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IMPULSIVITY AND EMOTIONAL DYSREGULATION AS PREDICTORS OF RELAPSE IN ALCOHOL USE DISORDER: A PROSPECTIVE STUDY

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Abstract
Alcohol Use Disorder (AUD) is a chronic and relapsing condition characterized by high rates of recurrence following treatment. The present prospective study examined whether impulsivity and emotional dysregulation predicted relapse among individuals with AUD. A total of 80 participants (aged 21–60 years) completed structured questionnaires assessing impulsivity and emotional dysregulation at baseline and were followed to determine relapse status. Descriptive statistics, chi-square tests, point-biserial correlations, and binary logistic regression analyses were performed. During follow-up, 32.5% of participants relapsed. Logistic regression analysis revealed that previous relapse episodes significantly predicted relapse, with each prior relapse increasing the odds of subsequent relapse. Female gender was also identified as a significant predictor. However, impulsivity and emotional dysregulation did not independently predict relapse after adjusting for demographic and clinical covariates. These findings suggest that behavioral history may play a more prominent role in relapse vulnerability than trait-level psychological measures alone. The results underscore the importance of detailed relapse history assessment and individualized relapse prevention planning. Further large-scale prospective studies incorporating multimodal assessment approaches are recommended to better clarify the complex psychological and contextual determinants of relapse in AUD.

Keywords: Alcohol Use Disorder, Relapse, Impulsivity, Emotional Dysregulation, Prospective Study

1. Introduction

In the DSM-5 framework, Alcohol Use Disorder (AUD) is a relapsing and chronic psychiatric disorder that is marked by loss of control over the consumption of alcohol, craving, tolerance, withdrawal, and continued consumption despite its negative effect. AUD has been a major world public health issue considering its prevalence rates, long term progression and high rates of relapse. It has been estimated that the relapse rates after treatment are between 40% and 70% during the first year, leading to long term disability and burden of treatment.[1] In addition to its clinical consequences, AUD has significant economic and social burden such as healthcare spending, decreased productivity, and susceptibility to comorbid psychiatric and medical disorders.[2]

The relapse in AUD is defined as the relapse to alcohol after a period of abstinence, and it is a conceptualized theory of a multifactorial process, which is affected by biological, psychological, and environmental factors.[3] Multimodal studies confirmed the prognostic variables related to the relapse such as neurocognitive impairment and behavioral susceptibility.[4] Emotional dysregulation, as well as impulsivity, have gained more and more relevance as the factors that contribute to the risk of relapse.[5] The studies in daily-life also indicate that impulsive tendency and emotional instability can result in the likelihood of unplanned drinking incidences.[6] Also, there is evidence that trauma exposure, aggression, and temperament have been linked to elevated relapse vulnerability because relapse processes of AUD are complex.[7]

Executive dysfunction and poor cognitive control have been stressed as a result of neurobiological research in relapse. Deficits in the executive functions and craving have been found to be important predictors of relapses.[8] The literature on family history shows that patients with AUD and family alcohol abuse cases are more impulsive, which may be affected by genetic and neurodevelopmental factors.[9] Anxiety symptoms and sleeping disturbances were also linked to emotional dysregulation among people with AUD, which only exacerbates the risk of relapse.[10] Further, executive functioning and emotional control deficiencies are associated with substance misuse in psychiatric groups.[11] These results point to the interaction between the cognitive control processes and emotional mechanisms in maintaining abstinence.

