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## Alcohol use and depression - literature review

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### Abstract

Alcohol consumption has serious health and social consequences. A coexistence of alcohol use disorders and depressive disorders is common. Alcohol abuse is more common in men, but women are at greater risk of its harmful effects. Alcohol consumption in adolescence and early adulthood is associated with a higher risk of developing depressive disorders in the future. The order in which these disorders appear may vary, but it is important to make a diagnosis of depression during the period of abstinence. Drinking alcohol can be seen as a form of coping with stress and anxiety disorders. The aim of this article is to review the literature on the relationship between depression and alcohol.

Alcohol changes your neural pathways. Long and intense exposure may cause irreversible changes. The stress response pathways responsible for emotions and the reward system are

the most sensitive. They deregulate the hypothalamic-pituitary-adrenal axis. Coexistence of alcohol use disorders and depressive disorders is treated primarily with antidepressants. Cognitive behavioral therapy has been shown to have a modest positive effect in relieving symptoms of depression and reducing the amount of alcohol consumed.

**Key words:** alcohol, depression, alcohol consumption

## **Introduction and purpose**

Alcohol consumption is one of the leading causes of death in the world. I have serious health, social and legal consequences. [1,3] Almost every second person with depressive disorders also suffers from disorders related to alcohol consumption, and 22% in the last year. [1,4] The simultaneous occurrence of both disorders is associated with greater intensity and worse prognosis than either separately. [5,6] It has been shown that remission of one condition is strongly associated with remission of another. [5] It has also been shown that simultaneous treatment of both disorders gives the best therapeutic effects. [6,7] Alcohol abuse is more common in men than in women, but only after puberty. [8] Compared to men, women are more vulnerable to the harmful effects of drinking alcohol. [9]

Emotional dysregulation is associated with impaired behavioral control of positive emotions, which underlies depression and alcohol use disorders. [10, 12] On the other hand, withdrawal from alcohol is associated with an improvement in the mental state. [15] There is a view that the severity of depression is directly proportional to the suppression of positive emotions. [11] Alcohol consumption can be used as an avoidance mechanism. [13] Its harmful or risky consumption at an early age translates into an increased risk of developing depressive disorders in the future. [14, 15] More than half of the respondents with alcohol problems and mood disorders returned to the addiction a few months after withdrawal. [16]

Difficulties in accepting positive emotions result from fear of the occurrence of secondary negative experiences. In order to suppress positive emotional states, such people may use alcohol as a mechanism for regulating emotions. [15] The symptoms of alcohol depression and withdrawal symptoms overlap. It is very important to make a diagnosis of depression outside of periods of drinking and abstinence. [18]

There are gender differences in the pharmacokinetics and pharmacodynamics of alcohol. [19] In women, blood alcohol levels rise faster and remain elevated for longer than in men. [8,19] Alcohol, like stress and psychological trauma, affects biological stress pathways. It follows that the coexistence of stress and alcohol abuse modifies the hypothalamic-pituitary-adrenal axis. [20]

## State of knowledge

The alcohol addiction process consists of several phases. In the first stage, alcohol activates the reward system, including the release of dopamine, which encourages more and more alcohol consumption. This is the stage of increasing pleasure, not escaping negative emotional states. [22] The next stage is addiction. Chronic alcohol abuse is associated with progressive changes in brain processes. The reward system undergoes intra-system neuroadaptations. It is a change from impulsive use driven by positive gain to impulsive use driven by negative gain. [22] The third stage is preoccupation. Alcohol consumption becomes essential for maintaining homeostasis of brain processes. [21]

During adolescence and early adulthood, it is very important to develop appropriate emotional, stress, reward and higher cognitive functioning. [8] Alcohol abuse from adolescence is associated with the risk of future depression and dysthymia. [5] There are also contradictions in research into which disorders occur first, but in women, depressive disorders have an earlier onset. [5, 23] The differences between the sexes also concern the foundations of the development of alcohol disorders and their subsequent consequences. Women more often than men are exposed to specific trauma, such as sexual trauma, and the higher the stress level, the higher the risk of developing alcohol disorders. [8] In turn, exposure to early childhood trauma and many stressors translate into problems with the proper experience of emotions, behavior control, executive functioning and decision making. The consequence of this is impaired behavioral control over the amount of alcohol consumed, which may be one of the reasons for the early onset of alcohol consumption and its consequences. [8,24]

