

Case Series

Familial clustering and relapse patterns in alcohol dependence syndrome: a case series of four sibling groups

Jaahnavi Golla*, Sreelatha Pasupuleti

Department of Psychiatry, PES Institute of Medical Sciences and Research, Kuppam, Andhra Pradesh, India

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*Correspondence:

Dr. Jaahnavi Golla,

E-mail: jaahnavi.gj1998@gmail.com

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ABSTRACT

Alcohol dependence syndrome (ADS) is a chronic relapsing disorder resulting from a complex interaction of genetic, environmental, and psychosocial factors, with a positive family history being a strong predictor of early onset, greater illness severity, and recurrent relapse. This case series describes four sibling groups diagnosed with alcohol dependence syndrome (ICD-10: F10.2), all of whom initiated alcohol use during their early twenties, with an age difference of two to six years between siblings. Despite variations in psychosocial background and family structure, all groups demonstrated recurrent relapses following multiple treatment attempts. Common contributing factors included shared environmental exposure, family history of alcohol dependence, permissive attitudes towards alcohol use, impulsivity, psychosocial stressors, poor motivation for abstinence, and mutual reinforcement of drinking behaviour. In one sibling pair, relapse episodes occurred almost simultaneously following similar stressors, while other families illustrated the influence of parental alcohol use, impulsivity, and differing motivations with similar relapse trajectories. These findings highlight that familial influences extend beyond genetic vulnerability to include behavioural modelling, shared stressors, and environmental reinforcement, underscoring the importance of incorporating family-centred assessment and relapse prevention strategies in the management of ADS.

Keywords: Alcohol dependence syndrome, Family history, Relapse, Siblings, Familial clustering, Addiction psychiatry

INTRODUCTION

Alcohol dependence syndrome (ADS) is one of the most prevalent substances use disorders worldwide and remains a major contributor to preventable morbidity, mortality, and socioeconomic burden. Characterised by impaired control over alcohol consumption, craving, tolerance, withdrawal symptoms, and recurrent relapse despite harmful consequences, ADS is increasingly recognised as a chronic relapsing brain disorder requiring long-term management.¹⁻³

The development of alcohol dependence is multifactorial, involving a complex interaction between genetic susceptibility and environmental influences. Twin and family studies estimate that approximately 50-60% of the risk for ADS is heritable, while the remaining risk is

attributed to environmental factors including parental modelling, early exposure to alcohol, peer influence, stressful life events, and socioeconomic adversity.⁴⁻⁷ Individuals with a positive family history frequently develop alcohol dependence at an earlier age, experience greater illness severity, demonstrate poorer treatment adherence, and have higher relapse rates than those without an affected first-degree relative.⁸

Among first-degree relatives, siblings provide a unique opportunity to examine the combined influence of shared genetic vulnerability and common environmental exposure. Siblings generally experience similar parenting practices, cultural attitudes, socioeconomic circumstances, and stressful life events, all of which may contribute to similar patterns of substance use. In addition, siblings may unintentionally reinforce one another's drinking

behaviour, consistent with principles of social learning theory, thereby increasing the risk of relapse.⁹ Despite substantial evidence supporting familial transmission of ADS, relatively few clinical reports have specifically examined relapse patterns among sibling groups in routine psychiatric practice.

The present case series describes four sibling groups diagnosed with ADS managed at a tertiary care psychiatry centre. Although each family demonstrated distinct psychosocial characteristics, all exhibited recurrent relapses despite multiple treatment attempts. By highlighting common relapse patterns and shared familial vulnerabilities, this case series emphasises the importance of integrating family-centred interventions into the long-term management of ADS.

CASE SERIES

Four sibling groups diagnosed with ADS (ICD-10: F10.2) were identified during routine clinical practice at a tertiary care psychiatry centre. Within each family, the age difference between siblings ranged from 2 to 6 years, and all had initiated alcohol consumption during their early twenties. Despite differences in psychosocial circumstances and patterns of alcohol use, all families demonstrated recurrent relapses following treatment, suggesting the influence of shared familial vulnerability. The clinical characteristics of each sibling group are described below.

Family 1

The first family comprised two brothers diagnosed with ADS (ICD-10: F10.2). Both initiated alcohol consumption during their early twenties, initially describing alcohol use as a coping mechanism for interpersonal conflicts and financial stress. Over time, alcohol use progressed to dependence, requiring multiple inpatient admissions for de-addiction treatment.

A distinctive feature in this sibling pair was the synchronised pattern of relapse. Both brothers frequently resumed alcohol consumption within days of one another, often following similar psychosocial stressors such as financial setbacks or family disputes.