Impulsivity is a multidimensional construct, which includes behavioral disinhibition, risk-taking, and poor decision-making. It is firmly associated with impairment of the prefrontal cortex that regulates the inhibitory control and goal-oriented behavior. Increased impulsivity has been linked severally to the severity of alcohol misuse and susceptibility of relapse. Not every person with increased impulsiveness is able to relapse, however, and this indicates that other aspects of psychology might mediate this association. One of these factors has been suggested to be emotional dysregulation because people can drink alcohol to control unpleasant moods.[12] Emotional instability and affective temperament is also found to predict relapse in alcohol dependence.[13]

Emotional dysregulation is the inability to be aware, interpret, and control emotions. Maladaptive emotion regulation strategies and impaired interoceptive awareness in people with AUD can be a factor in higher craving and relapses.[14] The clinical findings of neuroimaging prove that the impact of abnormal prefrontal activation is predictive of future risk in relapse, and this fact confirms the significance of emotional-cognitive integration.[15] Moreover, the potential modeling methods based on longitudinal data have prevailed the necessity of incorporating mental health, cognition, and craving measurements to enhance the accuracy of relapse prediction.[16]

Although research has continued to mount on the association of impulsivity and emotional dysregulation with alcohol misuse, there has been a paucity of prospective studies that examine their joint predictive value and their effects are observeable in the context of demographic and clinical factors. To create early screening of risks through reliable psychological predictors, which are questionnaire-based, and targeted relapse prevention strategies, it is vital to identify them. Thus, the objective of the current research was to assess the predictive variables of impulsivity and emotional dysregulation in predicting relapse among individuals with AUD on a prospective basis.

Objectives of the Study

1. To examine whether impulsivity and emotional dysregulation predict relapse among individuals with Alcohol Use Disorder in a prospective design.
2. To determine whether impulsivity and emotional dysregulation remain significant predictors of relapse after controlling for demographic and clinical covariates.

2. Materials and Methods

2.1 Study Design

The researchers used a prospective, questionnaire-based observational design to test the hypothesis that impulsivity and emotional dysregulation were the predictors of relapse in the cases of Alcohol Use Disorder (AUD). Structured self-report questionnaires were used to conduct baseline assessments

and help in following up the participants in terms of relapse status. The design was such that it enabled an assessment of predictive relationships among psychological variables and outcomes of relapse. Quantitative approach was taken so that statistical analysis of associations, correlations could be done and regression modeling could be done. The aim of the study was to adjust the contribution of the covariates that were significant with the goal of evaluating the independent role of impulsivity and emotional dysregulation in relapse.

2.2 Participants and Sampling

The study incorporated 80 participants who had been diagnosed with Alcohol Use Disorder. The participants were adults between the ages of 21 and 60 years. Purposive sampling was used to recruit them in a clinical environment where they received treatment to get rid of alcohol dependence. Those whose baseline was in early remission or abstinence could take part. Informed consent was obtained prior to the participants being included in the study. Sociodemographic variables like age, gender, marital status, education, employment status, treatment status, and mental health condition were obtained. Baseline assessment was done on all participants and followed up to establish the status of relapse over the course of the study.

2.3 Measures and Instruments

A structured questionnaire that included four parts demographic data, impulsivity, emotional dysregulation and relapse estimation was used to collect data. An impulsivity scale had 10 Likert scale items that were rated on a scale of 1 (strongly disagree) to 5 (strongly agree). A 10 Likert-scale measured on the same five-point scale was used to evaluate emotional dysregulation. Each construct was summed to assess the response to the items and the higher the total score, the more impulsive or emotionally dysregulated. Follow-up was done using structured questions to evaluate relapse based on alcohol consumption and drinking frequency. All the answers were coded in numbers to conduct statistical analysis.

2.4 Procedure

The participants were administered the questionnaire at the baseline under a supervised environment. The impulsivity and emotional dysregulation scales were collected afterwards after the demographic and clinical data were taken. All the participants were given identification numbers to preserve confidentiality. Monitoring of the participants during the follow up period was done after baseline assessment to determine which ones relapsed. Relapse was the consumption of alcohol after the abstinence. Structured assessment was used to obtain follow-up data, which were put into the dataset. Data that had been completed were coded and subjected to statistical analysis using an Excel sheet.

