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RESEARCH ARTICLE

FACTORS LEADING TO RELAPSE IN SUBSTANCE USE DISORDER PATIENTS - A CROSS-SECTIONAL STUDY

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Abstract

Background: Substance Use Disorder (SUD) is a chronic relapsing condition with high recurrence rates influenced by multiple biopsychos ocial factors.

Objectives: To estimate relapse prevalence and identify associated factors among patients with SUD.

Methods: This cross-sectional study was conducted at a tertiary care hospital in Bengaluru over 18 months. Among 680 patients screened, 530 had relapse, and 100 participants were included for detailed assessment. Data were analyzed using descriptive statistics and Chi-square/Fisher's exact test.

Results: The prevalence of relapse was 77.9%. Most participants were middle-aged males, with alcohol being the predominant substance. Relapse commonly occurred within 3 months of abstinence. Significant factors associated with higher relapse included early age of onset, unemployment, lower education, marital and parental status, family history, peer pressure, stressful life events, poor treatment adherence, and exposure to triggers ($p < 0.05$).

Conclusion: Relapse in SUD is highly prevalent and influenced by modifiable psychosocial factors, highlighting the need for targeted relapse prevention strategies and sustained follow-up care.

Introduction:-

- Substance Use Disorder (SUD) is a chronic relapsing disorder characterized by compulsive substance use despite harmful consequences.[1]
- Relapse is defined as the return to substance use after a period of abstinence following treatment or self-initiated cessation.[2]
- Relapse is a common outcome in substance use disorders, with studies reporting rates of 40–60% following treatment.[3]
- Substance use disorders share characteristics with other chronic medical illnesses, including cycles of remission and relapse.[3]

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- Multiple biological, psychological, and social factors contribute to relapse, including stress, craving, environmental cues, peer influence, and poor treatment adherence.[4]
- Neurobiological mechanisms underlying relapse involve dysregulation of reward pathways, particularly dopaminergic circuits, and stress-related systems such as the hypothalamic–pituitary–adrenal axis[5–6]. Cue-induced craving and conditioned learning play a significant role in triggering relapse, especially in high-risk environments[7].
- Psychological factors such as negative affect, anxiety, depression, and inadequate coping strategies further increase vulnerability to relapse[8–9]. Social determinants including family environment, low social support, and socioeconomic stressors have also been shown to influence relapse risk[10–11].
- Clinical variables such as early age of onset, longer duration of substance use, and psychiatric comorbidities are associated with higher relapse rates[12–13]. Poor treatment adherence and inadequate follow-up care significantly increase the likelihood of relapse[14]. Additionally, stressful life events and exposure to substance-related cues act as important precipitants of relapse episodes[15].
- Relapse most commonly occurs during the early months following abstinence, emphasizing the need for close monitoring and sustained interventions during this high-risk period[16]. Therefore, the present study was conducted to estimate the proportion of relapse and identify factors associated with relapse among patients with substance use disorder.
- Furthermore, impulsivity, impaired decision-making, and deficits in executive functioning have been increasingly recognized as important contributors to relapse vulnerability in substance use disorders[17]. These cognitive impairments reduce an individual's ability to resist urges and adapt to high-risk situations.
- In addition, inadequate access to rehabilitation services, stigma, and lack of continuity of care have been identified as significant barriers to sustained recovery, further increasing Motivational factors, including readiness to change and level of insight, also play a crucial role in determining relapse outcomes, with lower motivation being associated with poorer adherence and higher relapse rates[19].
- Additionally, lack of structured relapse prevention interventions, including psychosocial therapies such as cognitive behavioral therapy and skills training, has been associated with increased vulnerability to relapse in individuals with substance use disorders[20]
- Therefore, the present study was conducted.

Objectives:-

- To estimate the proportion of relapse in substance use disorder patients.
- To determine the risk factors associated with relapse in substance use disorder patients

Inclusion Criteria:

1. Individuals above 18 years of age and those who are willing to participate in studies.
2. Individuals who are meeting substance dependence criteria according to DSM-5 TR criteria and relapsed atleast once.

Exclusion Criteria:

1.Those who have psychiatric illness before the onset of substance dependence.

Methodology:-

Source of Data:

The study was an observational cross-sectional study conducted on the inpatients admitted in Sapthagiri Hospital, Sapthagiri Institute of Medical Sciences and Research Centre, Bengaluru

Study Design:-

The study is a cross sectional study

Study Duration:-

The study was conducted over a period of 18 months, from May 2024 to October 2025.

Study Population:-

The study population consisted of patients diagnosed with Substance Use Disorder (SUD) attending the psychiatry department during the study period.

Screening of Participants:-
During the study period, a total of 680 patients with substance use disorder were screened.

Identification of Relapse:-
Among the screened patients, 530 patients were identified to have relapse.

Study Sample:-
Out of the 530 patients with relapse, 100 participants fulfilling the inclusion criteria and consenting to participate were included for detailed assessment.

Sampling Method:-
Consecutive sampling method was used to recruit eligible participants attending the treatment center during the study period.

Data Collection:-
Data were collected using a structured proforma through direct clinical interview with the participants.

Variables Assessed:-
Sociodemographic variables:-
- Age
- Gender
- Education
- Occupation
- Marital status
- Parental status

Clinical variables:-
- Age of onset of substance use
- Psychiatric comorbidity
- Family history of substance use
- Peer pressure
- Craving severity
- Treatment adherence
- Exposure to triggers
- Stressful life events
- Type of substance used
- Duration of abstinence
- Number of relapses

Sample Size Estimation:-
The sample size was estimated using the formula based on the previous study conducted by Rampure R. et al.

$$N = \frac{4pq}{d^2}$$

Where:
- p = prevalence rate of relapse = 55.4%
- q = 100 – p = 44.6%
- d = absolute precision (10%)
- $N = \frac{4\times55.4\times44.6}{10^2} = 98.86 \approx 100$
- Hence, the sample size was determined to be 100 patients.

Statistical Analysis:-
- Data were analyzed using descriptive and inferential statistics.
- Sociodemographic and clinical variables were summarized using frequency, percentage, mean, and standard deviation.

- Prevalence of relapse was calculated as the proportion of relapse cases among the total substance use disorder patients screened during the study period.
- Association between variables and number of relapses was assessed using Pearson's Chi-square test or Fisher's Exact test where appropriate.
- A p-value < 0.05 was considered statistically significa**nt**.

Results:-

Table: Prevalence of Relapse Among Substance Use Disorder Patients

Category	Number (n)	Percentage (%)
Total SUD patients during study period	680	100
Patients with relapse	150	22.1
Patients without relapse	530	77.9

Table: Selection of Study Sample

Category	Number (n)
Total SUD patients screened	680
Patients identified with relapse	150
Patients included in the present study	100

Table 1: Age (years)

Age Group (years)	Frequency	Percentage
17-20	3	**3%**
21–25	7	**7%**
26–30	13	**13%**
31–35	15	**15%**
36–40	27	**27%**
>40	35	**35%**
Total	**100**	**100%**
Age (years)	38.63± 11.71	

The age distribution of the participants shows that substance use relapse was more common among older adults. Among the 100 participants included in the study, the largest proportion belonged to the age group of more than 40 years, accounting for 35% of the sample. This was followed by individuals aged 36–40 years, representing 27% of the participants. Participants in the age group of 31–35 years constituted 15%, while those aged 26–30 years made up 13% of the sample. Younger age groups were comparatively less represented, with only 7% belonging to the 21–25 years category and 3% in the 17–20 years category. The mean age of the participants was 38.63 ± 11.71 years, indicating that the majority of individuals experiencing relapse were middle-aged adults. This suggests that relapse in substance use disorder tends to occur more frequently among individuals who have had longer exposure to substance use or prolonged dependence.

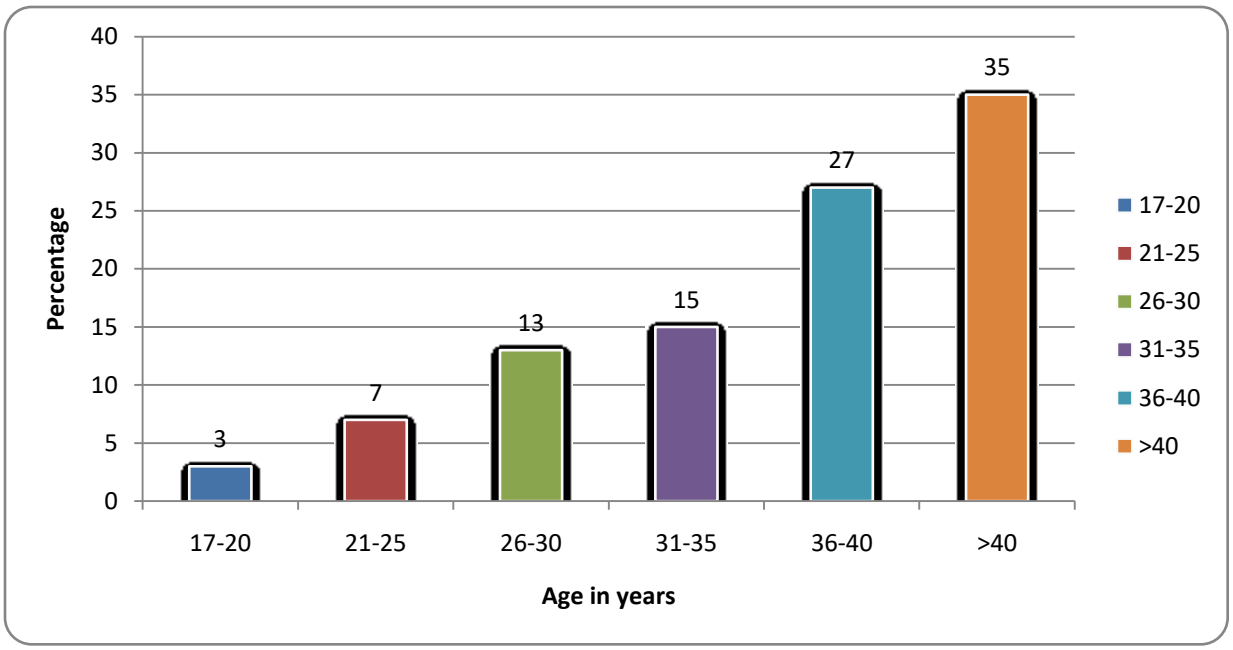

Figure 1: Age distribution

Table 2: Gender

Gender	Frequency	Percentage
Male	97	97.0
Female	3	3.0
Total	**100**	**100%**

The gender distribution of the study participants indicates a strong predominance of males among individuals experiencing relapse in substance use disorder. Out of the total 100 participants, 97% were male, while only 3% were female. This finding highlights that substance use relapse is significantly more common among men in the study population. The low proportion of female participants may reflect cultural, social, or reporting differences, where substance use among women may be underreported or less frequently brought to treatment settings. Overall, the data suggest that males constitute the primary group affected by relapse in substance use disorders in the studied population.

