Journal of Neonatal Surgery
ISSN(Online): 2226-0439
Vol. 14, Issue 28s (2025)
https://www.jneonatalsurg.com

OPEN ACCESS

Examining the Triad of Personality, Cognition, and Quality of Life in Alcohol and Opioid Consumers

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Cite this paper as: Ms. Rosy Arora, Dr. Kiran Srivastava, (2025) Examining the Triad of Personality, Cognition, and Quality of Life in Alcohol and Opioid Consumers. *Journal of Neonatal Surgery*, 14 (28s), 216-222.

ABSTRACT

Substance use disorders (SUDs), especially opioid and alcohol dependence, are significant challenges to public health, affecting personal characteristics, cognitive functions and quality of life (QoL). This paper examined these dimensions in young adults and seeks to compare the results between opioid and alcohol users. A cross-sectional research design was used, and participants were purposively selected from de-addiction clinics in Punjab, India; 50 opioid and 50 alcohol users were selected. Self-administered questionnaires and quantitative tests such as descriptive analysis and independent sample t-tests were used to assess personality traits, QoL, and cognitive functioning with the help of SPSS. Outcomes show that alcohol consumers get higher scores on personality tests and have more consistent traits than opioid consumers. However, no differences were observed in QoL between the two groups, and both groups experienced considerable physical, psychological and social difficulties. Analysis revealed that opioid users performed slightly better on cognitive tests, but the variability for cognitive functioning was higher in opioid users. The present findings indicate that alcohol and opioid dependence differently affect the psychological and cognitive characteristics of the patients. The results enhance the knowledge of how personality characteristics affect cognitive and QoL outcomes and facilitate the treatment and rehabilitation process of SUD clients.

Keywords: *Substance Use Disorders, Opioid Dependence, Alcohol Dependence, Personality Traits, Cognitive Functions, Quality of Life, Young Adults*

1. INTRODUCTION

SUDs currently occupy an increasingly prominent place in the sphere of global health, and opioids and alcohol are among the most consumed substances (Witkiewitz & Vowles, 2018; Bethesda, 2020). Alcohol dependence, as well as opioid dependence, in different ways, affects the physical welfare, psychological functioning, and QoL of individuals (Cleveland Clinic, 2022).

Among the diverse effects of substance use, three domains are critical to understanding how these substances affect young adults: personality, cognition, and QoL (Volkow & Blanco, 2023). More research is still needed to identify how these three factors are interconnected, particularly regarding opioid and alcohol dependence within the current addiction literature (Witham et al., 2019; Earnest et al., 2022).

Personality characteristics are critical determinants of stress reaction, relationship formation, and life management styles (Ringwald et al., 2024). According to the previous literature, it was found that users who have specific personality traits, including impulsivity, neuroticism and high levels of sensation-seeking, have a high probability of getting addicted to substances (Stautz & Cooper, 2013; Gómez-Bujedo et al., 2020; LaSpada et al., 2020).

Thus, although alcohol and opioid dependence do have some extent of similar psychological characteristics, the psychological characteristics of a person with one of these disorders may differ significantly from a person with the other (Gupta et al., 2014). High rates of neuroticism and extraversion are associated with alcohol dependence (Yadav et al., 2021) and high rates of emotional instability and introversion are commonly observed in opioid dependence (Dydyk et al., 2024).

Cognitive functioning is a term used to describe the brain's activities to learn, decide and control behaviours (Kiely, 2014). Neurocognitive deficits are commonly reported with alcohol and opioid addiction; both substances have been found to impair memory, attention, cognitive flexibility and decision-making abilities (Ramey & Regier, 2018; Bruijnen et al., 2019).

For instance, research also shows that alcohol alters the working of the prefrontal cortex and, thereby, the problem-solving and decision-making ability of the brain (Nippert et al., 2024). On the same note, opioids alter dopamine production in the brain's reward centre and the neurologic regions related to motivation and learning (Kosten & George, 2002).

QoL is a multifaceted concept that includes social, psychological, and physical well-being. (Teoli & Bhardwaj, 2023). Alcohol and opioid dependence, in particular, have been linked with a greatly diminished QoL (Bethesda, 2020). Patients with alcohol dependence develop social and occupational dysfunction and psychological disorders (NCCMH, 2021). Patients with opioid dependence experience more withdrawal symptoms, worsening health, and stigma (Pergolizzi et al., 2020).

Although extensive studies have been conducted on the impact of alcohol and opioid dependence on personality, cognition and QoL, there are still some gaps in the literature. Few studies have directly compared alcohol and opioid dependence, limiting understanding of differences or similarities in psychological and cognitive profiles between the two groups. Existing research on substance use is cross-sectional, lacking longitudinal studies to examine personality changes, cognitive decline, and QoL deterioration over time, and the impact of personality traits on outcomes remains unexplored (Hasin & Walsh, 2020; Noorbakhsh et al., 2020; Rizk et al., 2021; Earnest et al., 2022).

The current study seeks to fill these gaps by providing a detailed comparison of the personality, cognition, and QoL of young adults with opioid and alcohol dependence and the interdependence of these variables.