2.5 Variables and Data Management

The independent variables were the total impulsivity and the total emotional dysregulation score. Relapse status was the dependent variable, which was coded 0 (no relapse) and 1 (relapse). Other covariates were age, gender, years of alcohol use, past relapses, treatment and presence of mental health condition. The responses of Likert-scale were added together as total scores of impulsivity and emotional dysregulation. Data have been coded using numbers and inputted into Microsoft Excel after which they were exported to handle statistical analysis. Descriptive statistics were computed and the completeness of the data screened before inferential analyses are made.

2.6 Statistical Analysis

The analyses were done by using statistics to examine predictive and association relationships. To summarize the sample characteristics, descriptive statistics, such as frequencies, percentage, mean and standard deviations, were calculated. Chi-square tests were conducted to test the relationships between categorical variables and status of relapse. Relationships among continuous predictors and relapse were auxiliated by means of point-biserial correlation analysis. A binary logistic regression analysis was used to ascertain whether impulsivity and emotional dysregulation was predictive of

relapse with the adoption of demographic and clinical covariates. All analyses were established at the level of a statistical significance of $p < 0.05$.

3. Results

3.1 Sociodemographic and Clinical Characteristics of Participants

The study involved 80 respondents with a diagnosis of Alcohol Use Disorder. The average age was 42.78 years (SD=11.51) with the lowest age of 21 to the highest age of 60. The sample was equally divided between females (51.2%, n = 41) and males (48.8% n = 39). The majority were married (36.2%), then there was a group of divorced (25.0%), widowed (22.5%), and single people (16.2%). In terms of education, 27.5 percent of them had secondary education, 23.8 percent graduates and 23.8 percent postgraduates. One out of five (20%) of the participants were under treatment, and 46.2% had a mental health diagnosis. In the case of follow-ups, a rate of 32.5% (n = 26) relapsed and a rate of 67.5% (n = 54) abstained (Table 1).

Table 1. Frequency and Percentage Distribution of Sociodemographic and Clinical Variables (N = 80)

Variable	Category	n	%
Gender	Female	41	51.2
	Male	39	48.8
Marital Status	Married	29	36.2
	Divorced	20	25.0
	Widowed	18	22.5
	Single	13	16.2
Receiving Treatment	Yes	40	50.0
	No	40	50.0
Mental Health Condition	Yes	37	46.2
	No	43	53.8
Relapse	Yes	26	32.5
	No	54	67.5

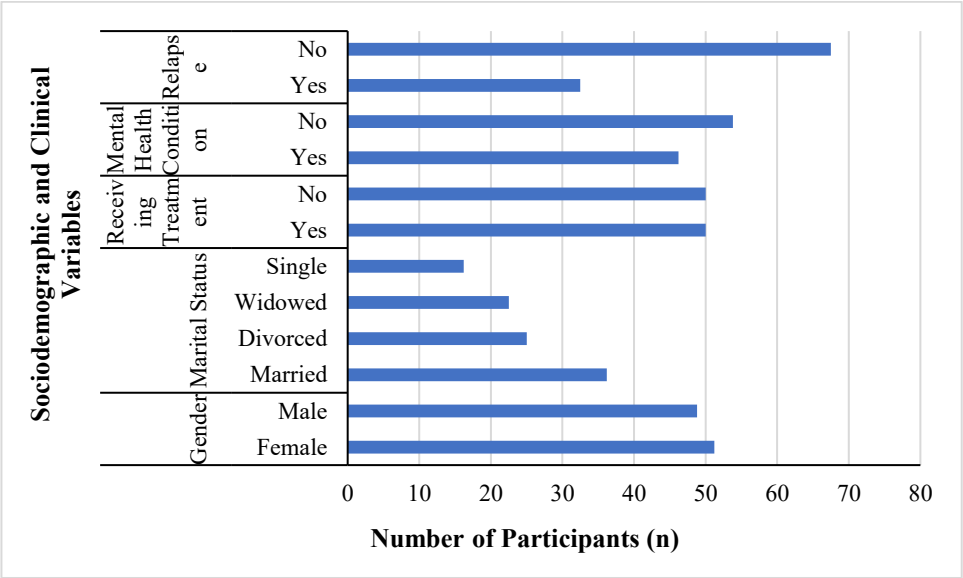


Figure 1. Distribution of Sociodemographic and Clinical Characteristics of Participants

Figure 1 presents the distribution of the important sociodemographic and clinical variables among 80 participants who had Alcohol Use Disorder. It introduces gender, marital status, treatment status, mental health condition, and relapse status indicating that most of them are abstinent, and there is even representation of treatment and a higher number of female participants.

