

Mediating Role Of Illicit Drugs Use Between Cognitive Distortions And Suicidal Ideation Among Students

Muhammad Behroz Khan¹, Dr. Erum Irshad²

Abstract

The present research investigated the association between cognitive distortions, suicidal ideation, and illicit drugs use among students. In addition, the study also signifies the mediating role of illicit drugs use between cognitive distortions and suicidal ideation among students. A cross-sectional correlational design and snow-ball sampling technique was used, whereas data collected from 310 research participants aged 18 to 30 years from the students of colleges and universities of Peshawar and Islamabad. Results showed that cognitive distortions positively predicted suicidal ideation in regression analysis whereas a significant positive correlation was found of illicit drugs with cognitive distortions and suicidal ideation. Structural equation model was analyzed through SmartPLS 4 in order to compute the mediating role of illicit drugs use between cognitive distortions and suicidal ideation, result indicated that use of illicit drugs partially mediated the impact of cognitive distortions on suicidal ideation among students which is complimentary in nature. To summarize, these results emphasize the imperative role of addressing cognitive distortions and instigating targeted interventions for illicit drugs use to reduce the intensity and frequency of suicidal ideation among students.

Keywords: Suicidal Ideation, Cognitive Distortions, Illicit Drugs Use, Students.

Introduction

According to the CDC (2017), suicide is the third leading cause of mortality among those aged 15–29. Mental health problems, such as suicidal ideation and conduct, are strongly associated with an increased risk of suicide in the future (Mortier et al., 2018; Nock, Borges, Bromet, Cha, et al., 2008). The spectrum of behaviors that include suicidal ideation is vast, spanning from fleeting, involuntary thoughts to thorough preparation, role-playing, self-harm, and failed attempts at suicide. Such endeavors may bear fruit, or they could be deliberately designed to fail or attract undue attention.

According to Klonsky et al. (2016), someone is considered to have suicidal ideation if they have thoughts of hurting themselves in order to terminate their life. According to this

¹. PhD Scholar, Department of Psychology, University of Peshawar.

². Professor and Chairperson, Department of Psychology, University of Peshawar.

Corresponding Author: Muhammad Behroz Khan, PhD Scholar Department of Psychology, University of Peshawar

description, mental health difficulties include suicidal ideation. The nationwide pandemic of adolescent and young adult suicides has brought the issue of suicidal thoughts into sharp focus.

Suicide continues to be a major public health concern in the United States, with the age-adjusted suicide rate hitting 14.1 per 100,000 population in 2021. There is growing worry about deaths classified as unintentional falls or poisonings, which have increased and might be misclassified suicides. From 2000 to 2018, the age-adjusted suicide rate rose by 36.7%. In the 10 to 24-year-old age group, suicide is notably the second leading cause of death. Although the suicide rate within this demographic remained stable from 2001 to 2007, an increasing trend was observed up until 2021.

Finding the causes and connections between suicidal ideation and behavior is an important area of study. It is believed that cognitive distortions play a significant role in the development and upkeep of suicidal thoughts and actions (Wenzel, Brown, & Beck, 2009). Additionally, Fazakas-DeHoog, Rnic, and Dozois (2017) investigated the link between cognitive distortions and thoughts of suicide in an effort to build a complete model of cognitive deficits and distortions. Their study comprised 397 students and found that cognitive distortions were the only factor influencing the development of suicidal ideation (Fazakas-DeHoog et al., 2017).

Approximately 31 million individuals with a substance use issue were among the 275 million individuals in the world who tried with illicit substances in 2016, according to the Vienna: United Nations Office of substances and Crime (2018). Over 25% of all suicides are attributed to drug misuse (Poorolajal, Haghtalab, Farhadi, & Darvishi, 2015). Substance misuse is a major killer of young people. Esposito-Smythers et al. (2012) found that drug use was associated with an increase in suicidal thoughts and actions. This is because mental health issues, aggression, and reduced coping skills are all worsened by drug use.

A history of substance misuse was shown to be the most robust predictor of suicidal ideation. Wong et al. (2013) found that out of 10 research, the one including heroin had the highest prevalence of self-reported suicidality, indicating that using illicit drugs is more strongly linked to suicidality than using legal ones. They also discovered that the total quantity of illicit drugs used during a person's lifetime strongly correlates with suicidality.

Suicidal ideation and behavior are more common in people who experience cognitive distortions, which are characterized by unhealthy reactions to stress due to erroneous information processing (Beck, 1976; Fazakas-DeHoog et al., 2017; Jager-Hyman et al., 2014; Miller & Esposito-Smythers, 2013). Some behaviors that are linked to illicit drug usage include picking out bad events, remembering only negative experiences, generalizing negative memories, and overanalyzing life events (Pillersdorf, 2018; Gandolphe et al., 2013; Kneeland et al., 2019). Such routines may serve to solidify an individual's biased and negative perception of themselves and the world around them. Drug use is common among individuals for a variety of reasons, including but not limited to: social issues, ineffective beliefs, irrational and distorted thinking, seeking sensation and pleasure, and difficulty identifying emotional states (Ranjbar et al., 2013).