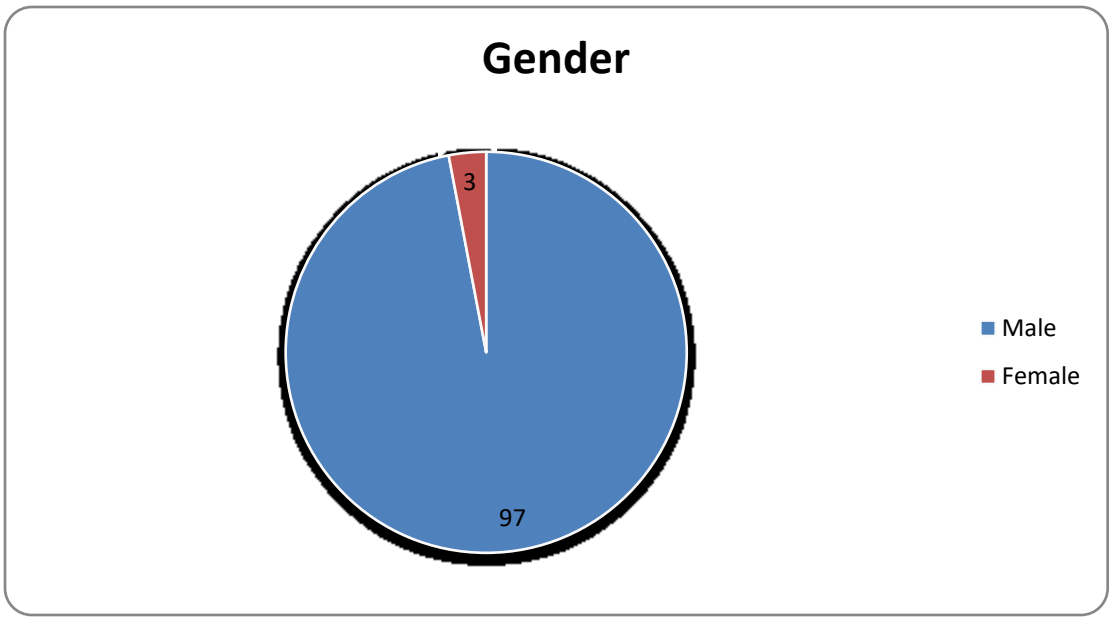

Figure 2: Gender distribution

Table 3: Age of Onset (years)

Age of Onset	Frequency	Percentage
≤18 years	25	**25%**
19–22 years	36	**36%**
23–26 years	18	**18%**
27–30 years	11	**11%**
>30 years	10	**10%**
Total	**100**	**100%**
Age of Onset (years)	**21.78 ± 5.46 years**.	

The age of onset of substance use among the participants reveals that most individuals began using substances during late adolescence or early adulthood. The largest proportion of participants (36%) reported initiating substance use between the ages of 19 and 22 years. This was followed by 25% of participants who began using substances at or before 18 years of age. Additionally, 18% reported an onset between 23 and 26 years, while 11% initiated substance use between 27 and 30 years. Only 10% began using substances after the age of 30. The mean age of onset was found to be 21.78 ± 5.46 years, indicating that substance use typically begins during early adulthood. Early initiation of substance use may increase vulnerability to long-term dependence and relapse.

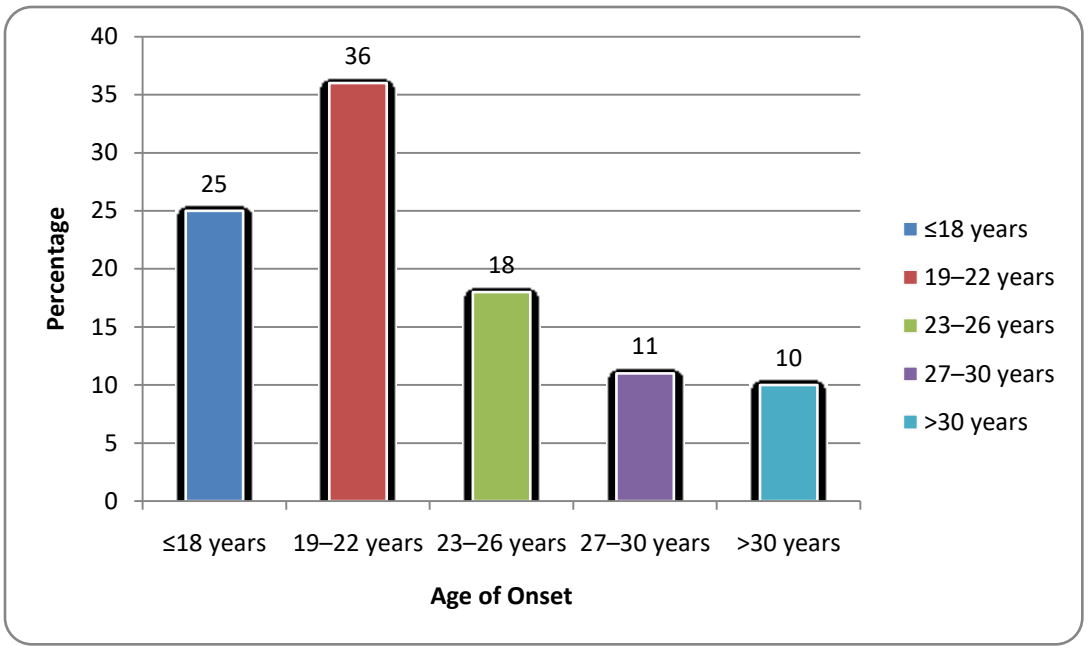

Figure 3: Age of onset

Table 4: Occupation Status

Occupation	Frequency	Percentage
Present	74	74.0%
Absent	26	26.0%
Total	**100**	**100%**

The occupational status of the participants shows that a majority were employed at the time of the study. Out of the total participants, 74% reported having an occupation, while 26% were unemployed. This indicates that most individuals experiencing relapse were engaged in some form of employment. However, despite being employed, these individuals still experienced relapse, suggesting that employment alone may not serve as a protective factor against substance use relapse. Other psychosocial or environmental factors may contribute to relapse even among those who are employed.

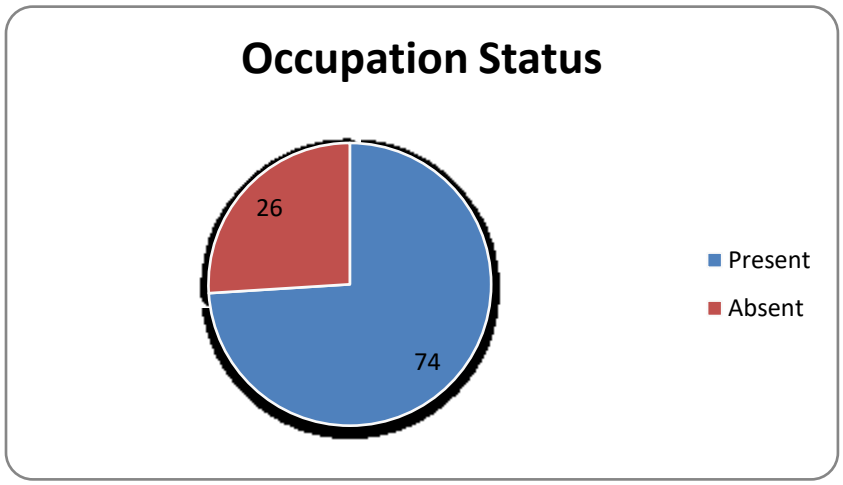

Figure 4: Occupation status

Table 5: Education Level

Education	Frequency	Percentage
Primary	17	17.0%
High School	33	33.0%
Graduate	45	45.0%
Postgraduate	5	5.0%
Total	**100**	**100%**

The educational status of the participants demonstrates that most individuals had attained at least a secondary level of education. Among the participants, 45% were graduates, representing the largest proportion. This was followed by 33% who had completed high school education. Additionally, 17% had only primary education, while a small proportion of 5% had postgraduate qualifications. The findings indicate that substance use relapse occurs across various educational levels, including among individuals with higher education. This suggests that educational attainment alone may not necessarily protect individuals from developing or relapsing into substance use disorders.

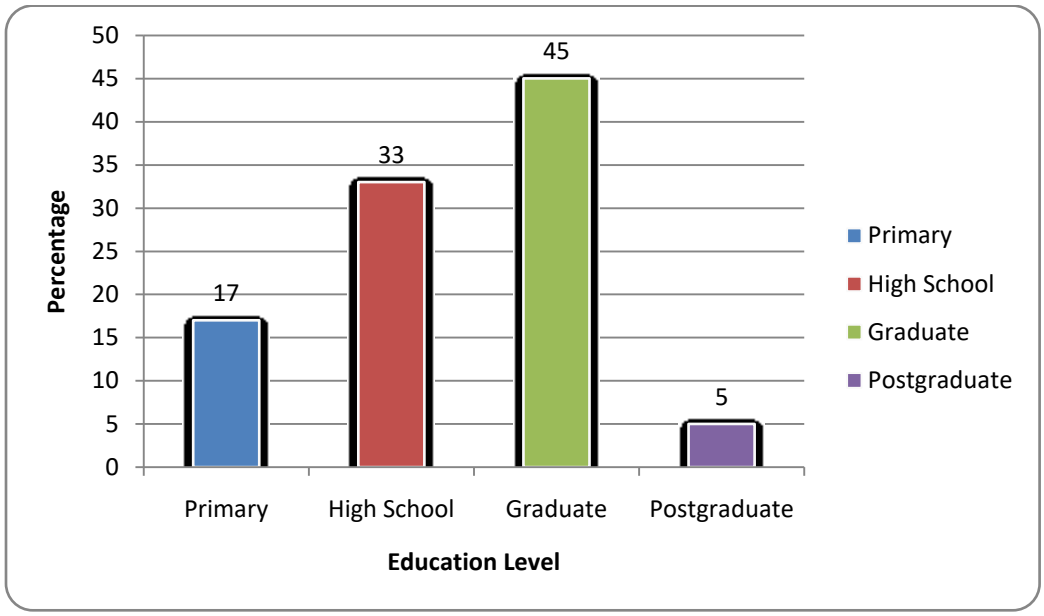

Figure 5: Education Level

Table 6: Marital Status

Marital Status	Frequency	Percentage
Married	65	65.0%
Single	34	34.0%
Divorced	1	1.0%
Total	**100**	**100%**

The marital status distribution reveals that the majority of participants were married. Among the 100 participants, 65% were married, while 34% were single and 1% was divorced. The higher proportion of married individuals suggests that relapse in substance use disorder occurs even among individuals with family responsibilities. Marital and family stress, interpersonal conflicts, or social pressures may contribute to relapse among married individuals. The presence of only one divorced participant indicates that divorce was relatively uncommon in the study population.

