



The Correlation Between Alcohol Use Disorder and Major Depressive Disorder

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Abstract. Depression and alcohol use disorder (AUD) are two of the most prevalent mental diseases and are frequently co-morbid. Although there are numerous studies on the comorbidity of alcohol use disorders (AUD) and major depressive disorder (MDD), correlational research on AUD and MDD is limited. This review aims to describe the correlation between AUD and MDD in different aspects (gender, age). According to studies, there appears to be a bidirectional relationship between AUD and MDD; both diseases can coexist, with each raising the risk of and aggravating the other. However, this bidirectional relationship also needs to be considered in different contexts and analysed specifically, highlighting the need for additional investigation into the relationship between AUD and MDD. Key future goals include study to understand the heterogeneity between AUD and MDD, the investigation of new medications to enhance outcomes, and the development of more effective interventions to alleviate patients' suffering.

Keywords: Alcohol use disorder, Major depressive disorder, Adolescence, Gender difference, Co-occurring disorder

1 INTRODUCTION

The most common psychological condition among Alcohol use disorder (AUD) patients is depression [1]. Notably, there is a correlation between the co-occurrence and severity of AUD and depression (particularly significant depression and persistent depression). And the prognosis is worse than both diseases. Consequently, the likelihood of suicidal ideation increased by the combined effects of AUD and depression [2]. However, few psychologists have examined the relationship between AUD and MDD.

According to some studies, there may be a direct causative association between AUD and MDD in some cases. Despite controlling for confounding variables, many studies have established evidence of an enduring association between alcohol use disorder and severe depression [3][4]. Abraham & Fava (1999) discovered that alcohol problems predict depression [5], although other researchers have found that depression predicts alcohol problems [6]. This review examines the correlation between AUD and MDD, including differences in the order of onset of AUD and MDD due to age and gender differences. In order to better appreciate the co-occurrence of these illnesses and

improve therapy, motivation is provided for future study and priority is suggested for future research topics.

2 STRATIFICATION ANALYSIS

Mental health illnesses such as major depressive disorder (MDD), persistent depressive disorder, and other depressive disorders are curable. Depressive disorders are characterized by sensations of sorrow, emptiness, or agitation that impact a person's mind and body, particularly their ability to perform [7]. Alcohol use disorder (AUD) is a medical illness characterized by the inability to cease or reduce alcohol consumption despite adverse social, occupational, or health effects. It covers problems that some individuals regard to as alcoholism, alcohol dependency, and alcohol addiction, as well as what is widely known as alcoholism [8]. Complex and intertwined, the correlation between AUD and MDD may be influenced by gender and age differences.

2.1 Gender

These correlations may differ by gender. It has been demonstrated that sex differences can be affected disproportionately by concurrent AUD and MDD. Researchers have established, based on many epidemiological studies, that women are 1.5 to 2.0 times more likely than men to develop MDD during their lifetimes [9].

Not only are there gender differences in prevalence, but also in the course of depression. A longitudinal study of young adults revealed that depression predicted drinking issues among women but not men. This study showed that “for females, depressive symptoms predicted subsequent alcohol problems over 3 years (odds ratio = 3.04, 95% confidence interval 1.35–6.80, $p < 0.01$) and 4 years (odds ratio = 2.42, 95% confidence interval 1.14–5.12, $p < 0.05$), but not for 7 years. For males, there was no evidence to support the hypothesis [10].” The study examined the young adult population aged 18–29 of AUD and depression, finding that women were more likely to experience MDD before AUD, whereas men were more likely to experience AUD before MDD [11].

2.2 Age

Higher levels of depressive symptoms (MDD) were associated with earlier onset of alcohol use, more frequent drinking, and drunkenness, as determined by a cross-sectional school survey including 6,238 adolescents aged 16 to 18 years. Girls revealed a stronger relationship than boys between anxiety and depressive symptoms and early alcohol usage [12].

Another study indicated a positive reciprocal link between alcohol-related difficulties and depressive symptoms ranging from early adolescence to early adulthood, with gender and age differences [2]. The link between high levels of depressed symptoms and greater first drinking issues was stronger in females. Despite slightly higher baseline levels of alcohol issues among women, men had a more significant increase over time. For example, alcohol-related fights are significantly more common in men than

in women. Severe alcoholism was associated with higher initial levels of depressive symptoms (particularly in females) and a flatter slope of depressive symptoms. In early adolescence, there was a considerable disparity between those with high and low depressive symptoms; however, by early adulthood, the disparity had shrunk, particularly in females [2].

3 CORRELATION BETWEEN AUD AND MDD

Due to the high prevalence of AUD and MDD and their co-occurrence, it is crucial to comprehend the underlying causes of their association. It has been suggested that the relationship is either causal, due to a shared etiologic, or artificial [13]. There may be a direct causal relationship if substantial alcohol use pharmacologically predisposes to serious depression and its symptoms. If alcohol misuse produces depression risk factors, there may be an indirect causal connection between alcoholism and depression (e.g., unemployment).

