

Drunkorexia – knowledge review

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Summary

Eating disorders are often accompanied by a lack of ability to manage emotions. Drunkorexia is a phenomenon that occurs mainly among a group of students. This disorder is characterized by significant dietary restrictions and excessive physical activity with the aim of being able to consume more alcohol without fear of weight gain. It is attributed to peer pressure, the popularization of a slim figure and the desire to increase the state of intoxication. Drunkorexia is more common in women and among people previously diagnosed with an eating disorder. Like any eating disorder, drunkorexia can lead to serious health consequences, but also increases the risk of violence, sexual assault and car accidents. Drunkorexia requires treatment for alcohol dependence and correction of inappropriate eating habits. Drunkorexia is a relatively new term and requires the development of diagnostic criteria and strategies to help people struggling with this disorder. Drunkorexia should be distinguished from alcohol use disorder and other eating disorders. It is necessary to spread knowledge about this type of behavior, its consequences and education about coping with stress.

Key words: diet, eating disorders

Introduction

Eating disorders are complex mental illnesses that often develop as unconscious coping mechanisms for difficult experiences and emotions, such as traumatic experiences, death of a loved one, sexual assault, and abusive relationships with family

members. In stressful situations, sufferers may limit their energy intake because diet is one of the few areas over which they have control [1].

Drunkorexia is a behavioural disorder that is also known as alcoholic anorexia or alcoholic bulimia [1]. Drunkorexia involves restricting caloric intake and/or excessive exercising in order to increase caloric intake from alcohol without fear of weight gain. The scant literature in this area also characterises drunkorexia as minimising caloric intake along with the use of laxatives and diuretics to maximise intoxication from alcohol [2]. Drunkorexia is not a separate and official medical term in the ICD-10 classification (International Classification of Diseases), which makes it difficult to diagnose and treat this condition. Compensatory behaviours, such as caloric restriction and excessive physical activity, may occur before or after alcohol consumption. The features of this disorder point to its behavioural factors, while the lack of diagnostic criteria may pose a problem in determining when a person requires professional help [2].

Students are a group at particular risk of developing drunkorexia, but it is difficult to determine the exact proportion of students with alcohol use disorders [1-3]. These behaviours may result from the desire to follow an idealised slim figure and the simultaneous association of alcohol with social situations and celebrations, especially among young adults. Both compensatory behaviour and alcohol consumption itself have health consequences. Alcohol consumption behaviours can exceed normative intake and increase the risk of alcohol-related problems [3].

This article presents the characteristics of drunkorexia along with a research review. Scientific databases such as Science Direct (Elsevier), Medline (PubMed) and Polska Bibliografia Lekarska were analysed. The following key words (according to the MeSH dictionary) were used to search for the articles: alcohol drinking, diet, substance-related disorders, students, adolescent, feeding and eating disorders, and the following headwords: drunkorexia, drunkoreksja, alkoreksja. The discussed scientific articles come from the years 2008-2021; however, it should be emphasised that the majority of the cited publications are the most recent reports from the years 2020 and 2021. A total of 26 review and original papers were analysed, including 3 Polish articles and one conference report.

Literature review

Epidemiology and diagnosis criteria

Alcohol abuse is a significant public health problem. Binge drinking is defined as drinking four or more drinks for women and five or more drinks for men on a single occasion [4]. Approximately 40% of American students report binge drinking at least once in a two-week period [4]. Studies [3, 4] have shown that the largest amounts of alcohol are consumed by students in their first year of university, making them the

largest exposure group. In addition to alcohol abuse, eating disorders are also common among students. Around 60% of female students report chronic use of diets for weight loss and binge eating. Additionally, most of the female students surveyed admit to having used various methods aimed at weight control [4]. In the Choquette et al. [5] study, approximately 55% of American and French students surveyed engaged in drunkorexia-related behaviours.

When drunkorexia develops, both women and men exhibit characteristic behaviours, which include restricting food intake (limiting caloric intake) and increasing physical activity [1-3]. The aim of these behaviours is to prevent weight gain. In addition to the most commonly mentioned physical exercise and dietary restrictions, the following also occur: vomiting, use of diuretics and slimming pills [4]. It is believed that there are three main factors affecting the development of drunkorexia: biological (predisposition to eating disorders and alcohol dependence), individual (distorted self-image, low self-esteem, emotional pain) and situational (new environment, peers, change of residence) [1].