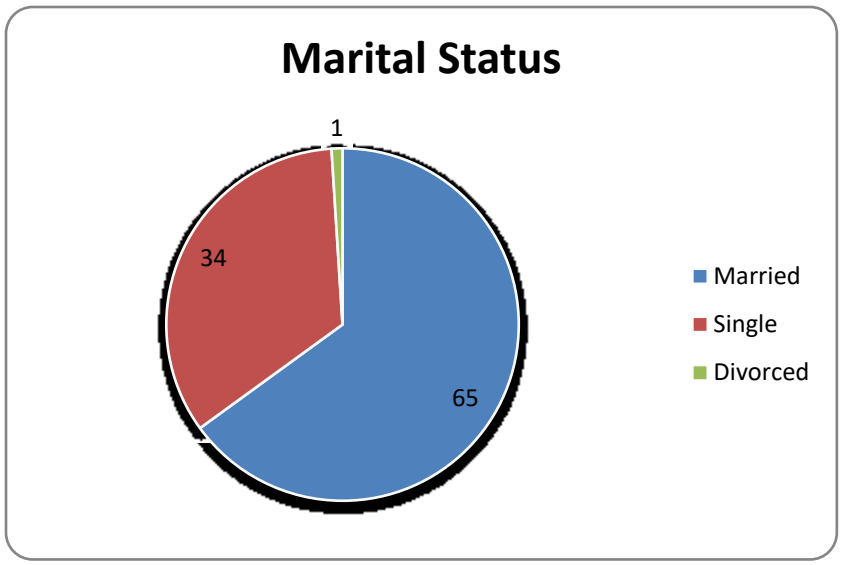

Figure 6: Marital status

Table 7 : Parental Status

Parental Status	Frequency	Percentage
Present Parents	71	71.0%
Absent Parents	24	24.0%
Single Parent	5	5.0%
Total	**100**	**100%**

The parental status of participants indicates that most individuals came from families where both parents were present. Among the participants, 71% reported having both parents present, while 24% reported the absence of parents. Additionally, 5% of participants were raised in single-parent families. The presence of both parents in the majority of cases suggests that family structure alone may not necessarily prevent substance use relapse. However, individuals from absent or single-parent families may still experience additional psychosocial challenges that could contribute to substance use behaviors.

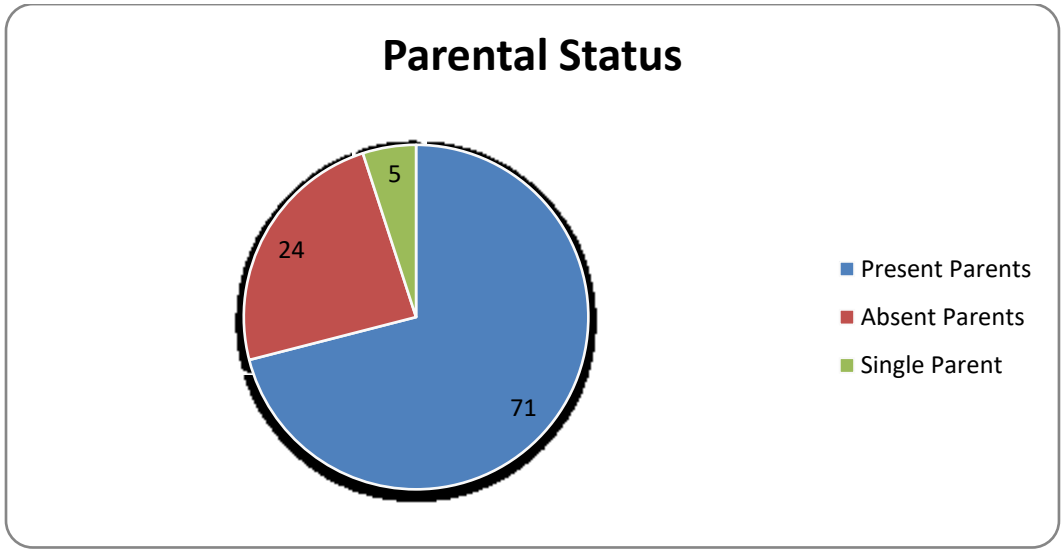

Figure 7: Parental status

Table 8 :Psychiatric Comorbidity

Psychiatric Comorbidity	Frequency	Percentage
None	67	67.0%
Anxiety	18	18.0
Depression	15	15.0
Total	**100**	**100%**

The distribution of psychiatric comorbidities among the participants indicates that more than half did not report any psychiatric condition. Specifically, 67% of the participants had no psychiatric comorbidity. Among those with comorbid conditions, anxiety was reported by 18% of participants, while depression was reported by 15%. The presence of psychiatric disorders such as anxiety and depression among a significant proportion of participants suggests that mental health conditions may contribute to the risk of relapse in substance use disorder. Psychological distress and emotional difficulties may increase vulnerability to substance use as a coping mechanism.

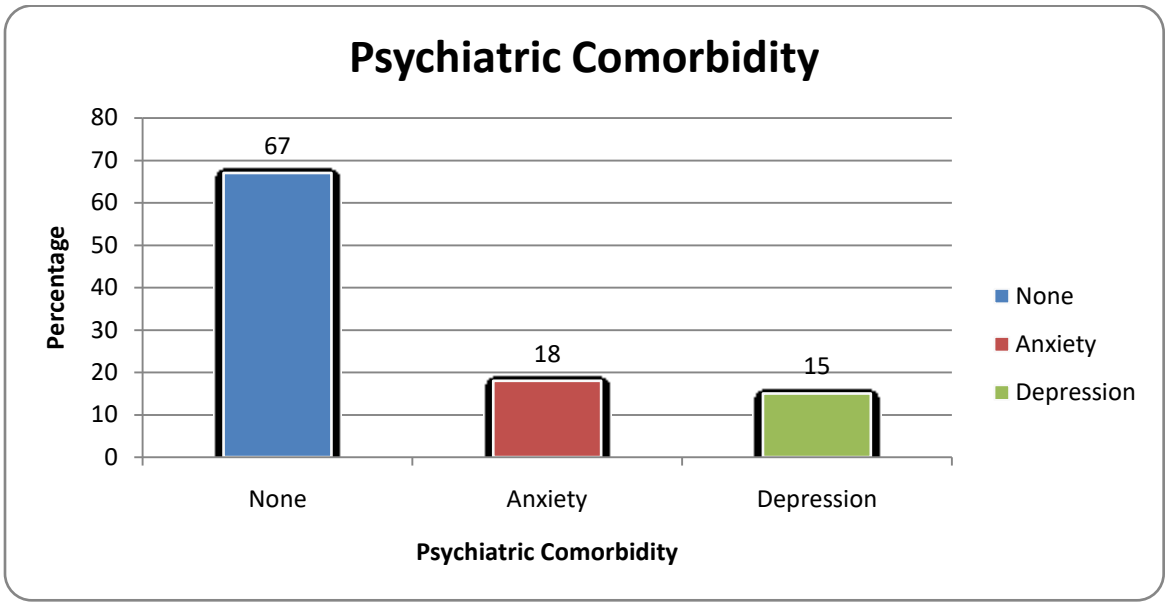

Figure 8: Psychiatric Comorbidity

Table 9. Family History

Family History	Frequency	Percentage
Yes	52	52.0%
No	48	48.0%
Total	**100**	**100%**

The data regarding family history reveal that slightly more than half of the participants had a family history of substance use. Among the participants, 52% reported a positive family history, while 48% reported no such history. The presence of substance use in family members may influence individuals through genetic predisposition, environmental exposure, or learned behaviors. This finding suggests that family background may play a role in the development and relapse of substance use disorders.

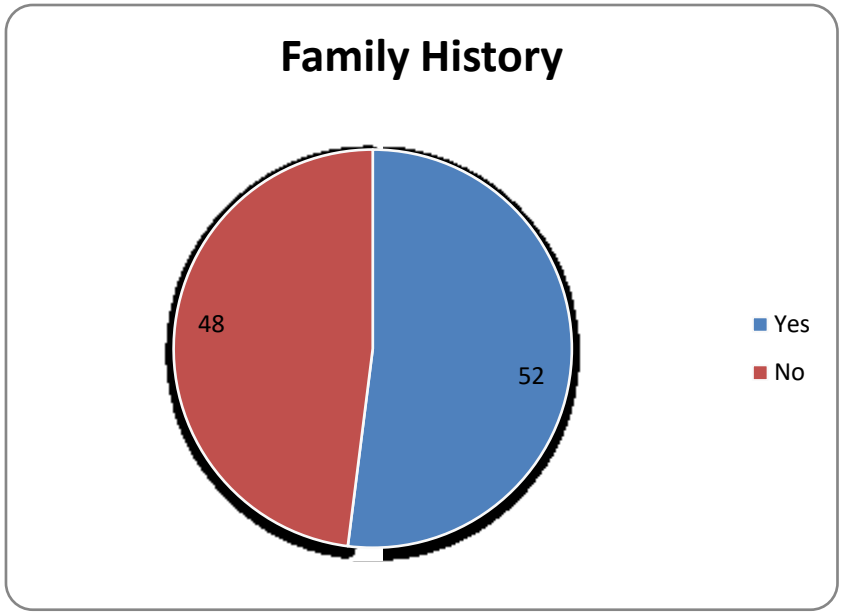

Figure 9: Family history

Table 10. Peer Pressure

Peer Pressure	Frequency	Percentage
Yes	73	73.0%
No	27	27.0%
Total	**100**	**100%**

Peer pressure was reported as a significant factor among the participants. In this study, 73% of participants reported experiencing peer pressure related to substance use, while 27% did not report such influence. The high proportion of individuals reporting peer pressure suggests that social influences and peer networks play an important role in substance use behaviors and relapse. Peer encouragement or exposure to substance-using groups may increase the likelihood of continued use or relapse after treatment.

