicidal behavior (28). Additionally, while substance use can be viewed as an externalizing symptom, PTSD is typically considered an internalizing symptom. Temperamental traits such as emotional reactivity and perseveration are positively associated with the development or maintenance of PTSD, and the DSM-5 personality inventory dimensions of negative affectivity and psychoticism are significant predictors of PTSD (29,30). Also, previous research has identified several significant predictors of future suicide attempts, including Cluster A and Cluster B personality disorders, lifetime substance abuse, baseline anxiety disorders, poor maternal relationships, and impaired social adjustment (31). Accordingly, individuals' personality and temperament characteristics may influence how exposure to interpersonal violence manifests in psychological symptoms. Further studies with larger sample sizes are needed to explore these relationships in more depth.

This study has several limitations. To be able to measure IPV and suicide probability, sself-report scales used in the study may be subject to social desirability bias. Furthermore, due to the cross-sectional design of the study, causal relationships cannot be established. One limitation is that participants consisted solely of individuals seeking mental health services, thereby excluding those who did not seek such services from the sample. The frequency and distribution of types of violence in this sample may differ from those observed in the general population or non-clinical samples. Also, Another limitation is the potential violation of the normality assumption in the data. Consequently, the findings may vary when applied to populations of women who have experienced violence. Additionally, although a proportion of the sample reported a prior suicide attempt, separate sensitivity analyses were not conducted to assess the potential confounding effect of this variable. This decision was primarily driven by the non-normal distribution of the data, which constrained the statistical validity of subgroup-based sensitivity analyses. Moreover, obtaining a sufficiently large and homogeneous clinical sample without a history of suicide attempts represents a substantial methodological and ethical challenge in clinical research. Accordingly, the present findings should be interpreted with caution, and future studies are warranted to replicate the analyses in samples with more balanced distributional properties and without prior suicide attempt history. During the adaptation of the scale, some items were removed due to low item-total correlations. While this approach enhanced the internal consistency of the instrument, it may have inadvertently reduced the content coverage of the scale, as the excluded items could represent clinically meaningful aspects of partner violence. This limitation has been explicitly acknowledged, and future research is encouraged to carefully consider both statistical criteria and clinical relevance when deciding on item retention during the scale adaptation process. Confirmatory factor analysis initially indicated suboptimal fit for the single-factor model. Based

on modification indices, three error covariances were added, resulting in substantially improved fit indices. While these adjustments enhanced model fit, they may introduce a risk of overfitting. Therefore, the results should be interpreted with caution, and future studies are encouraged to replicate the factor structure in independent and diverse samples to confirm the generalizability of the model. Consequently, increasing the sample size would enhance the generalizability of the results for clinical anda nonclinical samples. Finally, the use of a single sample for both validity and reliability analyses as well as structural modeling constitutes another limitation of this study.

Conclusion

This study was primarily designed to identify the variables predicting the likelihood of suicide. Despite the limited sample size, including individuals who exhibited help-seeking behavior holds clinical significance. Our findings indicate that intimate partner violence explains the likelihood of suicide through the mediating effects of substance use and traumatic stress. These results underscore the need for a multidimensional approach in clinical assessments, in which routine screening for IPV is considered essential in psychiatric evaluations. However, no relationship was found between substance use and traumatic stress. Therefore, it is recommended that new models incorporating personal characteristics such as impulsivity, psychological resilience, and temperament be tested. In sum, there is a significant relationship between IPV and suicide, mediated by addiction severity and traumatic stress.

Supplementary Information

Notes on Composite Abuse Scale revised-Short Form validity and reliability study for clinical sample groups

To identify the model that best fits the data during the Turkish adaptation process of the scale, two alternative models were tested. Reliability analyses and confirmatory factor analyses (CFA) were conducted to compare the alternative models. The first alternative model, which consisted of a single factor, yielded the best factor loadings and model fit indices. The second alternative model was constructed based on the original factor structure of the scale. In the analysis of Alternative Model 1, factor loadings ranged from 0.37 to 0.62, which fall within acceptable limits. However, without the inclusion of any error covariances, the model fit was not within acceptable thresholds: RMSEA=0.11 (90% CI [0.093, 0.13]); CFI=0.87; IFI=0.87; SRMR=0.11; GFI=0.78. All values fell outside recommended cutoff ranges, indicating poor fit. Based on modification indices, three error covariances were added to the model: Between Item 2 and Item 12:"Tried to convince my family, children, or friends that I was crazy or tried to turn them against me" and "Prevented me from seeing or talking to my family or friends"; Between Item 7 and Item 8:"Choked me" and "Forced or attempted to force me into sexual intercourse"; Between Item 9 and Item 14:"Harassed me via phone, text, email, or social media" and "Prevented me from getting a job, earning money, or accessing financial resources". Upon examining the items, it was observed that the error covariances added between certain items reflect their measurement of related constructs. Specifically, Items 2 and 12 share a common focus on the concept of "family." Items 7 and 8 assess severe forms of violence, measuring physical and sexual abuse, respectively. Meanwhile, Items 9 and 14 both capture controlling behaviors. After these modifications, the revised Alternative Model 1 showed standardized factor loadings between 0.39 and 0.63, which remained within acceptable limits. All t-values for the items were statistically significant (t >1.96), indicating significant factor loadings. The chi-square difference test showed that the inclusion of the three error covariances led to a significant improvement in model fit ($\Delta\chi^2$=102.13, p=0.00). The revised model demonstrated excellent to acceptable fit across indices: CFI=0.99 (excellent fit); IFI=0.99 (excellent fit); SRMR=0.08 (acceptable fit); RMSEA=0.027, with a 90% confidence interval of [0.00, 0.062] (excellent fit). The standardized factor loadings of the revised model are presented in Fig. 3.