Estimating the prevalence of drunkorexia in society is difficult because it is a relatively new term, which means that the number of publications in this area is minimal and all available data refer only to selected groups of students. It is estimated that about 30-50% of people with bulimia and up to 20% of people with anorexia abuse alcohol or are dependent on it [1]. An epidemiological study that demonstrates the prevalence of drunkorexia in the general population remains an issue that needs to be carefully designed.

So far, no criteria have been developed for the diagnosis of drunkorexia. However, four main characteristic behaviours have been reported in the literature [4, 5]:

- 1) planning to limit food in order to compensate for the calories contained in alcohol,
- 2) vomiting or using laxatives and/or diuretics to reduce caloric intake,
- 3) excessive exercise to reduce calories from alcohol consumption,
- 4) planning to limit food intake to increase intoxication after alcohol consumption.

There are reports of drunkorexia being classified as purging bulimia [4, 5]. According to the DSM-5 definition (the Diagnostic and Statistical Manual of Mental Disorders, 5th edition), drunkorexia is classified as anorexia, binge-eating / purging type [6]. However, anorexia, bulimia and drunkorexia should not be considered as a single disorder. Persons with drunkorexia, in contrast to persons with anorexia, undertake compensatory actions only in situations when they plan to consume alcohol [1-5]. At the beginning, such situations may occur sporadically, but as the degree of alcohol dependence increases, the person with drunkorexia will display such behaviour more and more often. As the alcohol tolerance increases, the sufferer may undertake

increasingly drastic dietary restrictions [5], leading, as in anorexia, to cachexia [3]. Drunkorexia should also be distinguished from alcoholism. It is worth emphasising that eating disorders and weight loss are a consequence of the alcoholic disease and not its goal [1].

Characteristics of drunkorexia

Drunkorexia is an overlap between an eating disorder and risky alcohol use [7]. It is unclear whether the disorder is more strongly associated with substance use or eating disorders. Drunkorexia has been shown to occur in both men and women [4-7]. Women report having this disorder twice as often as men [6]. Women are most likely to exhibit body dissatisfaction, laxative use and excessive exercise, while men are more likely to experience paroxysmal overeating, laxative use and food restriction [2, 3]. Over 50% of students report behaviours consistent with drunkorexia [1]. The literature [1, 2, 7] states that both male and female students reported feeling pressured (by peers) to consume alcohol and achieve or maintain a socially acceptable body shape. In addition, women, more often than men, reported using compensatory behaviours whose main purpose was to increase the perception of alcohol intoxication [7]. Furthermore, women who restrict calories to avoid weight gain show higher levels of eating disorders, while those who restrict calories to accelerate intoxication show more alcohol problems, trauma, sexual assault and depression [6]. Students living with friends were more likely to report engaging in compensatory behaviours before consuming alcohol, compared to those living alone or with family [6, 8]. Alcohol-related behaviours are often associated with social motives (the belief that alcohol improves social interactions), failure to cope with emotions, enhancement (seeking to increase positive affect through alcohol consumption) and conformity (drinking alcohol to fit in with a peer group) [8]. Alcohol and certain food groups are products that have a proven link with emotional regulation and may be seen by some individuals as a strategy for coping with emotions. Women have been found to develop drunkorexia mainly through enhancement mechanisms, whereas men as a result of difficulties in emotional regulation [7]. Emotional dysregulation, especially the need to control impulsive behaviour, is a significant factor in alcohol consumption among men [7]. Leasure et al. [9] identified four motivations for engaging in heavy exercise associated with alcohol consumption: guilt, body image, “work hard, play hard” and celebration. A study by Laghi et al. [10] found that drunkorexia is also associated with low self-esteem, alienation, interoceptive disturbances, emotional dysregulation and asceticism.