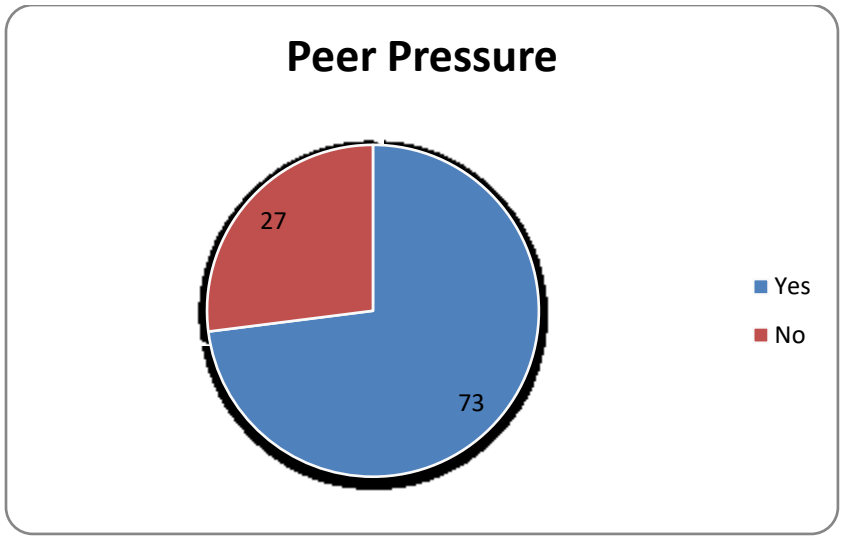

Figure 10 : Peer Pressure

Table 11. Craving Severity

Craving Level	Score Range	Frequency	Percentage
Mild	**1–3**	12	**12%**
Moderate	**4–6**	43	**43%**
Severe	**7–10**	45	**45%**
Total		**100**	**100%**
Craving Score		6.07 ± 1.95	

The severity of craving among the participants was assessed using a scoring system ranging from 1 to 10. The results show that 45% of participants experienced severe craving with scores between 7 and 10, representing the largest group. Additionally, 43% reported moderate craving with scores between 4 and 6, while only 12% reported mild craving with scores between 1 and 3. The mean craving score was 6.07 ± 1.95, indicating an overall moderate to severe level of craving among participants. These findings highlight that strong cravings are a common experience among individuals with substance use disorders and may significantly contribute to relapse.

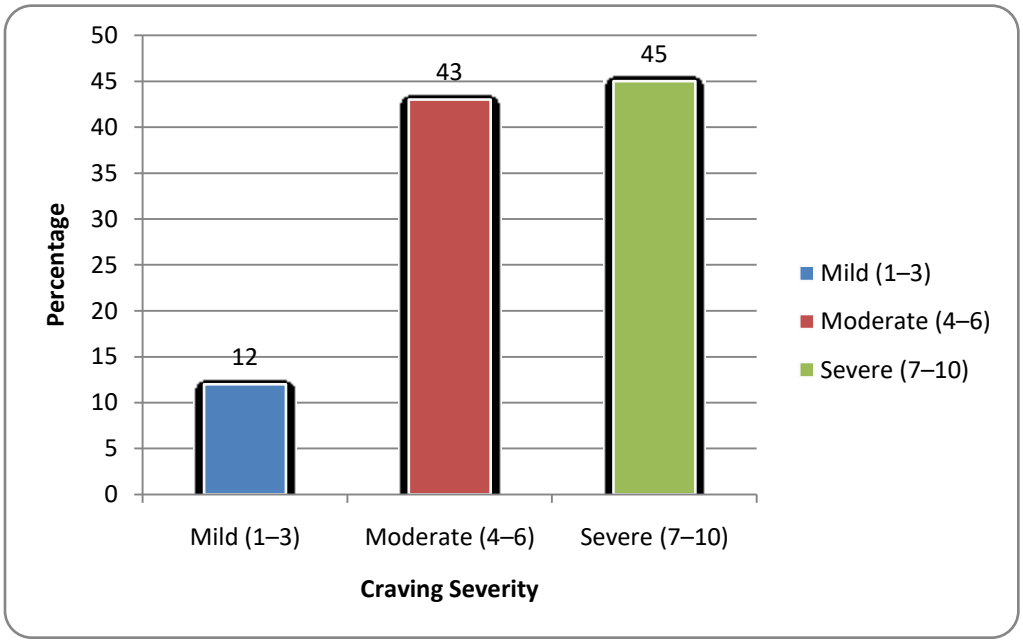

Figure 11: Craving Severity

Table 12. Treatment Adherence

Treatment Adherence	Frequency	Percentage
Good	53	53.0%
Poor	47	47.0%
Total	**100**	**100%**

The distribution of treatment adherence among participants shows that slightly more than half demonstrated good adherence to treatment. Specifically, 53% of participants reported good adherence, while 47% reported poor adherence. Although the majority adhered to treatment, the relatively high proportion of poor adherence indicates that many individuals struggle to consistently follow treatment recommendations. Poor adherence to treatment programs, medication, or counseling may increase the likelihood of relapse in substance use disorders.

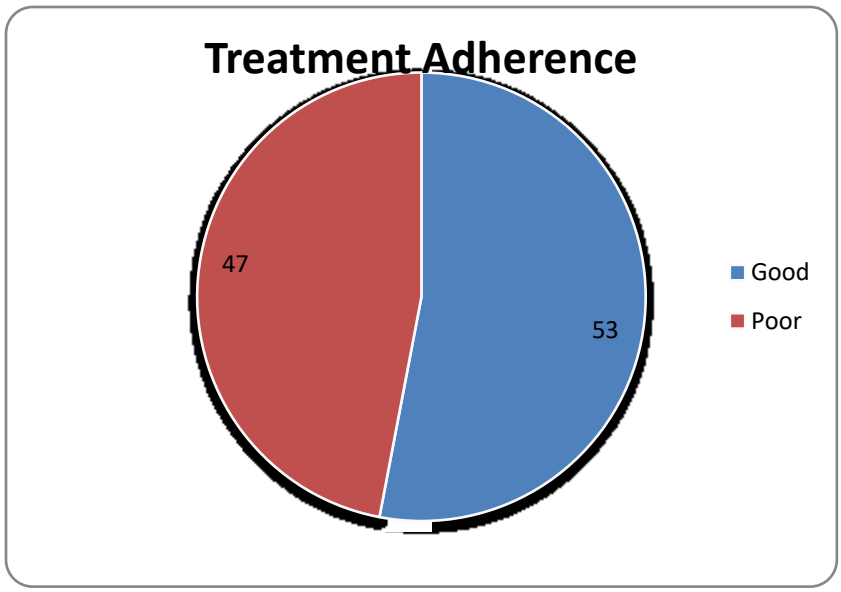

Figure 12: Treatment Adherence

Table 13: Exposure to Triggers

Exposure to triggers	Frequency	Percentage
Yes	53	53.0%
No	47	47.0%
Total	**100**	**100%**

Exposure to triggers was reported by nearly half of the participants. Among the participants, 53% reported exposure to triggers that could provoke substance use, while 47% reported no such exposure. Triggers may include environmental cues, emotional stress, social situations, or exposure to substances. The findings suggest that exposure to relapse triggers remains a common challenge for individuals recovering from substance use disorder and may significantly influence relapse risk.

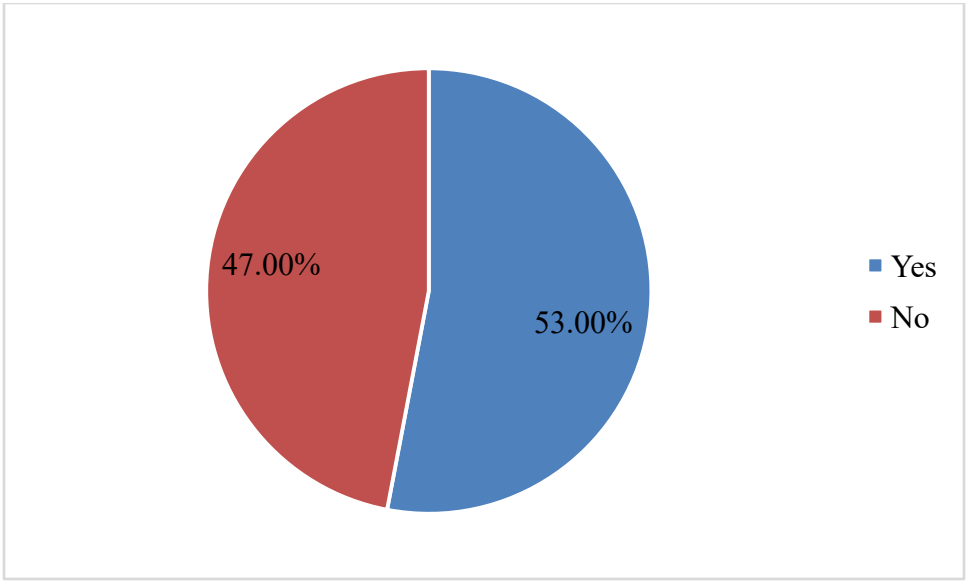

Figure 13: Exposure to Triggers

Table 14. Stressful Events

Stressful Events	Frequency	Percentage
Yes	49	49.0%
No	51	51.0%
Total	**100**	**100%**

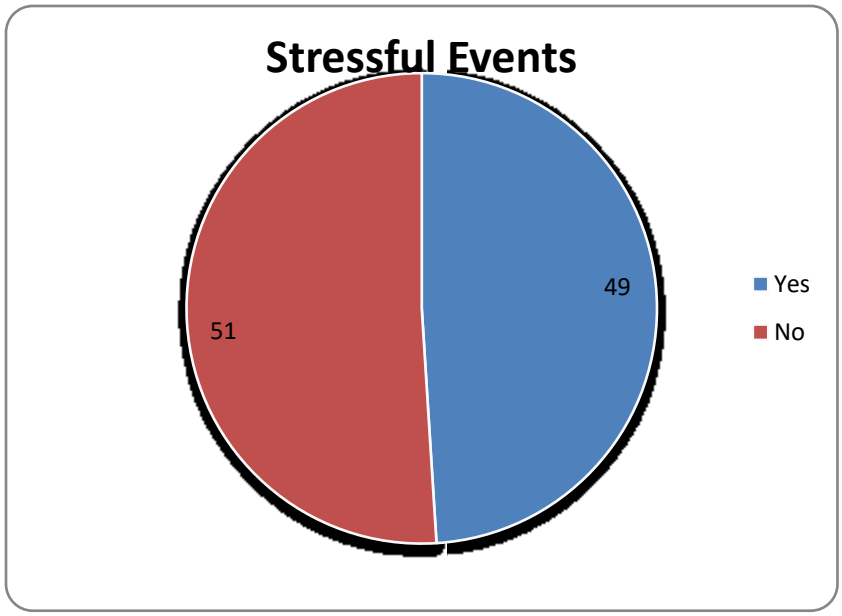

Figure 14: Stressful Events

The data regarding stressful life events indicate that 49% of participants experienced significant stress prior to relapse, while 51% reported no such events. The nearly equal distribution suggests that stressful life circumstances may play an important role in relapse for a substantial proportion of individuals. Stress can act as a psychological trigger that increases vulnerability to substance use as a coping mechanism.