This study explores how cognitive distortions impact suicidal ideation amongst students, with a particular emphasis on the mediating effect of the use of illicit drugs, as illicit drugs use intensifies the distortions of cognition which further increase the probability of suicidal ideation.

Rationale

Illicit drugs use is a significant general wellbeing worry in Pakistan, especially among youngsters. The utilization of illicit drugs like heroin, methamphetamines, and weed has been connected to a scope of adverse results, including emotional wellness issues and self-destructive way of behaving. In any case, the degree to which illicit drugs use intercedes the connection between cognitive distortions and suicidal ideation isn't surely known. This study speculates that illegal drugs use might intensify cognitive distortions, prompting an expanded chance of suicidal ideation.

Besides, the review will research whether students who utilize illicit drugs and experience suicidal ideation are bound to experience the ill effects of cognitive distortions contrasted with their companions who don't use any drugs or encounter suicidal ideation. This examination is critical for understanding whether cognitive distortions are more predominant in students with both illicit drugs use and suicidal ideation, which could illuminate designated illicit drugs for this high-risk bunch.

The discoveries of this study can possibly fundamentally affect psychological well-being practice in Pakistan, especially in the fields of directing, psychotherapy, and general wellbeing. By giving a more profound comprehension of how cognitive distortions, and illicit drugs use add to suicidal ideation, the exploration will offer important experiences for growing more powerful counteraction and mediation techniques.

Theoretical Framework

From a perspective of cognitive-behavioral model of suicidal behavior, suicidal ideation and behavior is akin to other forms of psychopathology in that they stem from faulty learning experiences, which manifest as maladaptive cognition, behavior, and emotional responses. Building on an existing model of adult suicidal ideation and behavior (Rudd, Joiner, & Rajeb, 2001), a model specifically for adolescents and young adults are proposed. This model suggests that suicidal ideation and behavior result from the interplay between learned maladaptive cognition, behavior, and affective responses to stressors in individuals with predisposing vulnerabilities. These vulnerabilities, often rooted in poor early learning experiences, may include exposure to adverse childhood experiences such as abuse or neglect (King & Merchant, 2008) and parental psychopathology, including suicidal behavior (Melhem et al., 2007).

Objectives

1. To assess the relationship between use of illicit drugs, cognitive distortions and suicidal thoughts among students.
2. To find the mediating role of use of illicit drugs between distortions of cognition and suicidal thoughts among students.

Hypotheses

H₁: Cognitive distortions will be positively correlated with suicidal ideation among students.

H₂: Illicit drugs use will be positively correlated with cognitive distortions and suicidal ideation among students.

H₃: Illicit drugs use will play a mediating role between the association of distortions of cognition and ideation of suicide among students.