3.2 Descriptive Statistics of Study Variables

The average alcohol duration of participants was 14.35 years (SD = 7.48) which suggests that the participants have been in long term alcohol consumption. The mean of the past relapses was 2.17 (SD = 1.70). Regarding psychological predictors, the average score in impulsivity Total was 29.50 (SD = 4.50) and the average score in emotional Dysregulation Total was 30.21 (SD = 4.67). Within the population that relapsed, the mean number of drinking days had in the last month of follow up was 3.45 (SD = 5.63). Table 2 summarizes the descriptive statistics of all continuous variables of the studies.

Table 2. Mean and Standard Deviation of Continuous Study Variables (N = 80)

Variable	Mean	SD	Min	Max
Age	42.78	11.51	21	60
Duration of Alcohol Use (Years)	14.35	7.48	2	25
Previous Relapses	2.17	1.70	0	5
Impulsivity Total	29.50	4.50	20	40
Emotional Dysregulation Total	30.21	4.67	19	42
Drinking Days (Last Month)	3.45	5.63	0	19

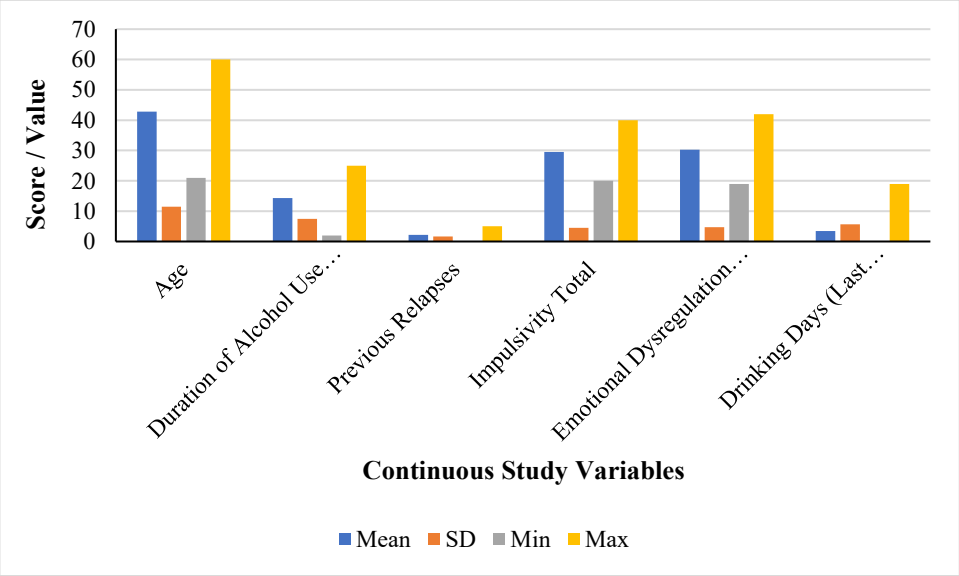


Figure 2. Descriptive Statistics of Continuous Study Variables

The mean, standard deviation, minimum and maximum of continuous variables such as age, duration of alcohol use, previous relapses, impulsivity, emotional dysregulation and days of drinking are shown in figure 2. It also reflects inconsistency in the sample, and the average scores of impulsivity and emotional discontrol are higher than the relapse measures.