This article includes several sections: The introduction outlines the brief of personality, cognition, and QoL and identifies gaps in the current literature for young adults with opioid and alcohol dependence. The methodology section explains the research design, sample selection, study area, and data collection and analysis methods. The analysis and results present the study's findings, comparing the two groups' personality traits, cognitive functioning, and QoL. The discussion interprets the results. Finally, the conclusion summarizes the study's contributions and offers recommendations for future research.

2. OBJECTIVES AND HYPOTHESIS:

2.1 Objectives

1. To compare the personality of young adults with opioid and alcohol dependence.
2. To compare the QoL of young adults with opioid and alcohol dependence.
3. To assess and compare the cognitive functions of young adults with opioid and alcohol dependence.

1.1 Hypothesis

1. (H_{01}): There will be significant differences in personality among opioid and alcohol-dependent young adults.
2. (H_{02}): There will be no differences in the QoL among the opioid and alcohol-dependent young adults.
3. (H_{03}): There will be no differences in the cognitive functions among the opioid and alcohol-dependent young adults.

3. METHODOLOGY

The present study follows the "cross-sectional" research design. The "Purposive sampling" technique was employed to collect data from the respondents with the help of the structured questionnaire. The proposed sample size was 100, consisting of 50 opioid dependents and 50 alcohol dependents. The sample size will be collected purposely from the de-addiction clinics in semi-urban areas of Punjab (SAS Nagar, Rupnagar, Fatehgarh Sahib, and Powadh). SPSS was used for the data analysis. Descriptive statistics and "Levene's test for equality of variances" were used to verify the proposed hypothesis.

3.3 Analysis and Results

3.3.1 Comparison of the Personality of Young Adults with Opioid and Alcohol Dependence

Table 1 reveals the basic descriptive statistics comparing personality traits for the two groups of young adults who are categorized based on opioid consumption and alcohol consumption. The mean personality score for opioid consumers is 2.54, having a standard deviation of 0.846, indicating a relatively higher variability in personality scores within this group.

On the other hand, the alcohol consumers have a higher mean personality score of 3.20, with a lower standard deviation of 0.551, suggesting that their personality scores are more consistent. In addition, the standard error of the personality mean for opioid consumers is 0.189 and for alcohol consumers is 0.123, showing that the personality score estimate for young adults consuming alcohol is slightly more.

Table 1. Basic Descriptive Statistics Comparing Personality Traits

Group Statistics					
	Types of Drugs	N	Mean	Std. Deviation	Std. Error Mean
Personality_ Mean	Opioid	50	2.54	.846	.189
	Alcohol	50	3.20	.551	.123

Table 2. Independent Samples Test for Personality

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Personality_ Mean	Opioid	7.167	.011	-2.923	98	.006	-.660	.226	-1.120	-.200
	Alcohol									

To determine the differences in personality among opioid and alcohol-dependent young adults, an "independent sample t-test" was used (table 2). The result holds that "Levene's test for equality of variance" is F = 7.167, p = 0.011 (which is < 0.05), so it is concluded that the variance has been assumed not to be equal. For this, t (98) = 2.923, p > 0. 05 in the score for opioid respondents (M=2.54, SD = .846) were not significantly different from that of alcohol users (M= 3.20, SD = 0. 551).

Therefore, it could be argued that there are no significant differences in the personality between opioid consumers and alcohol consumers respondents.

3.3.2 Comparison of the QoL of Young Adults with Opioid and Alcohol Dependence

The group statistics presented in Table 3 compare the QoL scores for two groups who are consuming opioids and those consuming alcohol. The mean QoL score for each group is identical at 3.94. However, the standard deviation measuring the variability of scores was found to be different for both groups. For opioid consumers, QoL scores depicted more significant variability with a standard deviation of 0.573, indicating a more comprehensive range of experiences within the group.

On the other hand, alcohol consumers show less variability, with a lower standard deviation of 0.343, representing more consistency in their QoL. The standard error of the mean is also lower for the alcohol group (0.077) compared to the opioid group (0.128), showing less variability in the case of alcohol users, indicating a more precise estimate of the average QoL for alcohol users.

Table 3. Basic Descriptive Statistics for Personality Traits

Group Statistics					
	Types of Drugs	N	Mean	Std. Deviation	Std. Error Mean
QOL_Mean	Opioid	50	3.94	.573	.128
	Alcohol	50	3.94	.343	.077

Table 4. Independent Samples Test for QoL

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
QOL_Mean	Opioid	1.791	.189	.000	98	1.000	.000	.149	-.302	.302
	Alcohol									

Table 4 shows the result of the "independent sample t-test" analysis of QoL between opioid and alcohol-dependent young adults. "Levene's test for equality of variance" stated that F = 1.791, p = 0.189 > 0.05; hence, the variances have been assumed to be equal. For this t(98) = -.766, p < 0.05 in the score for opioid users (M=3.94, SD= .573) was comparable with the score for alcohol users (M= 3.94, SD = 0.343).

Consequently, it can be concluded that there are insignificant differences in the QoL of opioid users and alcohol users.