Table15 :Type of Substance Used

Substance	Frequency	Percentage
Alcohol	94	94%
Cannabis	5	5%
Opioids	3	3%
Benzodiazepines	1	1%

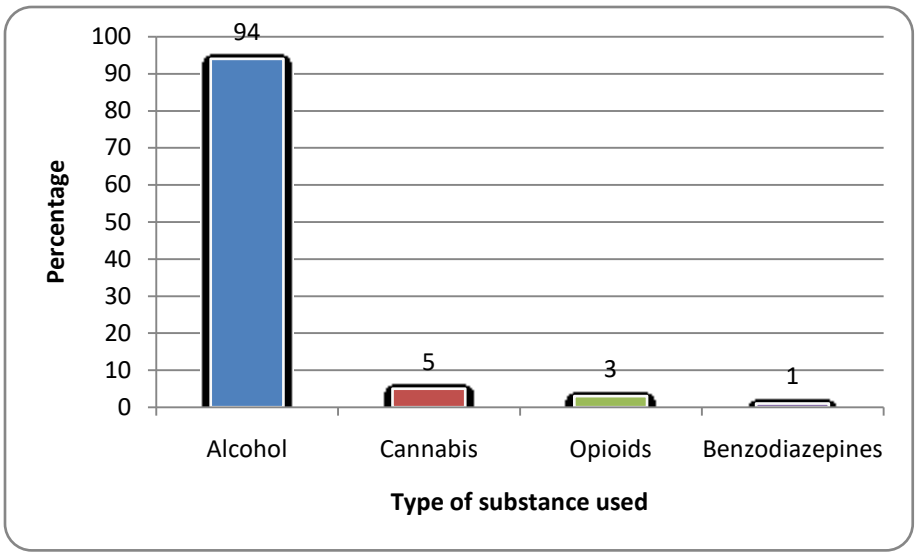

Figure 15: Type of Substance used

The distribution of substances used among participants reveals that alcohol was the most commonly used substance. A large majority of participants (91%) reported alcohol use. Cannabis use was reported by 5% of participants, while 3% reported opioid use and 1% reported benzodiazepine use. The predominance of alcohol use suggests that alcohol dependence is the most common form of substance use disorder among the participants in this study.

Table 16. Duration of Abstinence (months)

Duration	Frequency	Percentage
≤3 months	41	**41%**
4–6 months	9	**9%**
7–9 months	26	**26%**
≥10 months	24	**24%**
Total	**100**	**100%**
Duration of Abstinence (months)	**6.13 ± 3.78 months**	

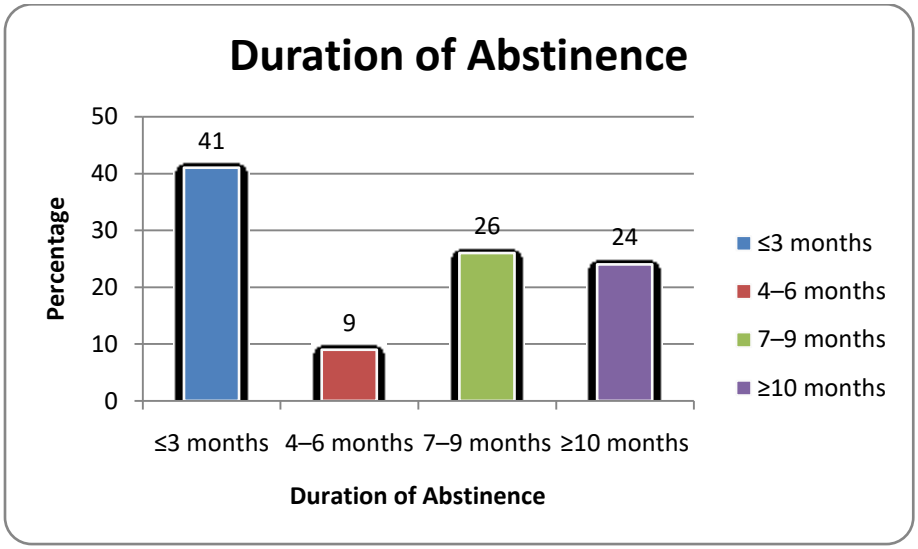

Figure 16: Duration of Abstinence

The duration of abstinence before relapse varied among the participants. The largest proportion, 41%, reported abstinence for three months or less before relapse. Additionally, 26% remained abstinent for 7–9 months, while 24% maintained abstinence for ten months or more. Only 9% reported abstinence lasting 4–6 months. The mean duration of abstinence was 6.13 ± 3.78 months. These findings indicate that relapse frequently occurs within the early months following abstinence, highlighting the importance of continuous support and monitoring during this critical period.

Table 17: Number of Relapses

Number of Relapses	Frequency	Percentage
1–2	54	54%
3–4	26	26%
≥5	20	20%
Total	**100**	**100%**
Relapses	**2.63 ± 1.62**	

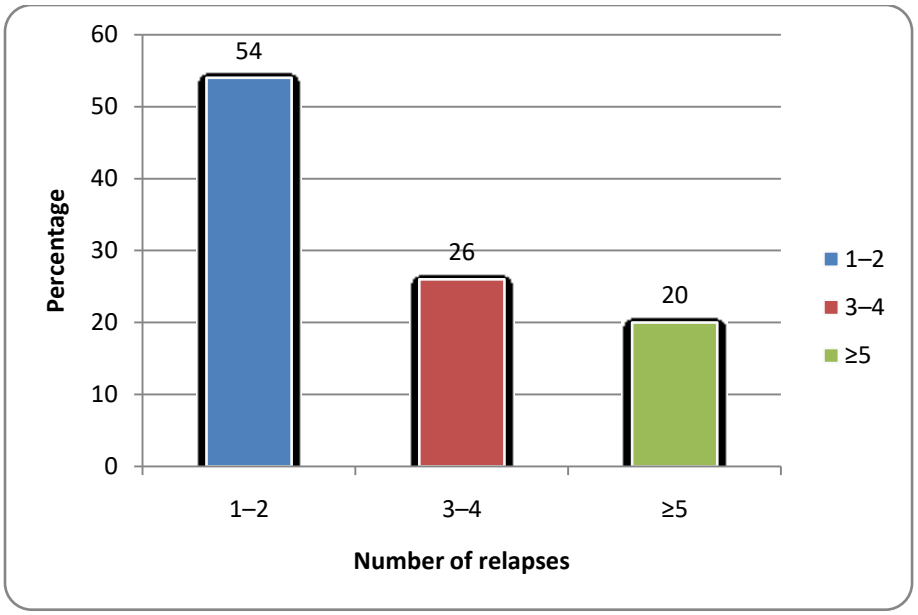

Figure 17: Number of relapses

The number of relapses experienced by participants shows that more than half had relapsed one to two times. Specifically, 54% reported experiencing one to two relapses, while 26% had three to four relapses. Additionally, 20% reported five or more relapses. The mean number of relapses was 2.63 ± 1.62, indicating that repeated relapse is relatively common among individuals with substance use disorder. These findings highlight the chronic and recurrent nature of substance use disorders, emphasizing the need for long-term treatment and relapse prevention strategies.

Table 18: Association Between Age Group andNumber of Relapses

Age Group	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
≤40 years	**22 (34.4)**	**42 (65.6)**	**64 (100)**	$\chi^2 = 0.011$	**0.916**
>40 years	**12 (33.3)**	**24 (66.7)**	**36 (100)**		
Total	**34 (34.0)**	**66 (66.0)**	**100 (100)**		

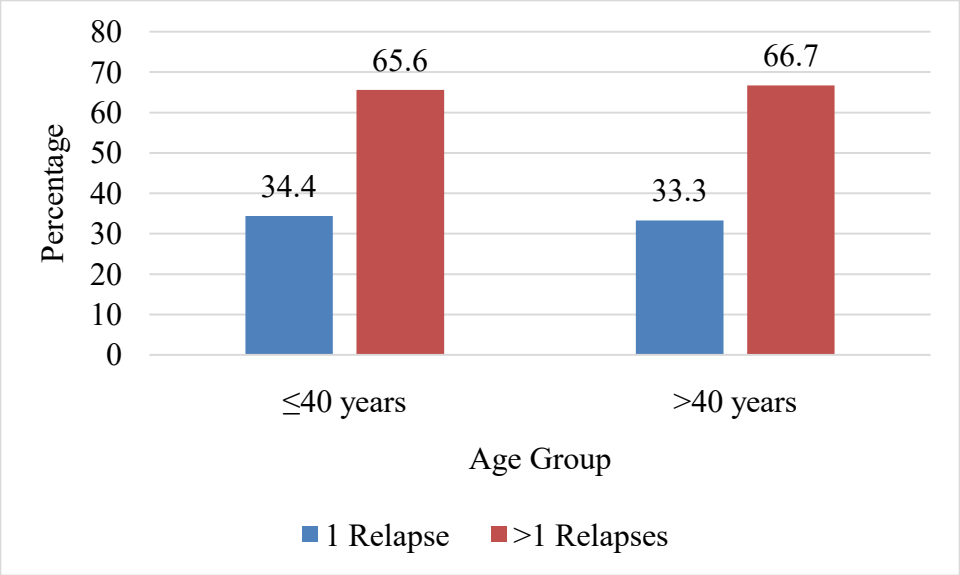

Figure 18: Association Between Age Group andNumber of Relapses

Table 19: Association Between Age of Onset and Number of Relapses

Age of Onset	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
≤20 years	24 (57.1)	18 (42.9)	42 (100)	$\chi^2 = 17.284$	<0.001
>20 years	10 (17.2)	48 (82.8)	58 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

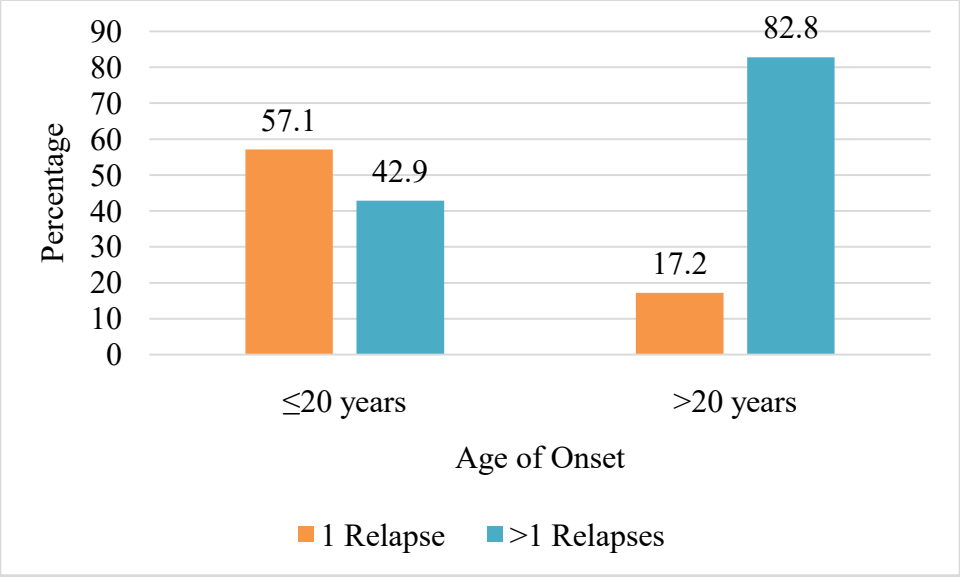

Figure 19: Association Between Age of Onset and Number of Relapses

Table 20. Association Between Gender and Number of Relapses

Gender	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
Female	2 (66.7)	1 (33.3)	3 (100)	Fisher's Exact	0.266
Male	32 (33.0)	65 (67.0)	97 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