3. Association Between Categorical Variables and Relapse (Chi-Square Analysis)

The chi-square tests were conducted to determine the relationship between the relapse status and the categorical sociodemographic and clinical variables. It was also found that there was a strong correlation between gender and relapse (kh2 = 3.975, p = 0.046), as such that the prevalence of relapse was different between the two sexes. Nevertheless, none of the relationships were significantly found between relapse and marital status (kh2 = 0.479, p = 0.924), level of education (kh2 = 1.137, p = 0.768), employment status (kh2 = 4.378, p = 0.112), abstinence duration (kh2 = 0.206, p = 0.902), treatment status (kh2 = 0.141, p = 0.707

Table 3. Chi-Square Test for Association Between Categorical Variables and Relapse (N = 80)

Variable	χ^2	df	p-value
Gender	3.975	1	0.046
Marital Status	0.479	3	0.924
Education	1.137	3	0.768
Employment	4.378	2	0.112
Current Abstinence	0.206	2	0.902
Receiving Treatment	0.141	1	0.707
Mental Health Condition	0.147	1	0.701

4. Correlation Between Continuous Variables and Relapse

The correlation was done by point-biserial analysis to test the relationships between the relapse (binary outcome) and continuous predictor variables. There was a strong positive correlation between past relapse incidences and relapse in the follow-ups (r = 0.292, p = 0.009) which showed that persons with more past incidences of relapse were more apt to relapse again. But relapse was not significantly related to impulsivity (r = 0.060, p = 0.599) and emotional dysregulation (r = -0.106, p = 0.347). Also, age (r = 0.065, p = 0.567) and years of alcohol usage (r = -0.151, p = 0.181) did not have any significant correlations with relapse (Table 4).

Table 4. Point-Biserial Correlation Between Continuous Variables and Relapse (N = 80)

Variable	r	p-value
Impulsivity Total	0.060	0.599
Emotional Dysregulation Total	-0.106	0.347
Age	0.065	0.567
Duration of Alcohol Use	-0.151	0.181
Previous Relapses	0.292	0.009

5. Logistic Regression Analysis: Predictors of Relapse

To determine whether impulsivity and emotional dysregulation were predictors of relapse controlling demographic and clinical variables, a binary logistic regression analysis was carried out. The variance was found to be statistically significant (Likelihood Ratio p = 0.021) with 17.8% of the variance. The odds of relapse were greatly predicted by the previous relapse experiences (B = 0.524, OR = 1.689, 95% CI = 1.180-2.417, p = 0.004) with more odds predicted as the experience of more relapses were experienced. The female gender played a role as well (B = 1.303, OR = 3.680, p = 0.023). Nonetheless, impulsiveness and emotional dysregulation did not play a major role in the adjusted model (Table 5).

Table 5. Binary Logistic Regression Predicting Relapse (N = 80)

Predictor	B	SE	OR	95% CI (OR)	p-value
Gender (Female vs Male)	1.303	0.574	3.680	1.196–11.325	0.023
Impulsivity Total	0.052	0.068	1.054	0.923–1.203	0.440
Emotional Dysregulation Total	-0.043	0.058	0.958	0.855–1.073	0.459
Previous Relapses	0.524	0.183	1.689	1.180–2.417	0.004

4. Discussion

The current prospective research was focused on impulsivity and emotional dysregulation as predictors of relapse in people with Alcohol Use Disorder (AUD). The follow-up relapses were found to be 32.5% which means that almost a third of the respondents returned to alcohol. The analysis of the logistic regression showed that past relapse episodes were a strong predictor of relapse with each extra relapse in the past enhancing the chances of future relapse. There were also gender differences

in that females have increased odds of relapsing. Nevertheless, adjusting the regression model had no significant predictors of impulsivity or emotional dysregulation.