Despite repeated treatment episodes, sustained abstinence was not achieved because of poor intrinsic motivation and continued reinforcement of drinking behaviour within the sibling relationship. The drinking behaviour of one brother frequently precipitated relapse in the other, illustrating the reciprocal influence siblings may exert during recovery.

Family 2

The second family consisted of four siblings, all of whom were exposed to alcohol use from an early age, where it was perceived as a normal part of family life.

Early exposure to alcohol, limited external social support, and inadequate supervision appeared to contribute to the progression of alcohol dependence in all four siblings. Multiple attempts at inpatient rehabilitation were followed by early relapse, particularly after the brothers returned to the same household following discharge. The shared living environment and continued interaction among siblings appeared to reinforce maladaptive drinking behaviour and reduce adherence to relapse prevention strategies.

Family 3

The third family comprised three brothers diagnosed with ADS (ICD-10: F10.2). Alcohol use began during their early twenties and gradually progressed to dependence. All three brothers demonstrated marked impulsivity and poor frustration tolerance throughout the course of illness.

Repeated relapses occurred within weeks of discharge from treatment and were commonly precipitated by relatively minor interpersonal disagreements or stressful life events. Insight into the illness remained poor, and motivation for long-term abstinence was limited. The siblings frequently denied the need for continued psychiatric treatment despite repeated relapses. During periods of alcohol intoxication, episodes of violent behaviour and legal problems were reported, further highlighting the impact of impulsivity on the course of illness.

Family 4

The fourth family consisted of two brothers diagnosed with ADS (ICD-10: F10.2). Both initiated alcohol consumption during their early twenties but differed in their reasons for drinking. One brother reported consuming alcohol primarily to cope with unresolved grief, whereas the other initially engaged in social drinking that gradually progressed to dependence.

Although the motivations for alcohol use differed, both brothers exhibited remarkably similar relapse patterns. Episodes of relapse were influenced by peer pressure and continued exposure to the same social environment. Periods of abstinence achieved following treatment remained brief, particularly after both siblings resumed living in the same setting. These observations suggest that common environmental influences may sustain relapse even when the initiating factors for alcohol use differ.

Comparative summary

Despite variations in family size and individual psychosocial factors, several common themes emerged across all four sibling groups. Alcohol use consistently began during the early twenties, followed by a chronic relapsing course despite repeated treatment attempts.

Shared genetic susceptibility, positive family history, permissive home environments, psychosocial stressors,

poor motivation for abstinence, and mutual reinforcement of drinking behaviour were recurrent factors contributing to relapse. These findings emphasise that relapse in ADS

cannot be explained solely by individual factors but should also be understood within the context of familial relationships and shared environmental influences.

Table 1: Comparative characteristics of the sibling groups.

Family	No. of siblings	Age gap	Age at onset	Major relapse factors	Distinctive feature
Family 1	2	2 years	Early 20s	Financial stress, interpersonal conflicts	Synchronised relapse pattern
Family 2	4	1.5 years each	Early 20s	Permissive family environment, paternal alcohol dependence	Two siblings with polysubstance use
Family 3	3	3 years between sibling 1 and 2; 6 years between 2 and 3	Early 20s	Impulsivity, poor frustration tolerance	Violent behaviour and legal issues during relapse
Family 4	2	4 years	Early 20s	Grief, peer influence, shared social environment	Different motivations with similar relapse trajectory

DISCUSSION

ADS is a chronic relapsing disorder resulting from a complex interaction of genetic, environmental, and psychosocial factors. Familial aggregation of ADS has been consistently demonstrated in epidemiological and genetic studies, with first-degree relatives of affected individuals exhibiting a significantly higher risk of developing the disorder than the general population. Twin and family studies estimate that nearly 50-60% of the vulnerability to ADS is attributable to genetic factors, while the remaining risk is influenced by environmental exposures, behavioural modelling, and psychosocial stressors.^{4,7}

The present case series demonstrates several recurring clinical patterns supporting the role of familial vulnerability in ADS. Although the four sibling groups differed in family structure and psychosocial background, all developed ADS during their early twenties and experienced recurrent relapses despite multiple treatment attempts. The similarities observed across the sibling groups suggest that shared environmental influences, common behavioural patterns, and genetic susceptibility collectively contribute to the development and persistence of ADS. These findings are consistent with the conceptualisation of substance dependence as a chronic relapsing condition requiring long-term management rather than episodic care.^{2,3}

A consistent finding across all four families was the influence of psychosocial stressors on relapse. Financial difficulties, interpersonal conflicts, unresolved grief, peer influence, and stressful family environments frequently preceded alcohol consumption. These observations align with established relapse prevention models, which emphasise the role of high-risk situations, inadequate coping skills, and emotional distress in precipitating relapse.¹⁰