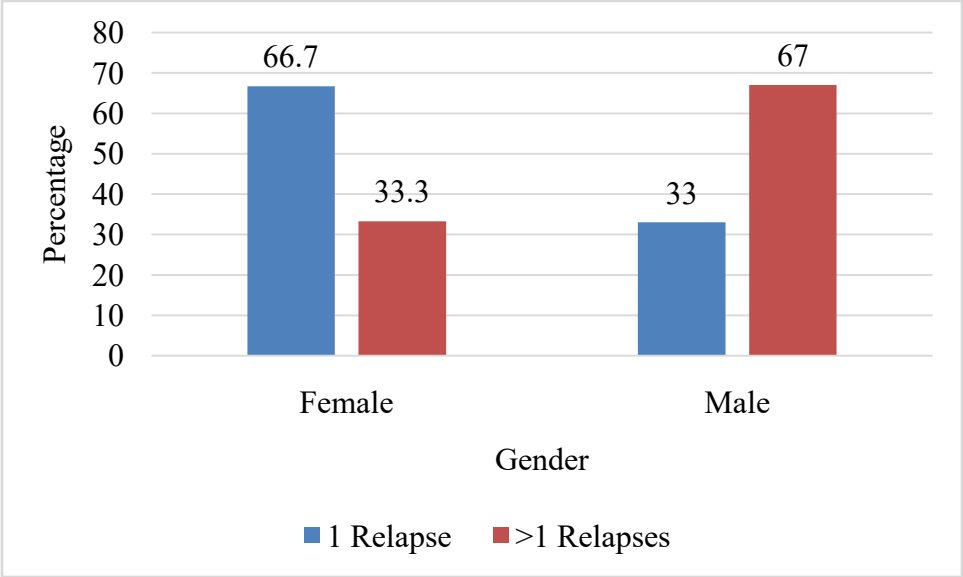

Figure 20. Association Between Gender and Number of Relapses

Table 21:Association Between Occupation Status and Number of Relapses

Occupation	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
Absent	0 (0.0)	26 (100.0)	26 (100)	Fisher's Exact	<0.001
Present	34 (45.9)	40 (54.1)	74 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

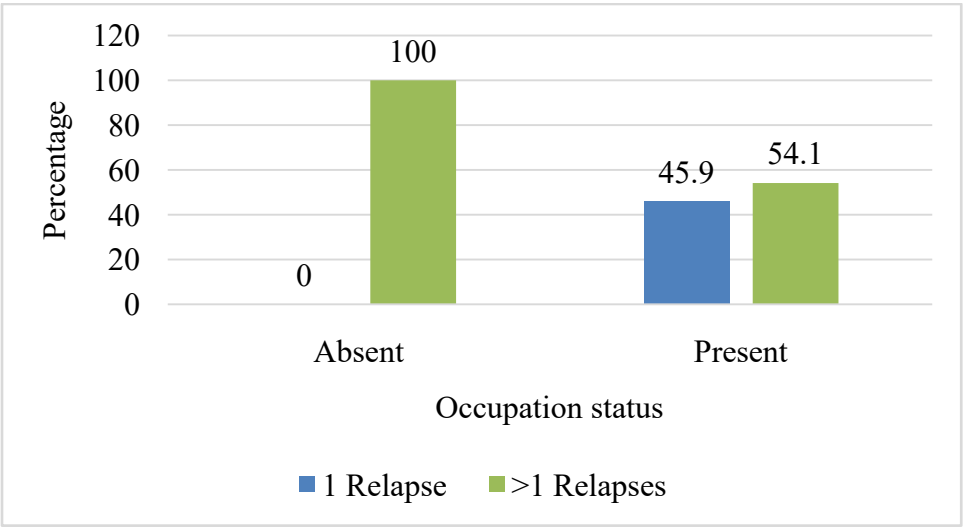

Figure21: Association Between Occupation Status and Number of Relapses

Table 22: Association Between Education Level and Number of Relapses

Education	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
Primary	4 (23.5)	13 (76.5)	17 (100)	Fisher's Exact	<0.001
High school	4 (12.1)	29 (87.9)	33 (100)		
Graduate	21 (46.7)	24 (53.3)	45 (100)		
Postgraduate	5 (100.0)	0 (0.0)	5 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

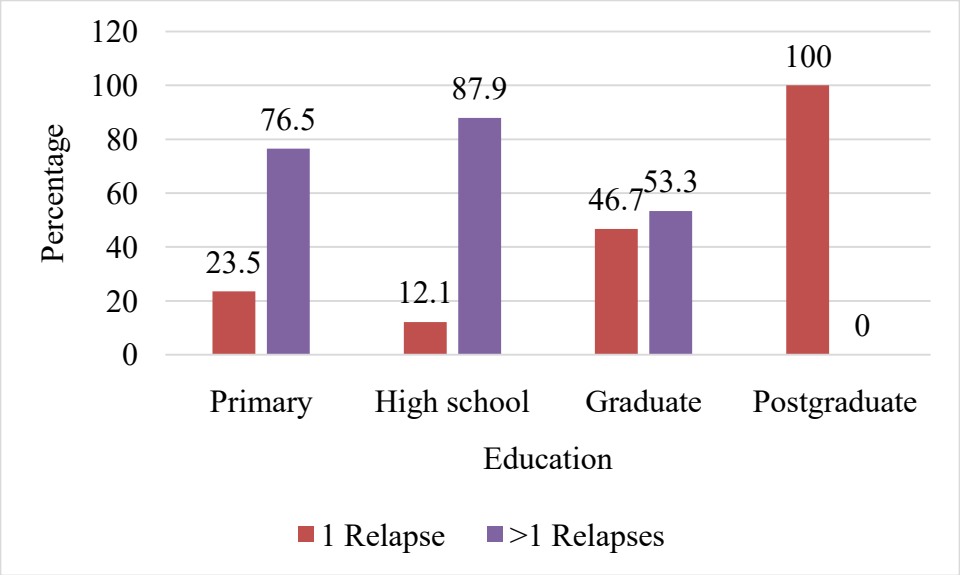

Figure22: Association Between Education Level and Number of Relapses

Table 23: Association Between Marital Status and Number of Relapses

Marital Status	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
Single	26 (76.5)	8 (23.5)	34 (100)	Fisher's Exact	<0.001
Married	8 (12.3)	57 (87.7)	65 (100)		
Divorced	0 (0.0)	1 (100.0)	1 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

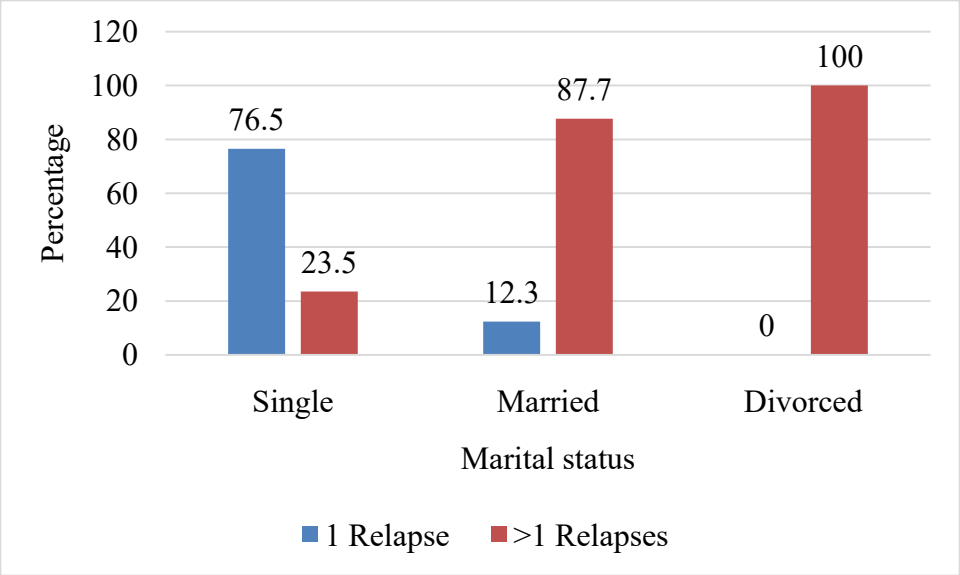

Figure 23: Association Between Marital Status and Number of Relapses

Table 24: Association Between Parental Status and Number of Relapses

Parental Status	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
Absent	0 (0.0)	24 (100.0)	24 (100)	Fisher's Exact	<0.001
Present	34 (47.9)	37 (52.1)	71 (100)		
Single parent	0 (0.0)	5 (100.0)	5 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

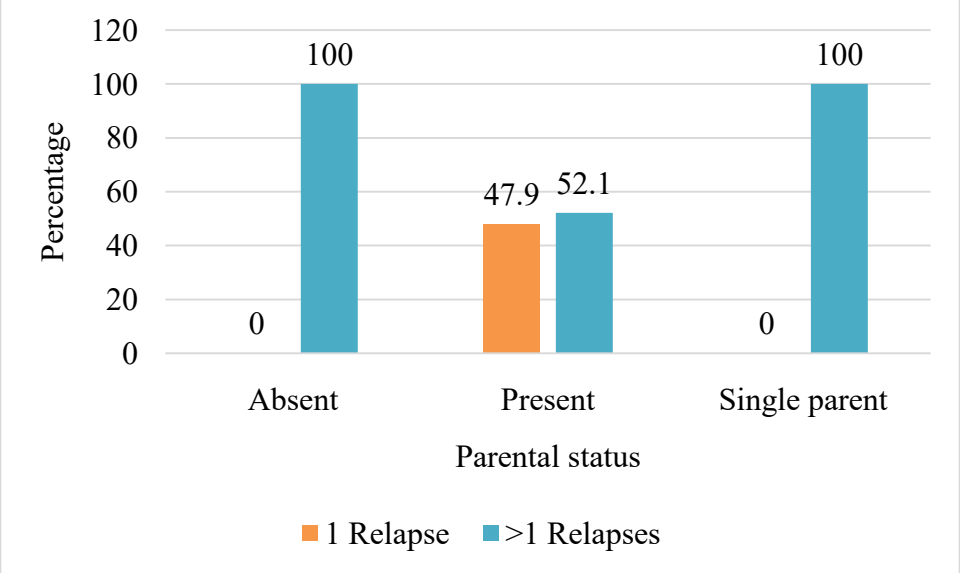

Figure 24: Association Between Parental Status and Number of Relapses

Table 25: Association Between Psychiatric Comorbidity and Number of Relapses

Psychiatric Comorbidity	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
None	26 (38.8)	41 (61.2)	67 (100)	Fisher's Exact Test	0.339
Anxiety	4 (22.2)	14 (77.8)	18 (100)		
Depression	4 (26.7)	11 (73.3)	15 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