The observation that past instances of the relapse was a predictive of the recurrence of the relapse in the future gives prominence to the cyclic and repetitive character of AUD. Patients who have had a history of repeated relapse can develop decreased coping efficacy, increased sensitivity to stress and maladaptive behavior patterns embedded. This helps to appreciate that the susceptibility to relapses can be acquired over time through the factor of behavioral reinforcement. Whereas the theoretical predictions of impulsivity and emotional dysregulation were likely to predict relapse, their non-significant results in the current study might have been caused by lack of statistical power, the use of self-report instruments in measurement or lack of adequate follow-up period. The nature of relapse is clinically complicated and might be affected by a combination of various interacting psychological, biological, and contextual factors on top of trait-level features.

The current results are in agreement with the studies that have focused on comorbid psychiatric vulnerabilities and relapse prone profiles in populations of individuals with AUD.[17] Persistent alcohol misuse and frequent cases of relapse have been linked to personality pathology and maladaptive forms of behavior.[18] Impulsivity has extensively been reported as a foreteller of maladaptive consequences in addiction-related settings, both in surgical and behavioral health groups.[19] Moreover, emotion regulation problems coupled with impulsiveness have been established to increase the risk among the clinical groups with emotional instability.[20] The emotional regulation disorders have also been taken as contributors to compulsions in behavioral patterns, in which trait impulsivity and disturbance in attachment engage together to perpetuate addictive behaviors.[21] Comparative evidence on the alcohol and cocaine use disorders has also provided strong relationships between impulsivity and severity of substance misuse.[22] Addictive tendencies systematic reviews also justify that impulsive traits are the ultimate predictors of addictive tendencies in prospective research.[23] Emotional dysregulation has also been given as a predictor of other compulsive behaviors including food addiction and it has been suggested that it is transdiagnostic.[24] Nonetheless, other researchers demonstrate that emotional dysregulation can have an indirect influence by craving, stress reactivity, or neurobiological dysregulation instead of being an independent predictor of relapse. The novel treatment models focusing on neurocognitive and emotional processes of AUD highlight the relevance of integrative solutions to the interpretation of relapse predictors.[25]

The importance of the past relapse history indicates that relapse screening must be incorporated in the clinical screening. There is also a need to have gender-specific relapse prevention as gender differences highlight. Even though impulsivity and emotional dysregulation were not highly independent predictors in this sample, it is still a clinically relevant construct that can potentially interact with contextual and neurobiological variables. Multifaceted interventions that include cognitive restructuring, emotional regulation training, and individual relapse prevention planning can be used to improve the treatment results. The strengths of the study were that it was a prospective study, had a structured assessment, and numerous covariates were used in the regression model. The sample size is however relatively small and the use of self-report measures may not provide as much predictive accuracy. There can also be a limited generalizability and the findings should be taken with caution. Subsequent studies are needed, which are based on larger samples, long-term follow-ups, and multimodal evaluation plans, such as neurobiological and behavioral measures, to revise the interaction of impulsivity, emotional dysregulation, and risk of relapse in AUD.

5. Conclusion

The current prospective study considered impulsivity and emotional dysregulation as the possible predictors of relapse in individuals with Alcohol Use Disorder. The results showed 32.5 percent of the subjects had relapsed within the follow up period. The strongest and most predictive variable among the studied variables was previous relapse history where each extra previous relapse predicts the chances of a future relapse significantly. There were also found to be gender differences with females showing the increased odds of relapse in the adjusted model. Nevertheless, impulsivity and emotional dysregulations were not predictive of relapse after the demographic and clinical covariates

were controlled. Theoretically, such results imply that behavioral history and repeated courses can be more significant causes of relapse in AUD than individual trait-level psychological indicators. Although impulsivity and emotional dysregulation are clinically relevant constructs, their influences may be interacting with contextual, environmental and neurobiological factors and not being a predictor themselves. The clinical implications of the findings are that the relapse history should be carefully evaluated when formulating the treatment strategies. Multiple relapses and previous relapses should be considered as the reason to strengthen monitoring and develop personal relapse prevention plans. On the whole, the relapse prevention of AUD is a multifactorial assessment that combines the behavioral history, psychological characteristics, and the context of influence. More extensive prospective studies should be done to understand the complicated role of psychological predictors in relapse vulnerability.

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