Conceptual Framework

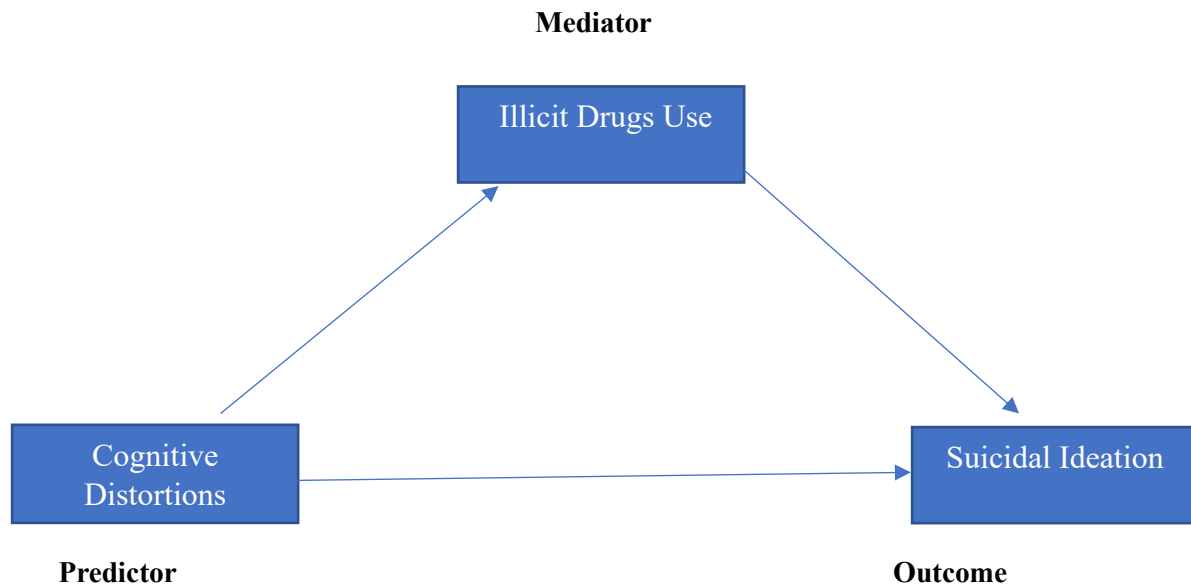


Figure 1: Schematic Representation of Mediating Effect of Illicit Drug Use between Cognitive Distortions and Suicidal Ideation among Students

Methodology

Study Design

The study used cross-sectional correlational research design.

Sample Size and Sampling

A snowball sampling technique was used for sampling. Sample size comprised of 310 participants in order to robust results using bootstrapping for mediation analysis through structural equation model. The participants age ranged 18 to 30 years, who is approached from different colleges and universities of Peshawar and Islamabad with educational level ranges from intermediate (HSSC) to post-graduate (PhD) whereas bot married and unmarried participants were included.

Inclusion and Exclusion Criteria

Participant who are enrolled in educational institutes, doesn't have any psychiatric illness and other organic issues, using illicit drugs, within age range 18 to 30 years, only male across all level of socioeconomic status were included. Whereas individual who are not enrolled in education institute, with history of psychiatric illness, not using illicit drugs for more than one month, not falling in age range of 18 to 30 years and female gender were excluded.

Instruments

Demographic Information Sheet

This sheet contains questions pertaining age, gender, marital status, education level, socioeconomic status, family structure, city in which where they are studying, birth order, type and duration of drugs use, and family and friends' history.

Drugs Use Disorder Identification Test (DUDIT)

DUDIT is developed by Berman et al., (2004) and used for screening of illicit drugs users, which is composed of 11 items. Over the past years, an individual's use of illicit drugs and its associated outcomes will be assessed by DUDIT and data will be collected across the subsequent areas: (i) Drugs use frequency, (ii) problems related to drugs, and (iii) symptoms of drugs dependence. The DUDIT Cronbach's alpha was 0.93 for male and 0.96 for female (Nesvåg et al., 2010).

Cognitive Distortions Questionnaire (CD-Quest)

By using the Questionnaire of Cognitive Distortions, cognitive distortions will be assessed at each time point (CD-Quest; de Oliveira et al. 2014, 2015). The fifteen item Cognitive Distortions Questionnaire measures the degree and frequency of various cognitive distortions which are common that people have experienced over the earlier week (CD-Quest; de Oliveira et al. 2014, 2015). To specify which distortions of cognition distortions in the past week they experienced for that responded will be instructed, —how much in the particular moment it occurred they believed (i.e., Intensity), as well as —during this past week how much it occurred they believed (i.e., Frequency). Cognitive distortions questionnaire internal consistency has been shown as reliable ($\alpha=0.80-0.91$).

Columbia-Suicide Severity Rating Scale (C-SSRS)

The C-SSRS is used to evaluate the ideation of suicide and intent of suicide (C-SSRS; Posner et al., 2011). As referred by Posner and colleagues, four subscales were derived: Lethality, Intensity, Severity, and Behavior. Sub-scale of severity in C-SSRS was specifically used for the collection of data regarding suicidal ideation from the research participants. The nature of suicidal thoughts is described by a subscale of Severity, which is a single-item including intent: (v) suicidal intent with plan, (iv) suicidal intent, (iii) suicidal thoughts with methods, (ii) non-specific active suicidal thoughts, and (i) wish to die. The characteristics of suicidal thoughts were assessed by the subscale of Intensity, which is comprised of 5 items (controllability, frequency, deterrents to intent and/or attempt, duration, and reason for the ideation). Score for sub-scale of Intensity varies from 2 to 25 and reliability has been demonstrated as adequate ($\alpha = 0.73$) (Posner et al., 2011).

Procedure

After the formal approval of research study by the Advance Studies and Research Board, head of the educational institutes first approached for an approval. Then, the students were contacted individually on the basis of research inclusion and exclusion criteria for the collection of data. The participants were explained the purpose of research and were asked to participate voluntarily. On their verbal consent they were briefed about the procedure of the research and their queries regarding research procedure were entertained. They were also informed about their rights as research participants. Subsequently, the written form of consent was required to sign by the participants of research before administration of scales. The participants were instructed about how to respond to questionnaire items and was facilitated while facing any difficulty while responding to the questionnaire items. After completing the questionnaires, the participants were generously thanked for their time and cooperation.