Anxiety and affective disorders are linked to stress. It has been shown that people who suffered from anxiety disorders and by drinking alcohol tried to manage their anxiety symptoms, drank more and became addicted more often. [25] The situation is similar in post-traumatic stress disorder, in which it precedes alcohol disorders in women more often. [26] In the above disorders, the frequency of relapse of alcohol disorders is also higher than in the absence of these comorbid disorders. [8]

Drinking alcohol is associated with significant changes in the human nervous system, and the longer and more intense the exposure, the more permanent the changes. The pathways responsible for the stress response, emotional regulation and the reward system are particularly vulnerable. [27] Changes in these pathways are conducive to addiction. Alcohol affects the hypothalamic-pituitary-adrenal axis and glucocorticoid receptors in areas associated with the development and progression of alcohol use disorders. [8,27] Hormonal differences are visible in relation to gender. Women with alcohol use disorders have lower levels of adrenocorticotrophic hormone (ACTH), higher levels of norepinephrine (NE), as well as a stronger relative stress-induced ACTH response and a weaker stress-induced NE response compared to men. [25] After occasional moderate exposure to alcohol, the dopaminergic, autonomic hypothalamic, and catecholaminergic systems return to their original state. With alcohol abuse, these systems change permanently. Interestingly, stress response rates are higher in people with anxiety or alcohol disorders. [21] The above information suggests that alcohol consumption, both acute and chronic, contributes to the

transition from controlled to compulsive alcohol consumption and that it is susceptible to addiction. [8]

Co-occurrence of depressive and alcoholic disorders is treated mainly with antidepressants. [5] Older antidepressants such as tricyclic antidepressants (TCAs) have been reported to be more effective in reducing symptoms of depression than newer antidepressants such as selective serotonin reuptake inhibitors (SSRIs). [28] Antidepressants themselves do not directly influence alcohol consumption, but by indirectly reducing symptoms of depression, they may contribute to a reduction in alcohol consumption. [5] Studies have shown that the use of drugs such as naltrexone is safe and effective in reducing symptoms of alcohol abuse and depression. [28] In contrast, the use of acamprosate in the treatment of alcohol use disorders showed similar effects with and without depression. However, it has been proven that abstinence from alcohol influences the remission of depression. [29] Combination treatments such as sertraline plus naltrexone and acamprosate plus escitalopram also show a positive effect on the treatment of both disorders. [30]

The analysis of studies on the combination of motivational interviewing and cognitive-behavioral therapy in alleviating the symptoms of alcohol disorders and depression showed a slight improvement in symptoms. [31] Similarly, in the analyzes of the impact of several psychotherapies (eg interpersonal psychotherapy and cognitive-behavioral therapy), there was a slight improvement in symptoms. [32] Behavioral activation therapy has also been shown to be effective in depressive disorders and alcohol consumption. [32] Also, cognitive-behavioral therapy for depressive disorders and disorders related to the use of psychoactive substances reduces the amount of alcohol consumed and the symptoms of depression. [5,33] Participation in mutual aid groups such as Alcoholics Anonymous (AA) meetings is recommended, which reduces symptoms of depression and alcohol consumption. [34]

## **Conclusions**

Based on the analysis of the literature, it can be stated that alcohol consumption disorders and depression are common. Starting alcohol use in adolescents and young adults is associated with a higher risk of future depressive disorders. In adulthood, alcohol dependence mainly affects men, but women are more vulnerable to the harmful effects of alcohol consumption. Alcohol can cause irreversible changes to the entire nervous system, especially the hypothalamic-pituitary-adrenal axis.

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