In the analysis of Alternative Model 2, which preserved the original factor structure of the scale (physical abuse, psychological abuse, sexual abuse),

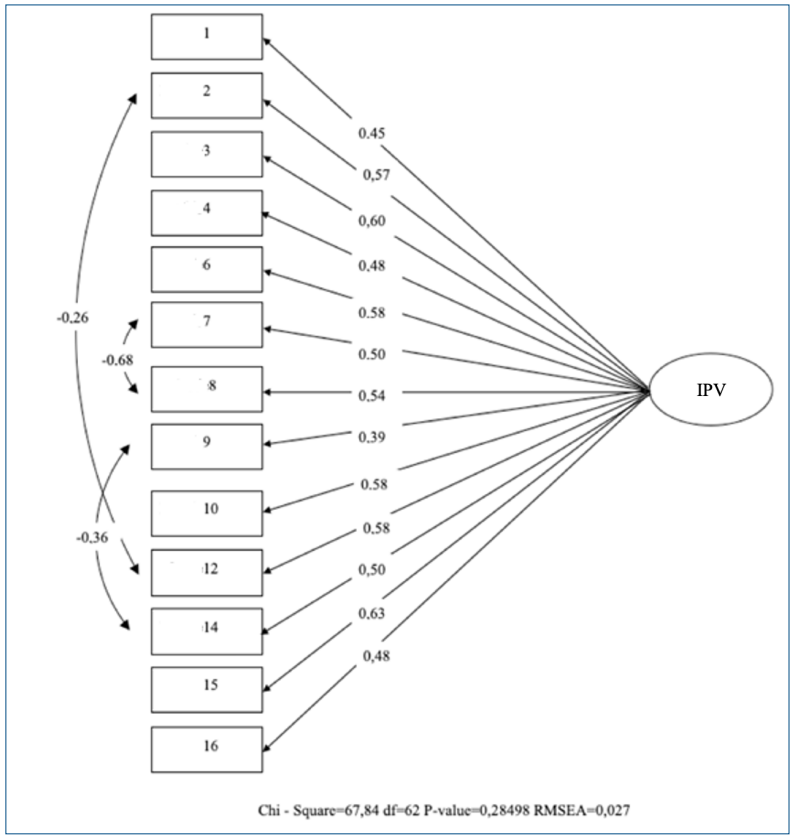

Figure 3. Standardized factor loadings for unidimentional model (Items; 1, 2, 3, 4, 6, 7, 8, 9, 10, 12, 14, 15, 16). IPV: Intimate partner violence.

the factor loadings of the items ranged from 0.29 to 0.95, falling within acceptable limits. However, the overall model fit indices were not within acceptable thresholds. Even after the addition of error covariances based on modification indices, the model fit values did not approach acceptable levels. As a result, based on the comparison of the two alternative models, the single-factor structure was deemed more appropriate and was retained for use in the final version of the scale.

In summary, during the adaptation of the scale to the Turkish language and culture, the original three-factor structure was not supported. Instead, the comparison of alternative models led to the acceptance of a unidimensional factor structure. The literature indicates that physical, sexual, and psychological abuse in intimate partner relationships are not entirely independent constructs, as these forms of abuse often overlap (32,33). Therefore, a unidimensional structure is theoretically justified.

Items 5, 11, and 13 were removed from the scale during reliability analysis due to item-total correlations falling below the acceptable threshold of 0.30. These items are: Item 5: "Followed me or loitered around my home or workplace,"; Item 11: "Punched, kicked, or bit me, or hit me with an object,"; Item 13: "Locked me in a room or another place.". The poor performance of these items may be attributed to their lack of relevance or infrequency within the current sample. Notably, Item 13 was not reported by any participant within the past year, possibly indicating that the sample did not include individuals exposed to this type of abuse. After removing these three items, reliability analysis showed a Cronbach's alpha of 0.85, indicating good internal consistency. Item-total correlations ranged between 0.30 and 0.71. Confirmatory factor analysis (CFA) supported the unidimensional model, with factor loadings ranging from 0.39 to 0.63. The psychometric properties and citation guidelines of the Turkish validated and reliable version are presented in detail below in Turkish.

SUPPLEMENTARY

https://www.noropsikiyatriarsivi.com/uploads/NPA_29258_EN_SUPPL.pdf

Ethics Committee Approval: Approval was obtained from the Non-Interventional Clinical Research Ethics Committee of Eskişehir Osmangazi University Faculty of Medicine, dated 27 February 2024, with decision number 49.

Informed Consent: Participants were included in the study after providing their informed consent.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept- ŞÖ, İGYK; Design- ŞÖ, İGYK; Supervision- İGYK; Materials- ŞÖ, TD; Data Collection and/or Processing- ŞÖ, TD; Analysis and/or Interpretation- ŞÖ, TG; Literature Search- ŞÖ, TD, İGYK; Writing- ŞÖ, TG; Critical Reviews- TG, İGYK.

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