Results

The present study explored the mediating role of illicit drugs use between cognitive distortions and suicidal ideation. Below are the computed results.

Table 1 Descriptive Statistics and Correlation Analysis for Cognitive Distortion Questionnaire (CD-Quest), Suicidal Ideation Subscale of Columbia- Suicide Severity Rating Scale (C-SSRS), and Drug Use Disorders Identification Test (DUDIT) (N = 310)

	Variables	N	M	SD	1	2	3
1	Cognitive Distortions	310	38.15	11.05	-		
2	Suicidal Ideation	310	4.33	2.11	.21***	-	
3	Illicit Drugs Use	310	23.12	6.42	.43***	.18***	-

*p < 0.05, **p < 0.01, ***p < .001

Table 1 computed a Pearson correlation coefficient to assess the linear association between cognitive distortions, suicidal ideation, and illicit drugs use. Result indicates that cognitive distortions have a significant positive correlation with suicidal ideation ($r = .21, p < .001$) and illicit drugs use ($r = .43, p < .001$). Moreover, illicit drugs use signifies a significant positive correlation with suicidal ideation ($r = .18, p < .001$).

Mediating Role of Illicit Drugs Use between Cognitive Distortions and Suicidal Ideation

Measurement Model Analysis

The reliability and validity of the variables were evaluated using the measurement model (see Table 2). Initially, it was observed that all item factor loadings in the model exceeded the minimum acceptable threshold of 0.50, with values above 0.70 being preferable. However, in social science researches, it is common to encounter factor loadings below 0.70. Instead of immediately discarding such indicators, the impact of their removal on composite reliability, content validity, and convergent validity shall be analyzed. Typically, items with outer loadings ranging from 0.40 to 0.70 should only be considered for removal if their deletion leads to an improvement in Composite Reliability (CR) or Average Variance Extracted (AVE) beyond the recommended thresholds. In this study, removing 26 items significantly enhanced both CR and AVE values.

Reliability was evaluated using Cronbach’s alpha, rho_A, and composite reliability, with all constructs showing values exceeding the recommended threshold of 0.70, indicating strong reliability. Convergent validity was confirmed for all constructs, as the Average Variance Extracted (AVE) was above 0.50. Discriminant validity was assessed by comparing the correlations among latent variables with the square root of AVE and checking the heterotrait-monotrait ratio (HTMT), which remained below the threshold of 0.85. Thus, discriminant validity was established (refer to Table 3).

Table 2 Reliability and Validity Analysis

Constructs	Items	Loadings	Alpha	rho_A	CR	AVE
Cognitive Distortions	CD_Quest_12	0.719	0.702	0.708	.800	0.572
	CD_Quest_2	0.755				
	CD_Quest_9	0.793				
Suicidal Ideation	C_SSRs6	0.702	0.813	.813	.893	0.739
	C_SSRs8	0.928				

	C_SSRS9	0.929				
Illicit Drugs Use	DUDIT_6	0.735	0.708	.765	.807	0.739
	DUDIT_7	0.797				
	DUDIT_8	0.758				

