

# The Neurochemical Impact of Alcohol on Anxiety and Stress Responses in the Brain

Martin Lau\*

Department of Psychology, University of Wales, Cardiff, UK

## DESCRIPTION

Alcohol, a ubiquitous and socially accepted substance in many cultures, holds a dual reputation: it can be a source of relaxation and conviviality, yet it also carries the potential to increase anxiety and mental health challenges. This commentary about into the involved interaction between alcohol consumption and anxiety, exploring both personal experiences and scientific insights to illuminate on this often-misunderstood relationship.

## The appeal and paradox of alcohol

Alcohol's appeal lies in its ability to temporarily alleviate stress and anxiety. For many, a glass of wine after a long day or a night out with friends can provide a sense of relaxation and social connection. This perceived benefit stems from alcohol's depressant effects on the central nervous system, which can induce feelings of euphoria and reduce inhibitions.

However, this relief is often fleeting and can be accompanied by unintended consequences, particularly for individuals prone to anxiety disorders or those facing stressful life circumstances. The paradox of alcohol lies in its potential to heighten rather than alleviate anxiety over time.

## Cycle of anxiety and alcohol use

**Immediate effects:** Initially, alcohol may seem to alleviate anxiety symptoms by dulling the senses and temporarily lifting mood. However, as the body metabolizes alcohol, its sedative effects wear off, often leaving individuals feeling more anxious than before. This rebound anxiety can increase feelings of worry, restlessness and tension, creating a cycle where alcohol is sought again for relief.

**Long-term consequences:** Chronic alcohol use can lead to tolerance, dependency and ultimately, Alcohol Use Disorder (AUD). Individuals with AUD often experience heightened anxiety as a withdrawal symptom, perpetuating a vicious cycle of drinking to alleviate withdrawal-induced anxiety, despite knowing the negative impact on their mental health.

## Biological and psychological mechanisms

**Neurochemical impact:** Alcohol affects neurotransmitter systems in the brain, including Gamma-Aminobutyric Acid (GABA) and glutamate, which are involved in regulating anxiety and stress responses. Initially, alcohol enhances GABA activity, promoting relaxation. However, with chronic use, adaptations occur in these neurotransmitter systems, contributing to increased anxiety and the need for more alcohol to achieve the same calming effect.

**Co-occurring disorders:** Anxiety disorders often coexist with AUD and other substance use disorders. Individuals with Generalized Anxiety Disorder (GAD), social anxiety disorder or Post-Traumatic Stress Disorder (PTSD) may turn to alcohol as a form of self-medication, increasing their underlying mental health condition.

## Personal perspectives and experiences

**Anxiety and alcohol use:** Many individuals share personal narratives of using alcohol to cope with anxiety, only to find that it increases their symptoms in the long run. This paradoxical experience highlights the need for exact approaches to mental health and substance use treatment, focusing on addressing underlying anxiety while promoting healthier coping mechanisms.

**Recovery:** Recovery from co-occurring anxiety and AUD underscore the importance of integrated treatment approaches. Cognitive-Behavioral Therapy (CBT), mindfulness-based interventions and support groups like Alcoholics Anonymous (AA) offer strategies for managing anxiety without relying on alcohol. These approaches emphasize skills-building, self-awareness and resilience in navigating life's challenges.

## Public health implications and interventions

**Education and awareness:** Increasing public awareness about the relationship between alcohol and anxiety is crucial. Education campaigns can dispel about alcohol's role in anxiety management

**Correspondence to:** Martin Lau, Department of Psychology, University of Wales, Cardiff, UK, Email: laumartin\_43@org.uk

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management and promote evidence-based strategies for stress relief and mental well-being.

**Early intervention:** Screening for co-occurring anxiety disorders in individuals seeking treatment for AUD is essential. Early identification allows for interventions that address both substance use and mental health concerns, improving overall treatment outcomes and quality of life.

**Policy and community support:** Policies that promote access to mental health services, substance use treatment and integrated care are essential in addressing the complex needs of individuals with co-occurring anxiety and AUD. Community-based initiatives that reduce stigma and provide support networks play a vital role in recovery and prevention efforts.