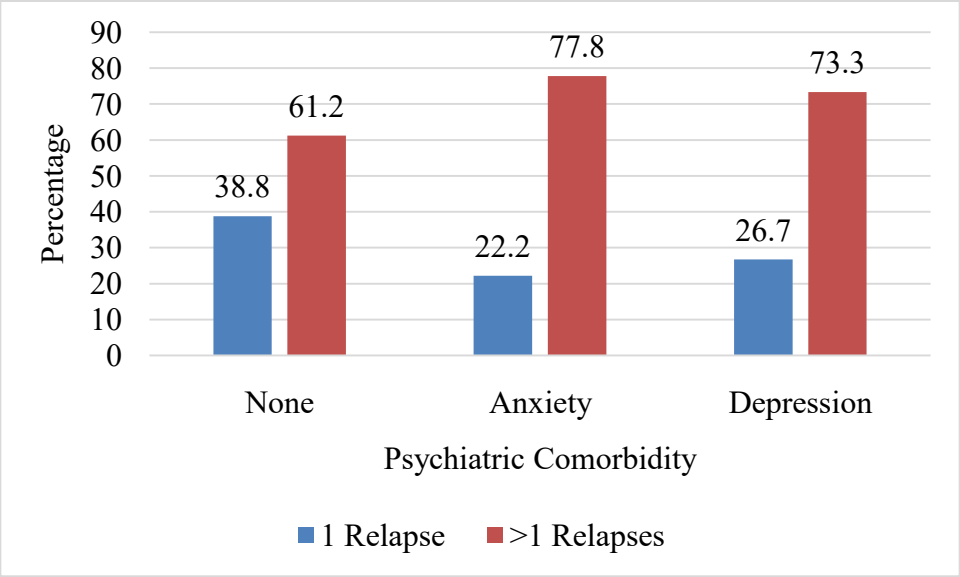

Figure 25: Association Between Psychiatric Comorbidity and Number of Relapses

Table 26: Association Between Family History and Number of Relapses

Family History	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
No	32 (66.7)	16 (33.3)	48 (100)	Fisher's Exact	<0.001
Yes	2 (3.8)	50 (96.2)	52 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

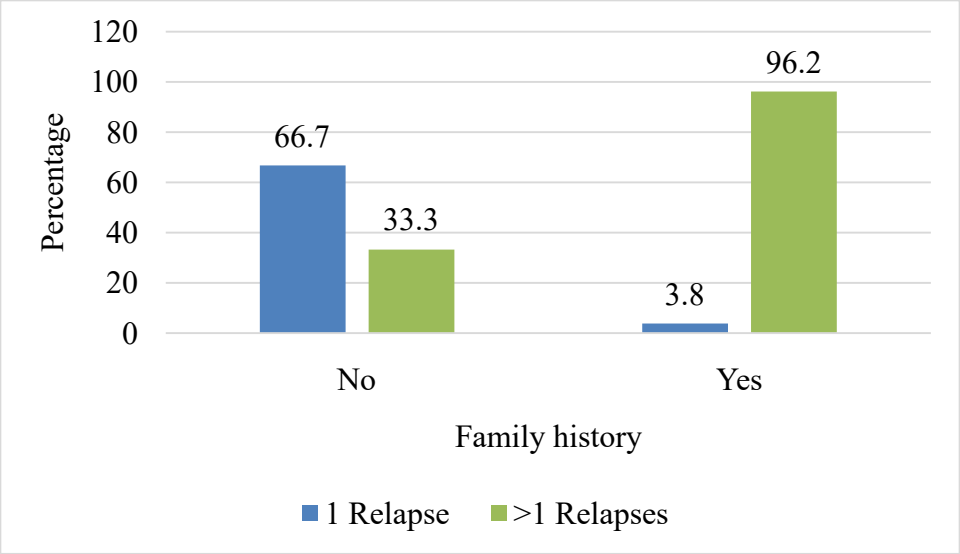

Figure 26: Association Between Family History and Number of Relapses

Table 27: Association Between Peer Pressure and Number of Relapses

Peer Pressure	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
No	23 (85.2)	4 (14.8)	27 (100)	Fisher's Exact	<0.001
Yes	11 (15.1)	62 (84.9)	73 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

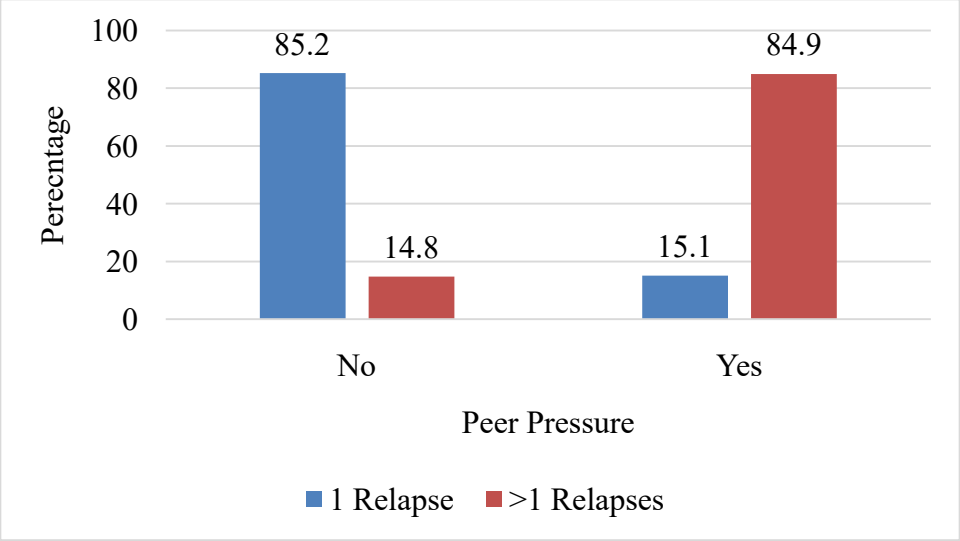

Figure 27: Association Between Peer Pressure and Number of Relapses

Table28: Association Between Stressful Events and Number of Relapses

Stressful Events	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
No	33 (64.7)	18 (35.3)	51 (100)	Fisher's Exact	<0.001
Yes	1 (2.0)	48 (98.0)	49 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

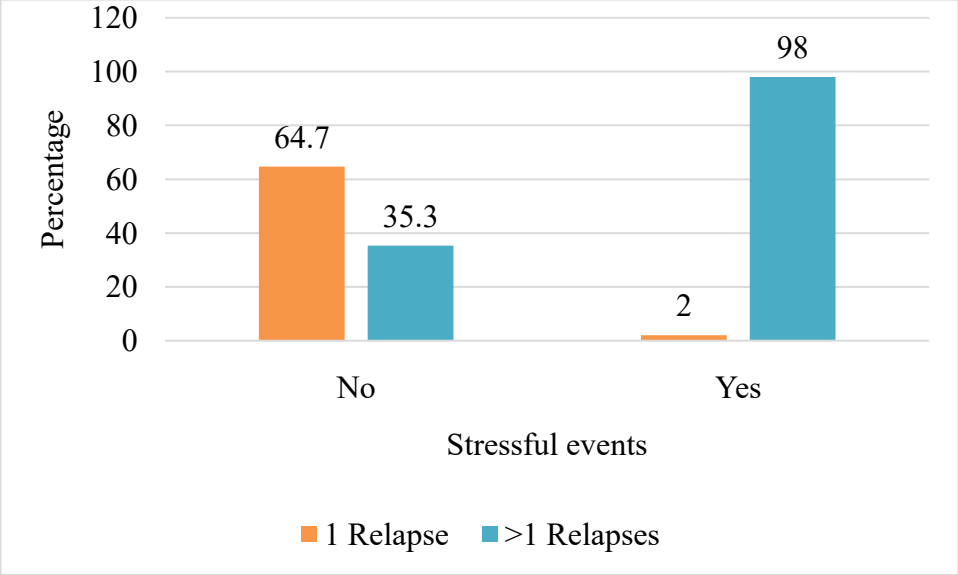

Figure 28: Association Between Stressful Events and Number of Relapses

Table 29: Association Between Type of Substance Used and Number of Relapses

Type of Substance	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
Alcohol	29 (32.2)	61 (67.8)	90 (100)	Fisher's Exact	0.228
Alcohol + Cannabis	1 (100)	0 (0)	1 (100)		
Alcohol (variant entry)	1 (100)	0 (0)	1 (100)		
Benzodiazepines	1 (100)	0 (0)	1 (100)		
Cannabis	1 (50.0)	1 (50.0)	2 (100)		
Cannabis + Alcohol	0 (0)	2 (100)	2 (100)		
Opioids	1 (33.3)	2 (66.7)	3 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

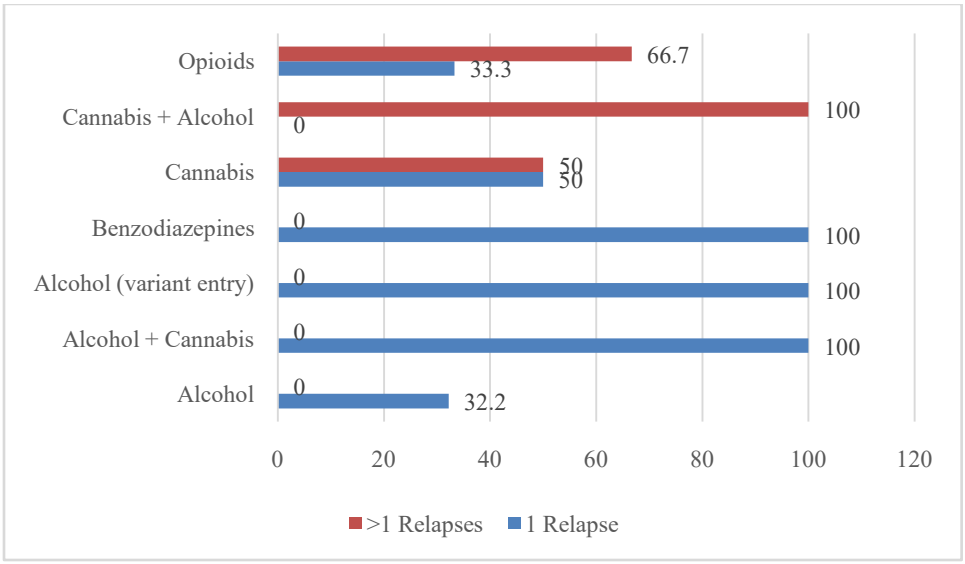

Figure 29: Association Between Type of Substance Used and Number of Relapses

Table 30: Association Between Treatment Adherence and Number of Relapses

Treatment Adherence	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
Good	34 (64.2)	19 (35.8)	53 (100)	Fisher's Exact	<0.001
Poor	0 (0.0)	47 (100.0)	47 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