Note: CR= Composite Reliability and AVE= Average Variance Extracted

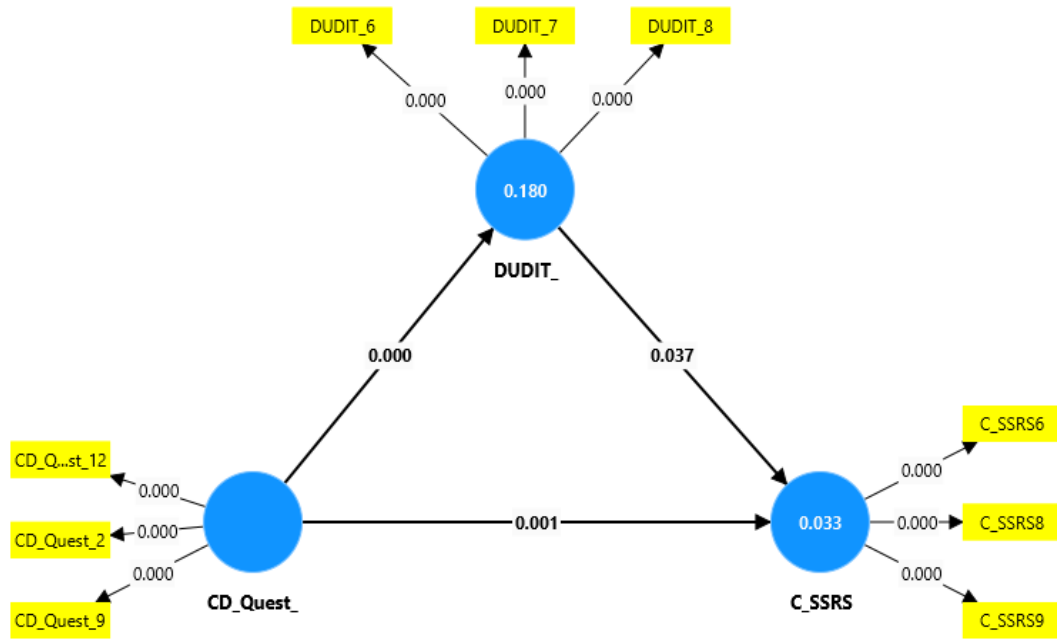


Figure 1: The measurement of mediating role of illicit drugs use between cognitive distortions and suicidal ideation.

Table 3 Fornell-Larcker Criterion and HTMT

	CD_Quest	C_SSRS	DUDIT
CD_Quest	0.756	0.196	0.643
C_SSRS	0.138	0.859	0.070
DUDIT	0.424	-0.048	0.763

Note: Diagonal and italicized are the square roots of the AVE. Below diagonal elements are the correlation between the construct's values. Above the diagonal elements are the HTMT values.

Structural Model Analysis

Structural model was computed through bootstrapping in order to evaluate role of illicit drugs use as a mediator between cognitive distortions and suicidal ideation. The results in table 4 revealed a significant indirect effect of cognitive distortions on suicidal ideation through illicit drugs use ($H_3: \beta = -.055, t = 1.968, p < .05$). The total effect of cognitive distortions on suicidal ideation was significant ($\beta = .138, t = 2.623, p < .01$). Even with the inclusion of the mediator, the effect of cognitive distortions on suicidal ideation is remained significant ($\beta = .193, t =$

3.421, $p < 0.001$). This shows a complimentary partial mediation effect of illicit drugs use in the association among cognitive distortions as well as suicidal ideation. Hence, H_3 was supported.

Table 4: Mediation Analysis Results

Total effect (CD⇒ SI)			Direct Effect (IDU→ SI)			Indirect effect of IDU on SI					
Coefficient	T-value	p-value	Coefficient	T-value	p-value	Hypothesis	Coefficient	SE	T-value	p-value	Percentile Bootstrap 95% Confidence Interval
.138	2.623	.009	.193	3.421	.001	(CD → IDU → SI)	-.055	.028	1.968	.04	-.117 – .050

Note: CD = Cognitive Distortions, IDU = Illicit Drugs Use, SI = Suicidal ideation

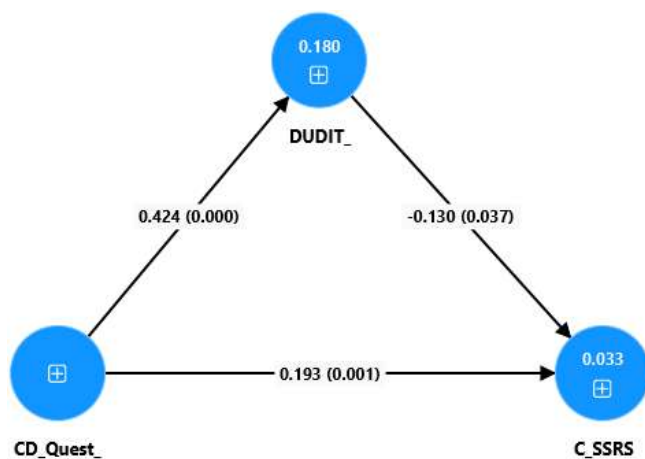


Figure 3: The structural model for mediating role of illicit drugs use between cognitive distortions and suicidal ideation.

Discussion

Hypothesis 1: Cognitive distortions will be positively correlated with suicidal ideation among students. The initial hypothesis (H_1) suggested that cognitive distortions would be positively correlated with suicidal ideation among students. Statistical computation of correlational analysis shows a significant positive correlation between cognitive distortions and suicidal ideation among students (see Table 1). These results align with prior research studies that has shown suicidal ideation to be a significant predicted by cognitive distortions. For example, two studies have used a design of case-control to investigate variations in cognitive attributes between individuals who have recently attempted suicide and those who are non-suicidal psychiatric participants comparators. The primary study was conducted by Ellis and Ratliff (1986) discovered that recent suicide attempters ($n = 20$) reported significantly higher levels of dysfunctional attitudes (cognitive distortions) as compared to participants who was in psychiatric control group ($n = 20$). Second study was conducted by Jekkel and Tringer (2004)

where they established that suicide attempted individuals ($n=40$) reported particular cognitive distortions more frequently, such as the conviction of needing to be continuously happy, an external locus of control, feelings of hopelessness, and anticipation of future adverse events, as compared to psychiatric control individuals who had not attempted suicide.