Research review

Eating disorders and alcohol abuse are associated with dysfunction of the hypothalamic-pituitary-adrenal (HPA) axis [5, 6]. One of the indicators of this axis is cortisol. Individuals with eating disorders have increased or decreased daily cortisol levels and altered cortisol release in response to stress [6]. Oswald et al. [6] examined the relationship between cortisol levels and alcohol consumption, drunkorexia and alcohol problems. The students surveyed reported consuming alcohol on an average of about 1.8 (standard deviation (SD) = 1.5) days per week and consuming an average of 3.5 (SD = 2.4) standard alcoholic beverages on those days. Almost 50% of the students reported getting drunk at least once in the last 30 days [6]. Approximately 23% of the students declared caloric restriction on days on which they planned to consume alcohol, in order to increase their calorie intake from alcohol without worrying about weight gain. A total of 5.5% of the respondents reported vomiting after eating and the same number of the respondents reported vomiting while drinking alcohol [6]. The purpose of inducing vomiting while consuming alcohol was to get rid of excess calories from the body. Higher baseline cortisol levels were positively correlated with drunkorexia in women, but not in men [6].

A study by Wilkerson et al. [8] on behaviours related to eating and physical activity among college drinking students has shown that Greek male and female students with weight loss intentions may be at higher risk of developing drunkorexia. Similar results were obtained by Giles et al. [11] – African-American students used dietary restrictions the least frequently, while half of the Greek students declared the use of restrictions on days when they planned to drink alcohol. Jaworski and Fabisiak [12] investigated the frequency of dietary restrictions before planned alcohol consumption among secondary school students. Their study showed that almost 80% of the subjects, regardless of gender, consumed alcohol in the past 12 months. Women were more likely to follow a reduction diet, while the frequency of dietary restrictions was similar in both analysed groups. Approximately 30% of women and about 22% of men declared the occurrence of dietary restrictions before planned evening alcohol consumption in the last 12 months [12]. Higher values for the prevalence of drunkorexia were observed among Australian female undergraduate students [13]. Almost 60% of female respondents reported experiencing behaviours consistent with drunkorexia 25% of the time or more in the past three months. More than 16% of the respondents reported routinely engaging in behaviours consistent with drunkorexia in order to balance the calories consumed from alcohol [13]. A study by Eisenberg and Fitz [14] found that women who consumed larger amounts of alcohol were more likely to develop drunkorexia compared to women who consumed smaller amounts of alcoholic beverages. It has also been shown that women have more concerns about weight gain compared to men,

and therefore women who drink large amounts of alcohol and have a strong motivation to control their weight are most likely to develop drunkorexia [14].

In light of the ever-growing social media, it is important to study the effects of social media use among young people. Foster et al. [15] examined the effects of snapchat use on the incidence of drunkorexia in female students. Snapchat is an “image-based” social media platform and one of the most used platforms among the 18-24 age group in the US. The study has shown that snapchat influences the behaviours found in drunkorexia and the motivations specific to drunkorexia. The authors of the study noted that female students using this social networking site showed a higher risk of developing an eating disorder [15].

Among the behaviours occurring in drunkorexia, excessive exercise can be distinguished [16]. Moderate physical activity reduces the risk of morbidity and mortality from any cause. Binge-drinking students are more than 13% more likely to achieve recommended levels of physical activity, compared to students who do not drink alcohol [16]. The positive aspect of increasing physical activity, among this group of students, is related to minimising alcohol-induced weight gain, and therefore it is a compensatory behaviour [16]. When physical exercise is used as an activity to prevent or reduce alcohol consumption in individuals with alcohol abuse disorders, it is a conscious use of a means to compete with the substance being abused [9]. Hunt and Forbush’s [4] research showed that alcohol consumption mediates between binge eating and drunkorexia, which may be indicative of alcohol-induced overeating attacks. Alcohol consumption is also associated with increased self-esteem among healthy individuals [4]. Hill and Lego [17] investigated the role of body esteem, sensation seeking and their impact on the occurrence of drunkorexia. The study found that sensation seeking, body weight assessment and appearance appraisal were associated with involvement in drunkorexia. Four models of involvement in drunkorexia were identified: alcohol consumption, bulimia, dietary restrictions and exercise, and restrictions [17]. Appearance appraisal was a significant factor in the effects of alcohol consumption, dietary restriction, and engaging in physical activity in the restriction models of drunkorexia. In contrast, sensation seeking was a significant factor in all models. In addition, elevated desire for sensation seeking and low body esteem were associated with involvement in drunkorexia [17]. Similar results were obtained by Griffin and Vogt [18] – both low esteem for one’s own body and high sensation-seeking were significant factors for drunkorexia. Furthermore, the findings indicate that drunkorexia cannot be classified solely as an eating disorder or an addiction-related disorder [18].