Relapse rates in ADS remain high even after treatment, with longitudinal studies demonstrating frequent recurrence, particularly in individuals exposed to persistent environmental triggers and inadequate follow-up care.¹³ Chronic stress further increases vulnerability to substance use and relapse through neurobiological mechanisms involving stress-response pathways and reward circuitry.¹⁴

The influence of the family environment was particularly evident in the second sibling group, where paternal alcohol dependence and permissive attitudes towards alcohol use appeared to normalise drinking behaviour from an early age. Exposure to alcohol use within the household, combined with limited supervision and socioeconomic adversity, may increase the risk of developing ADS and contribute to recurrent relapse following treatment. Behavioural modelling within families, as described in social learning theory, remains one of the most important mechanisms underlying the intergenerational transmission of substance use disorders.¹⁵

Another notable observation was the mutual reinforcement of drinking behaviour among siblings. In several families, alcohol consumption by one sibling appeared to precipitate relapse in another, particularly after discharge from inpatient treatment when they returned to the same living environment. These findings suggest that relapse in ADS is influenced not only by individual motivation but also by ongoing exposure to family members actively consuming alcohol. Previous studies have also demonstrated high relapse rates among individuals treated for alcohol use disorders, particularly in the presence of persistent environmental triggers and inadequate social support.⁸

The third sibling group highlighted the contribution of impulsivity and poor frustration tolerance to recurrent relapse. Impulsivity has been consistently associated with poor treatment adherence, impaired decision-making, and an increased likelihood of relapse in ADS. The occurrence

of violent behaviour and legal problems during intoxication further illustrates the significant functional impairment associated with persistent alcohol dependence and underscores the need for comprehensive psychosocial interventions alongside pharmacological treatment.

Collectively, these cases demonstrate that relapse in ADS extends beyond biological dependence alone. Shared genetic vulnerability, family history, interpersonal relationships, behavioural modelling, psychosocial stressors, and common environmental exposures interact to influence treatment outcomes. Therefore, treatment approaches focusing solely on detoxification and pharmacotherapy may be insufficient in individuals with strong familial clustering of ADS. Family-based psychoeducation, relapse prevention planning, caregiver involvement, and long-term psychosocial rehabilitation should be incorporated into routine management to improve sustained recovery.¹²

Alcohol use continues to represent a major public health concern globally and in India, contributing substantially to disease burden, disability, and premature mortality.^{11,16,17} Recent national surveys have highlighted the magnitude of substance use disorders in India, emphasising the need for early identification and family-based preventive strategies.¹⁸

The present case series has certain limitations. It includes a small number of sibling groups managed at a single tertiary care centre, limiting the generalisability of the findings. In addition, the descriptive nature of the study precludes conclusions regarding the relative contribution of genetic and environmental factors. Nevertheless, the consistent relapse patterns observed across multiple sibling groups provide valuable clinical insights into the influence of familial factors on the course of ADS and highlight the importance of adopting a family-oriented approach in addiction psychiatry.

Strengths

This case series highlights multiple sibling groups with ADS, providing a unique clinical perspective on familial clustering and relapse patterns, it demonstrates consistent relapse trajectories across different families despite varying psychosocial backgrounds, strengthening the observation of shared vulnerability, the study emphasises the role of environmental and behavioural factors in addition to genetic predisposition, adding practical clinical relevance, the detailed clinical descriptions offer insights into real-world relapse patterns in routine psychiatric practice.

Limitations

The observations are based on a limited number of sibling groups from a single tertiary care centre, limiting the generalisability of the findings, the descriptive nature of the case series does not permit conclusions regarding

causality between familial factors and relapse, further longitudinal studies involving larger populations are required to better understand the contribution of genetic, environmental, and psychosocial factors to recurrent relapse in ADS.

CONCLUSION

This case series highlights the significant role of familial factors in the onset and relapse of ADS. Shared genetic vulnerability, environmental influences, and behavioural reinforcement among siblings contribute to recurrent relapse and poor long-term abstinence. These findings underscore the need for incorporating family-centred approaches into the management and prevention of alcohol dependence.

Recommendations

Family history should be routinely assessed in all individuals presenting with ADS, siblings of patients with ADS represent a high-risk group and may benefit from early screening and preventive interventions, shared environmental triggers and behavioural reinforcement within families should be actively addressed during relapse prevention planning, family-centred psychoeducation and counselling should complement pharmacological and psychosocial treatment approaches, long-term follow-up involving caregivers may improve treatment adherence and reduce the likelihood of recurrent relapse.

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