Hypothesis 2: Illicit drugs use will be positively correlated with cognitive distortions and suicidal ideation among students. The initial hypothesis (H_2) suggested that illicit drugs use would be positively correlated with cognitive distortions and suicidal ideation among students. Statistical analysis Statistical computation of the correlation analysis indicates a positive correlation among use of illicit drugs and suicidal thoughts, which specifies that higher level of illicit drugs use is correlated with increased suicidal ideation among students, which shows that hypothesis 2 is proved ($r = .18, p < .001$, see Table 1). The findings of hypothesis 2 was supported by the study of Poorolajal et al. (2015). The effect of the use of illicit drugs on suicidal outcomes was estimated by a meta-analysis which is performed by Poorolajal et al. (2015). Consistent with fact, the use of illicit drugs is correlated strongly with a higher chance of suicidal ideation, suicide attempt, and suicide death. Consequently, any form of illicit drugs use can be regarded as a key predictor of suicide and major contributor to premature death (Poorolajal et al., 2015).

Furthermore, the Statistical computation of the data indicates a strong positive correlation between cognitive distortions, and illicit drugs use among students, which suggest that heightened level of cognitive distortions are correlated with increased frequency of illicit drugs use ($r = .43, p < .001$, see Table 1). The positive association between cognitive distortions and illicit drugs use implies that students with more significant cognitive distortions are more prone to use illicit drugs. Cognitive distortions, for instance catastrophizing or all-or-nothing thinking, can disrupt decision making and increase susceptibility of drugs use as a coping strategy. These distorted patterns of thoughts may lead to greater chances of illicit drugs use by affecting how students handle and perceive emotional difficulties and stressful circumstances. These findings for hypothesis in table 1 are consistent with previous research studies suggesting a relationship among cognitive distortions and use of illicit drugs. The investigated data was supported by the study of Dalton (2005) and Shoal and Giancola (2001), whose research has found a significant positive correlation between use of illicit drugs and cognitive distortions among adolescence and young adults. Furthermore, Esposito-Smythers and Spirito (2004) recognized that young adults using illicit drugs could show a rigid pattern of cognitions, which may likely generate a thought that are automatic and extremely negative in nature.

Hypothesis 3: The hypothesis 3 of the research study assumed that illicit drugs use will play a mediating role in the relationship between cognitive distortions and suicidal ideations among students. Statistical computation of the data was done with the help of structural equation modeling through SmartPLS 4. The structural equation model analysis reveals a significant direct association between cognitive distortions and suicidal ideation ($\beta = .138, t = 2.623, p < .01$, see Table 4), whereas the path coefficient signifies that the effect of cognitive distortions on suicidal ideation was still significant even in the inclusion of the mediator i.e., illicit drugs use ($\beta = .193, t = 3.421, p < 0.001$, see Table 4). Moreover, a notable finding in the structural equation model was the significant role of illicit drugs use as a mediator in the association between cognitive distortions and suicidal ideation, which shows that use of illicit drugs indirectly influences suicidal ideation through cognitive distortions ($\beta = -.055, t = 1.968, p < .05$, see Table 4). These findings support the path of how cognitive distortions, illicit drugs use, and suicidal ideation are interconnected. The mediating role of illicit drugs use emphasizes the significance of addressing the illicit drugs use in interventions intended to reduce the risk of suicidal ideation among students. Additionally, the data computed also implied that the cognitive distortions may lead to increase the use of illicit drugs which subsequently increase

the likelihood of suicidal ideation. Furthermore, it can be concluded that the individuals who experiencing cognitive distortions may turn to use of illicit drugs use as a coping strategy to deal with the tension or stressful circumstances which in turn heighten the likelihood of suicidal ideation.

Typically, there is a lack or dearth of research studies in exploring how illicit drugs use mediates the relationship between predictors of suicide ideation. Only one study was conducted by Lamis et al., (2016), who has attempted to explore this possibility. In their moderated mediation analysis of suicide risk factors among college students, Lamis et al. (2016) discovered that alcohol problems mediated the relationships between hopelessness and suicidal ideation, as well as between depression and suicidal ideation. As far it is known, there is dearth of research studies has investigated whether illicit drugs use mediates the relationship between cognitive distortions and suicide ideation among students. Breet et al. (2018) noted that while most studies concentrated on alcohol and tobacco, they often overlooked other substances, including cannabis, opioids, sedatives, stimulants, prescription medication misuse, inhalants, and hallucinogens. Polysubstance use was also linked with suicidal tendencies in a study conducted by Doksat et al., (2017), keeping in view it is required to further research to confirm from the existing literature the findings for all commonly illicit drugs. Addressing this gap, the hypothesis 3 in research study was examined whether illicit drugs use acted as a mediating pathway between cognitive distortions and suicide ideation.