3.1 Causal model

A test of the causal relationship between alcohol abuse or dependence and major depressive disorder indicated a substantial association between alcohol abuse and major depressive disorder [14]. Controlling for confounding variables with conditional fixed effects models and time-dynamic covariable factors diminished the amplitude of these correlations, but did not alter their statistical significance. In this test, a series of structural equation models were fitted to categorical measures of MD and AAD symptoms observed during three time intervals: 17 to 18 years, 20 to 21 years, and 24 to 25 years. These models include fixed effects affecting MD and AAD, as well as the ability to examine unidirectional and reciprocal effects between MD and AAD across time periods. The most appropriate causal model, as determined by structural equation modeling, was one in which AAD generated an increased risk of MD. The data imply that the link between AAD and MD is best explained by a causal model in which alcohol problems increase the risk of MD, as opposed to a self-administration model in which MD increases the likelihood of AAD. This study demonstrates, however, that the findings are limited and inconsistent with those obtained by other researchers during the same time period. In addition, it shows that the conclusions reached are based on underlying assumptions and that additional study may be necessary to assess the validity of the hypothesis on the stability of comorbidity patterns between AAD and MD. Therefore, the results of this study should be considered informative rather than conclusive [14].

According to a clinical review published in *Professional Psychology: Research and Practice*, alcohol consumption hinders recovery from depression. Furthermore, even mild to moderate alcohol appeared to increase depression, and depressed patients who drank little amounts of alcohol (less than 1 ounce per day) had poorer outcomes with medication [15].

3.2 Bidirectional relationship between AUD and MDD

According to a review by Dr. McHugh & Weiss on alcohol use disorders and depression (2019), there appears to be a bidirectional association between alcohol use disorder (AUD) and depression; both diseases can coexist, with one raising the risk of the other and aggravating it. Both AUD and depression are among the most prevalent mental disorders and commonly co-occur [16].

Another study has indicated that MDD and AUD are complexly connected, with a small, bidirectional, and development-specific relationship between the two illnesses. Similar to prior research, this study indicated that MDD tended to occur before AUD (57 percent of lifetime cases), with just 2 percent of patients presenting with both first-onset MDD and AUD. Interestingly, however, the researchers found the opposite pattern when specifically examining the chronology of concurrent events: 57% of concurrent episodes were characterized by AUD occurring first, while only 23% of concurrent events were characterized by MDD occurring first. They also investigated the probable relationship between MDD and AUD. Adjusting for changes in illness stability through time and the possibility of psychiatric confusion, they analysed cross-sectional and prospective relationships across three phases of development. They found that AUD in adolescence predicted MDD in early adulthood, but not vice versa. In contrast, they found that MDD in early adulthood was predictive of AUD in adulthood, but not the other way around [17].

4 FUTURE WORKS

Studies have enhanced our awareness of the distinctions between AUD and MDD and provide multiple avenues for future investigation. However, additional future research is required, particularly research that predicts the precise association between MDD and AUD. This could help psychologists develop more effective strategies to ease patients' suffering in clinical settings. Additionally, it could aid counselling psychologists in teaching patients good coping techniques to replace thought and behaviour patterns that may cause or exacerbate AUD and MDD. And minimize self-harm and suicidal conduct to some level.

The limitations of the review are that it does not actually discuss experiments but rather reviews and discusses a portion of the outcomes of previous research. As a result of the underrepresentation of women in many of the studies, it is unclear what role gender heterogeneity plays in the association between AUD and MDD.

Future developmental studies must also examine the impact of early adolescent alcohol consumption on the brain. As previously mentioned, AUD in adolescence is predictive with MDD in early adulthood [2]. It indicates that brain alterations caused by alcohol drinking throughout early adolescence may contribute to the development of MDD in early adulthood.

Since the majority of current research focuses on the co-occurrence of AUD and MDD, less is known about the relationship between AUD and MDD. Future research may also need to investigate a broader range of intervention processes that have identified the relevant pathways connecting MDD and AUD.

5 CONCLUSION

The link between AUD and MDD is subtle and bidirectional; both diseases can coexist and influence one another. Both diseases are among the most prevalent psychiatric conditions and have more severe repercussions and a poorer prognosis than if they were treated separately. And the data suggest that AUD in adolescence predicts MDD in early adulthood, but not the other way around. They found that MDD in early adulthood predicted AUD in adulthood, but not conversely.

The connection between AUD and MDD can be affected by age and gender differences. Initial levels of depressive symptoms are connected with greater initial drinking issues, particularly among women. Nevertheless, alcohol-related problems increased more rapidly in men than in women or men with less severe depressive symptoms. All of these findings indicate that gender and developmental stage are important considerations when examining the relationship between MDD and AUD. Although an aggravation of one condition tended to be connected with an exacerbation of the other disorder, the initial relationship was stronger in females, but the growth of each disorder was more pronounced in males.

In addition, the investigation of past studies in the field revealed numerous publications indicating a majority of white participants, highlighting the dearth of research on ethnic minorities in the field. There will be a pressing need in the future for study to better comprehend the co-occurrence of AUD and MDD among minorities and ethnic minorities. Access to treatment for AUD and depressive disorders differs between different communities, although they are underrepresented in research on these diseases.

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