3.3.3 Comparison of the Cognitive Functions of Young Adults with Opioid and Alcohol Dependence

The data presented in Table 5 compares cognitive performance between opioid consumers and alcohol consumers based on their mean cognitive scores. Both groups consist of 50 young adults each. Data depicts that Opioid users have a slightly higher average cognitive score (M = 2.14) compared to alcohol consumers (M = 1.98), indicating that opioid users may perform better to some extent on cognitive tasks on average.

However, the standard deviation is higher for opioid users (SD = 0.426) than for alcohol users (SD = 0.275), indicating more variability in cognitive performance within the opioid group. The standard error of mean values reflects that opioid consumers have a higher standard of error (0.095) compared to alcohol users (0.061), depicting that opioid users are less precisely estimated than alcohol users.

Table 5. Basic Descriptive Statistics for Cognitive Performance

Group Statistics					
	Types of Drugs	N	Mean	Std. Deviation	Std. Error Mean
Cognitive_Mean	Opioid	50	2.14	.426	.095
	Alcohol	50	1.98	.275	.061

"Independent sample t-test" was used to compare the cognitive functions between opioid and alcohol-dependent young adults. "Levene's test for equality of variance" stated that F = 1.385 p = 0.247 > 0.05; hence, variances have been assumed equal. For this, t(98) = 1.412, p > 0.05 in the score for opioid users (M=2.14, SD= .426) was greater than that of alcohol users (M= 1.98, SD = 0.275).

Consequently, it can be concluded that there are significant differences in the cognitive functions of opioid-dependent and alcohol-dependent respondents.

Table 6. Independent Samples Test for Cognitive Performance

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Cognitive_Mean	Equal variances assumed	1.385	.247	1.412	98	.166	.160	.113	-.069	.389
	Equal variances not assumed			1.412	32.460	.167	.160	.113	-.071	.391

4. DISCUSSIONS

The findings reveal significant differences in the personality traits of young adults dependent on opioids versus alcohol. Alcohol users exhibited higher and more stable personality scores (M = 3.20, SD = 0.551) compared to opioid users (M = 2.54, SD = 0.846), as confirmed by t(98) = -2.923, p = 0.006. This suggests that alcohol users may possess traits such as "extraversion and neuroticism," which align with previous literature linking these traits to alcohol dependence. In contrast, the greater variability in the personality scores of opioid users indicates a heterogeneous profile, potentially influenced by emotional instability and introversion, as supported by prior research. These differences underline the necessity of personality-focused interventions, such as coping strategies for emotional regulation in opioid users and risk reduction in sensation-seeking behavior for alcohol dependents.

Despite the assumption that different substances may impact QoL variably, the results indicate no significant differences in QoL between the two groups (opioid: M = 3.94, SD = 0.573; alcohol: M = 3.94, SD = 0.343), with t(98) = 0.000, p = 1.000. Both groups face comparable challenges in physical health, psychological well-being, and social relationships. The similar scores across groups highlight the pervasive impact of substance dependence on overall life satisfaction and functioning, irrespective of the specific substance. There is a need for multi-sectoral collaboration in responding to QoL concerns regarding substance-dependent persons with the need for adjustment of social support, reduction of stigma, and increased access to equal and integrated health for these people.

Analysis of the cognitive function showed that opioid users achieved slightly higher mean scores (M = 2.14, SD = 0.426) than alcohol users (M = 1.98, SD = 0.275), but the difference was not significant, t(98) = 1.412, p = 0.166. The higher dispersion of opioid users indicates that while some of them have only minor cognitive deficits, others experience significant impairments that might be associated with the neurotoxic effects of opioids on the reward and learning networks. However, alcohol use is connected with a stable negative impact on executive functions and memory, as the prefrontal zone is the most sensitive to its influence. These findings suggest the development of appropriate cognitive rehabilitation programs based on the deficits found in each group.

5. CONCLUSION

This paper examined the relationship between personality traits, cognitive functions, and QoL among young adults with opioid and alcohol dependence. Regarding personality, the current findings revealed some differences, where alcohol users expressed higher and more stable personality scores than opioid users. Significantly, the two groups did not differ in terms of QoL; thus, the overall challenges of the two groups were similar. Cognitive function analysis showed a slightly better performance of opioid users compared with alcohol users, although the difference was insignificant; however, the opioid dependents demonstrated much lower stability of performance. The present study offers essential information about the features of opioid and alcohol dependence as well as the similarities and differences of these disorders. The findings highlight the need for intervention specific to each group's personality profile and cognitive impairment.

It also underlines the importance of the multifaceted strategies that target QoL determinants regardless of the type of the substance at the physical, psychological and social levels. Subsequent investigations should employ longitudinal research paradigms to make further, more conclusive exploration of chronological aspects of personality alterations, neuropsychological decline and QoL reduction. Moreover, the increase in sample size and including a more heterogeneous

sample might improve the external validity of these results. Overall, the presented work advances the knowledge of the psychological and cognitive processes of substance dependence, thus opening the avenue for more specific and efficient treatment approaches. In this regard, adequate coverage of these domains will help clinicians and policymakers to help young adults deal with the severe issues arising from opioid and alcohol dependence.

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