Conclusion

The aim of this research study was to examine the association between cognitive distortions, suicidal ideation, and illicit drugs use among students. Findings revealed that there was significant positive correlation between cognitive distortions, illicit drugs use, and suicidal ideation which indicating that heightened the intensity of cognitive distortions and illicit drugs use, greater the chances of vulnerability towards suicidal ideation. Also, it indicates a reverse association between cognitive distortions and illicit drugs use, as due to the distorting thinking people can prone to use illicit drugs in contract illicit drugs use can also further heightened the intensity of cognitive distortions. Moreover, the study aided in investigating the role of illicit drugs use as a mediating variable between association of cognitive distortions and suicidal ideation. The present study also helps in understanding how cognitive distortions, and illicit drug use interaction could help shape strategies which are preventive. Educational institutes and mental health professionals may find screening tools useful for identifying students at risk due to these factors. Implementing early intervention programs would then address these risk factors before they intensify. In addition, the study also encourages a multifaceted approach to treatment. Collaborating with counselors, mental health professionals, and illicit drugs specialists would offer a more comprehensive strategy for addressing the intricate factors that contribute to suicidal ideation.

Recommendation and Limitations

Future studies may use longitudinal designs to monitor how cognitive distortions, illicit drug use, and suicidal ideation among students change over time. This approach would shed light on how these factors are interrelate and progress overtime, which offering valuable insights into their causal relationships and long-term effects. It is recommended that research on the efficacy of targeted interventions for cognitive distortions, and illicit drugs use should be carried out. Assessing various approaches of therapy and their effects on suicidal ideation could offer valuable empirical support to practitioners.

References

1. Beck, A. T. (1976). *Cognitive therapy and the emotional disorders*. International University Press.
2. Breet, E., Goldstone, D., & Bantjes, J. (2018). Substance use and suicidal ideation and behaviour in low- and middle-income countries: A systematic review. *BMC Public Health*, 18, 549. Doi. <https://doi.org/10.1186/s12889-018-5425-6>.
3. Dalton, R. F. (2005). *Cognitive distortions identified with type and frequency of self-reported substance abuse usage*. The Ohio State University.
4. Doksat, N. G., Zahmacioglu, O., Demirci, A. C., Kocaman, G. M., & Erdogan, A. (2017). Association of suicide attempts and non-suicidal self-injury behaviors with substance use and family characteristics among children and adolescents seeking treatment for substance use disorder. *Substance Use and Misuse*, 52(5), 604–613. <https://doi.org/10.1080/10826084.2016.1245745>.
5. Ellis, T. E., & Ratliff, K. G. (1986). Cognitive characteristics of suicidal and nonsuicidal psychiatric inpatients. *Cognitive Therapy and Research*, 10(6), 625-634. <https://doi.org/10.1007/bf01173750>
6. Esposito-Smythers, C., & Spirito, A. (2004). Adolescent substance use and suicidal behavior: A review with implications for treatment research. *Alcoholism: Clinical and Experimental Research*, 28, 77S-88S.
7. Esposito-Smythers, C., Walsh, A., Spirito, A., Rizzo, C., Goldston, D. B., & Kaminer, Y. (2012). Working with the suicidal client who also abuses substances. *Cognitive and behavioral practice*, 19(2), 245-255.
8. Fazakas-DeHoog, L. L., Rnic, K., & Dozois, D. J. A. (2017). A Cognitive Distortions and Deficits Model of Suicide Ideation. *Europe's journal of psychology*, 13(2), 178–193. <https://doi.org/10.5964/ejop.v13i2.1238>
9. Gandolphe, M. C., Nandrino, J. L., Hancart, S., & Vosgien, V. (2013). Autobiographical memory and differentiation of schematic models in substance-dependent patients. *Journal of behavior therapy and experimental psychiatry*, 44(1), 114-121.
10. Jager-Hyman, S., Cunningham, A., Wenzel, A., Mattei, S., Brown, G. K., & Beck, A. T. (2014). Cognitive Distortions and Suicide Attempts. *Cognitive therapy and research*, 38(4), 369–374. <https://doi.org/10.1007/s10608-014-9613-0>
11. Jekkel, E., & Tringer, L. (2004). Suicide and cognitive distortions. *Psiholoska Obzorja*, 13(1), 139-150.
12. King, C. A., & Merchant, C. R. (2008). Social and interpersonal factors relating to adolescent suicidality: A review of the literature. *Archives of suicide research*, 12(3), 181-196.
13. Klonsky, E. D., May, A. M., & Saffer, B. Y. (2016). Suicide, Suicide Attempts, and Suicidal Ideation. *Annual review of clinical psychology*, 12, 307–330. <https://doi.org/10.1146/annurev-clinpsy-021815-093204>
14. Kneeland, E. T., Griffin, M. L., Taghian, N., Weiss, R. D., & McHugh, R. K. (2019). Associations between pain catastrophizing and clinical characteristics in adults with substance use disorders and co-occurring chronic pain. *The American Journal of Drug and Alcohol Abuse*, 45(5), 488–494. <https://doi.org/10.1080/00952990.2019.1581793>
15. Lamis, D. A., Ballard, E. D., May, A. M., & Dvorak, R. D. (2016). Depressive symptoms and suicidal ideation in college students: The mediating and moderating roles of hopelessness, alcohol problems, and social support. *Journal of Clinical Psychology*, 72(9), 919–932. <https://doi.org/10.1002/jclp.22295>.
16. Melhem, N. M., Brent, D. A., Ziegler, M., Iyengar, S., Kolko, D., Oquendo, M., ... & Mann, J. J. (2007). Familial pathways to early-onset suicidal behavior: familial and individual antecedents of suicidal behavior. *American Journal of Psychiatry*, 164(9), 1364-1370.
17. Miller, A. B., & Esposito-Smythers, C. (2013). How do cognitive distortions and substance-related problems affect the relationship between child maltreatment and adolescent suicidal ideation? *Psychology of Violence*, 3(4), 340.
18. Mortier, P., Auerbach, R. P., Alonso, J., Axinn, W. G., Cuijpers, P., Ebert, D. D., Green, J. G., Hwang, I., Kessler, R. C., Liu, H., Nock, M. K., Pinder-Amaker, S., Sampson, N. A., Zaslavsky, A. M., Abdulmalik, J., Aguilar-Gaxiola, S., Al-Hamzawi, A., Benjet, C., Demyttenaere, K., . . . Bruffaerts, R. (2018). Suicidal thoughts and behaviors among college students and same-aged peers: results from the World Health Organization World Mental Health Surveys. *Social Psychiatry and Psychiatric Epidemiology*, 53(3), 279–288. <https://doi.org/10.1007/s00127-018-1481-6>