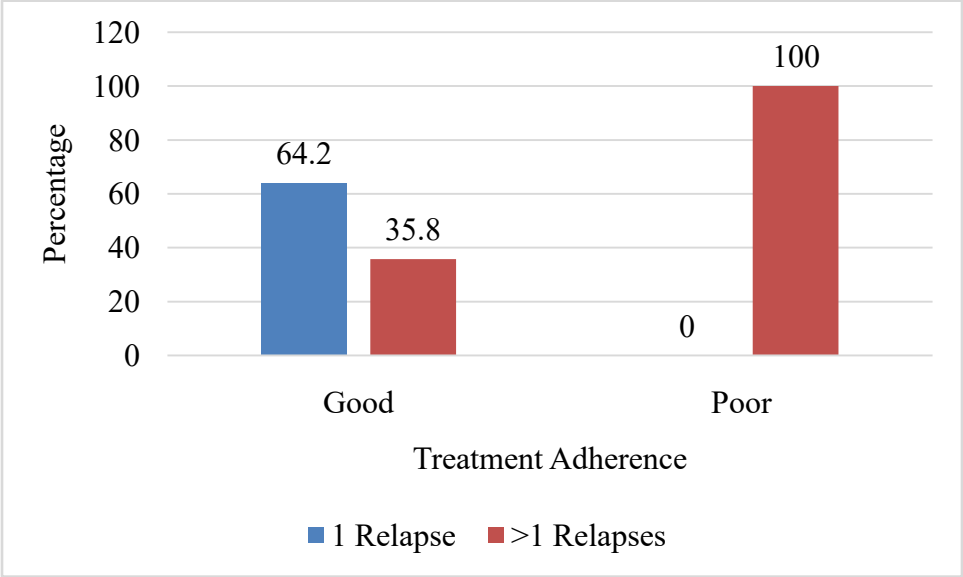

Figure 30: Association Between Treatment Adherence and Number of Relapses

Table 31: Association Between Exposure to Triggers and Number of Relapses

Exposure to Triggers	1 Relapse n (%)	>1 Relapses n (%)	Total n (%)	Test	P-value
No	34 (64.2)	19 (35.8)	53 (100)	Fisher's Exact	<0.001
Yes	0 (0.0)	47 (100.0)	47 (100)		
Total	34 (34.0)	66 (66.0)	100 (100)		

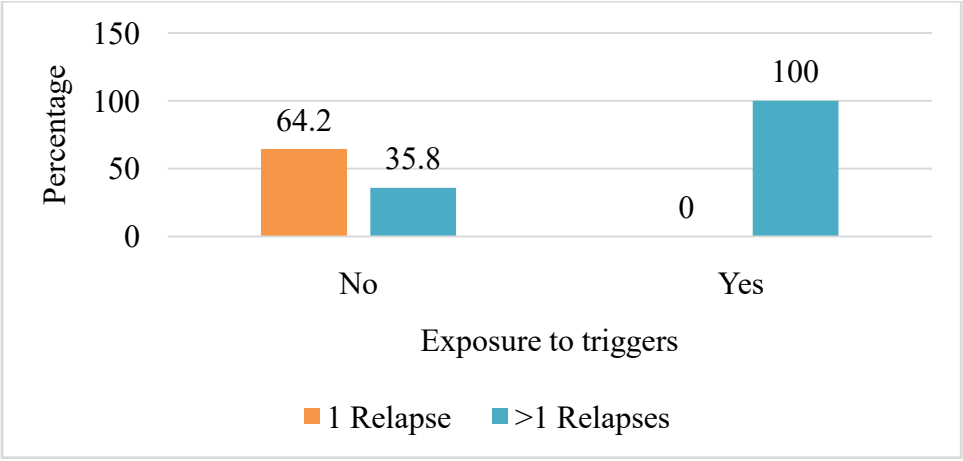

Figure 31: Association Between Exposure to Triggers and Number of Relapses

Limitations of the Study:-

The present study has several limitations that should be considered while interpreting the findings. Firstly, the study was conducted using a cross-sectional research design, which limits the ability to establish causal relationships between the identified factors and relapse in substance use disorder. The findings therefore only indicate associations rather than direct cause-and-effect relationships. Secondly, the study was carried out among a relatively small sample size of 100 participants, which may limit the generalizability of the results to a larger population.
Another limitation is that the study was conducted in a single clinical setting, which may not fully represent the experiences of individuals with substance use disorders in other regions or treatment centers. Cultural, social, and environmental differences in other settings may influence relapse factors differently. Additionally, the data collected in the study relied largely on self-reported information from participants. Self-reporting may lead to recall bias, underreporting, or social desirability bias, particularly when discussing sensitive topics such as substance use, peer pressure, or psychological issues.

Furthermore, certain potentially influential factors such as family support, severity of dependence, coping mechanisms, and availability of rehabilitation services were not explored in depth in the present study. These factors may also contribute significantly to relapse among substance use disorder patients. Finally, the limited representation of female participants in the sample restricts the ability to understand gender-specific patterns of relapse.

Recommendations:-

Based on the findings of the present study, several recommendations can be made for clinical practice, research, and policy development. Firstly, healthcare professionals should focus on early identification and management of risk factors such as peer pressure, psychological distress, cravings, and stressful life events, as these factors appear to play an important role in relapse among substance use disorder patients. Counseling and psychosocial interventions should be strengthened to help individuals develop effective coping strategies for managing triggers and cravings.

Secondly, relapse prevention programs should be incorporated as an integral part of substance use disorder treatment. Continuous follow-up care, support groups, and behavioral therapy may help individuals maintain long-term abstinence and reduce the risk of repeated relapse. Healthcare providers should also emphasize the importance of treatment adherence, as poor adherence may increase vulnerability to relapse.Thirdly, family-based interventions should be encouraged to enhance family support and awareness regarding substance use disorders. Educating family members about relapse triggers and recovery processes may help create a supportive environment for patients undergoing treatment.

Further research is recommended with larger sample sizes and multi-center settings to improve the generalizability of findings. Longitudinal or prospective studies may also be conducted to better understand the causal relationship between various risk factors and relapse in substance use disorder. In addition, future studies should include a more balanced representation of male and female participants to explore gender-related differences in relapse patterns.

Conclusion:-

The present study aimed to identify the factors leading to relapse among patients with substance use disorder using a cross-sectional research design. The findings revealed that relapse was more common among middle-aged adults and predominantly among male participants. Early initiation of substance use, particularly during adolescence and early adulthood, was observed among a large proportion of participants, suggesting that early exposure to substances may contribute to long-term dependence and relapse. Several psychosocial factors were identified as important contributors to relapse. Peer pressure was reported by a significant proportion of participants, indicating the strong influence of social environments on substance use behaviors. Psychological factors such as anxiety and depression were also present among some participants, highlighting the role of mental health in relapse vulnerability. Additionally, a considerable number of individuals reported exposure to triggers, stressful life events, and moderate to severe cravings, which may increase the likelihood of relapse.

Alcohol was identified as the most commonly used substance among the participants. The study also found that many individuals experienced relapse within a relatively short duration of abstinence, emphasizing the importance of continuous monitoring and support during the recovery process. Repeated relapse episodes among several participants further highlight the chronic and recurrent nature of substance use disorders.

Overall, the findings of the study underscore the need for comprehensive treatment approaches that address psychological, social, and behavioral factors associated with relapse. Effective relapse prevention strategies, improved treatment adherence, psychosocial support, and ongoing follow-up care are essential for promoting sustained recovery among individuals with substance use disorders.

Discussion:-

The present study aimed to estimate the prevalence of relapse and identify factors associated with relapse among patients with substance use disorder. The findings revealed a high prevalence of relapse (77.9%), which is higher than the rates reported in earlier studies (40–60%)[3,4]. This variation may be attributed to differences in study setting, sample characteristics, and inclusion of patients with a history of relapse. The majority of participants in the present study were middle-aged males, which is consistent with previous literature indicating higher substance use and relapse rates among males[13]. Alcohol was the most commonly used substance, aligning with epidemiological trends observed in India and other settings[3].

Early age of onset of substance use was significantly associated with higher relapse frequency in this study. This finding is consistent with previous research suggesting that early initiation leads to greater neurobiological vulnerability and long-term dependence[12]. Neuroadaptations in reward pathways and impaired executive control may contribute to increased relapse risk in such individuals[5–6].Psychosocial factors played a significant role in relapse. Peer pressure showed a strong association with relapse, supporting existing evidence that social influences are key determinants of substance use behavior[11]. Similarly, stressful life events were significantly associated with relapse, consistent with findings that stress activates neurobiological pathways linked to craving and relapse[15]. Exposure to triggers and cue-induced craving were also strongly associated with relapse, which aligns with conditioning models of addiction[7].

Family-related factors, including family history of substance use and parental status, were significantly associated with relapse. This supports previous literature highlighting the role of familial and environmental influences in substance use disorders[10–11]. Marital status and lower educational levels were also associated with higher relapse rates, possibly reflecting psychosocial stressors and limited coping resources.Unemployment was found to be significantly associated with higher relapse frequency, which may be explained by reduced social stability and increased stress. Poor treatment adherence was another key factor associated with relapse, consistent with prior studies emphasizing the importance of continuous engagement in treatment for sustained recovery[14].

Although psychiatric comorbidities such as depression and anxiety were present among participants, no significant association was observed with relapse frequency in this study. This finding differs from some previous studies that report higher relapse rates in individuals with comorbid psychiatric conditions[8–9], possibly due to sample size or assessment differences. Relapse was most commonly observed within the early months of abstinence, which is consistent with earlier findings that identify this period as high-risk for recurrence[16]. This emphasizes the importance of close monitoring and intensive support during the initial phase of recovery. Cognitive factors such as impulsivity, impaired decision-making, and executive dysfunction may also contribute to relapse, as suggested in prior studies[17]. Additionally, systemic barriers such as stigma, lack of access to rehabilitation services, and inadequate follow-up care may further increase relapse risk[18]. Motivational factors, including readiness to change, also influence relapse outcomes, with lower motivation associated with poorer adherence and higher relapse rates[19]. Furthermore, lack of structured psychosocial interventions, including relapse prevention strategies, may increase vulnerability to relapse[20].

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