19. Nock, M. K., Borges, G., Bromet, E. J., Alonso, J., Angermeyer, M., Beautrais, A., Bruffaerts, R., Chiu, W. T., De Girolamo, G., Gluzman, S., De Graaf, R., Gureje, O., Haro, J. M., Huang, Y., Karam, E., Kessler, R. C., Lepine, J. P., Levinson, D., Medina-Mora, M. E., . . . Williams, D. (2008). Cross-national prevalence and risk factors for suicidal ideation, plans and attempts. *The British Journal of Psychiatry*, 192(2), 98–105. <https://doi.org/10.1192/bjp.bp.107.040113>
20. Pillersdorf, D. A. (2018). Cannabis-associated Impairments in Autobiographical Memory Specificity and the Fading Affect Bias (Master's thesis, University of Windsor (Canada)).
21. Poorolajal, J., Haghtalab, T., Farhadi, M., & Darvishi, N. (2015). Substance use disorder and risk of suicidal ideation, suicide attempt and suicide death: a meta-analysis. *Journal of Public Health*, 38(3), e282–e291. <https://doi.org/10.1093/pubmed/fdv148>
22. Ranjbar, N., Alilo, M., Asadi, M., Ghodraty, Y., Najar, M., & Mahsa, S. (2013). Comparison of coping strategies, perfectionism and self-efficacy in individuals with substance use disorder and normal individuals. *Scientific Quarterly Research on Addiction*, 7(25), 39-56.
23. Rudd, M. D., Joiner, T. E., & Rajab, M. H. (2001). *Treating suicidal behavior: An effective, time-limited approach*. Guilford Press.
24. Shoal, G. D., & Giancola, P. R. (2001). Cognition, negative affectivity and substance use in adolescent boys with and without a family history of a substance use disorder. *Journal of Studies on Alcohol*, 62(5), 675-686.
25. Vienna: United Nations Office on Drugs and Crime. 2018. (2018). *World Drug Report 2018*.
 - a. <https://doi.org/10.18356/d29e3f27-en>
26. Wenzel, A., Brown, G. K., & Beck, A. T. (2009). *Cognitive Therapy for Suicidal Patients: Scientific and Clinical Applications*. American Psychological Association.
<http://www.jstor.org/stable/j.ctv1chrpx6>
27. Wong, S. S., Zhou, B., Goebert, D., & Hishinuma, E. S. (2013). The risk of adolescent suicide across patterns of drug use: a nationally representative study of high school students in the United States from 1999 to 2009. *Social psychiatry and psychiatric epidemiology*, 48, 1611-1620.