Health consequences and treatment

The health consequences of drunkorexia related to alcohol abuse are the same as for other substance abuse disorders. According to available scientific reports [1, 7, 16, 19], the main problem is the occurrence of risky behaviours such as drink-driving, which puts not only the drinker at risk, but is also a source of danger for others. The long-term consequences of alcohol consumption can include mental and physical health consequences [19]. Studies [1, 7, 8, 19] show that fasting alcohol consumption increases alcohol toxicity, resulting in an increased risk of damage to the brain and other organs. In addition, nutritional deficiencies and hypoglycaemia may occur, as well as memory loss and loss of consciousness. Cognitive abilities are impaired, there are problems with concentration, learning new material and remembering [8]. Alcohol consumption also affects mood [19]. Emotional lability, rapid mood changes from euphoria to depression are observed [18, 19]. A number of other pathophysiological consequences are also possible: neurological, cardiovascular, gastrointestinal, haematological, immunological, and endocrinological [19]. Structural changes in the musculoskeletal system are also observed [19]. Women seem to be particularly vulnerable to the consequences of this disorder as their body weight compared to men, tends to be lower, and women also have smaller body water reserves that could be used to dilute alcohol in the blood [19, 20]. All these factors make women more vulnerable to the harmful effects of alcohol and the health consequences in the form of liver cirrhosis, brain damage and other diseases. Alcohol is also known for its diuretic properties, and the increased excretion of urine results in the removal of water-soluble minerals and vitamins from the body. The deliberate elimination of certain nutrients, (which could be supplied to the body with food), in favour of alcohol promotes the occurrence of nutritional deficiency disorders [20]. Alcohol consumption affects (usually increases) the feeling of hunger [1]. People with drunkorexia may have a distorted sense of appetite, which can lead to severe bouts of hunger. Alcohol also influences taste perception: it can stimulate the perception of sweet taste, and sweet taste in turn activates the areas of the brain associated with reinforcement and reward [1].

Drunkorexia not only results in health consequences, but also increases the risk of violence, risky sexual behaviour, sexual assault, and alcohol and substance abuse problems [8]. People with drunkorexia have rigidity of beliefs, denial of the illness, and dichotomous thinking that make treatment difficult [8, 16, 17].

Cognitive behavioural therapy, motivational interviewing and schema therapy are used to treat drunkorexia [21]. Depending on the degree of alcohol abuse, dependence treatment becomes necessary (individual/group open therapy or in a closed centre). It is an accepted principle that in the treatment of drunkorexia, alcohol problems should be solved first, and then inappropriate eating behaviours [1].

Discussion

Alcohol consumption and eating behaviours among adolescents and young adults have been widely studied, but as separate phenomena. Most of the discussed studies do not apply to age groups other than students and young adults, members of the academic community, and individuals who were previously diagnosed with eating disorders. There are no studies that characterise the phenomenon of drunkorexia in other population groups. Interestingly, nationality has been shown to influence motives for engaging in drunkorexia – French students were more likely to engage in drunkorexia-related behaviours for compensatory purposes than to increase alcohol intoxication, compared to American students [5]. Moreover, self-control, dietary calorie counting, and knowledge of nutrition facts among women have been shown to be associated with binge drinking, increased self-confidence during alcohol consumption, and food restriction [22]. Accordingly, medical, sports, and dietary students may be more likely to experience drunkorexia behaviour. Furthermore, it is worth noting pre-existing eating disorders and mental health problems among the subjects studied. It was shown that drunkorexia was associated with dysfunction of metacognitive processes [22, 23]. Beliefs about the need to control thoughts, negative beliefs about uncontrollability and danger, worrying, and positive beliefs about alcohol consumption were significant predictors of drunkorexia [23].

In the publications analysed, a certain disadvantage was perceived related to the use of BMI (body mass index) as the only measure of body weight categorisation (underweight, normal, overweight, obese). It should be noted that in the student populations surveyed, especially in sports-related majors, the use of BMI in studies may be unreliable due to the high percentage of muscle tissue and the simultaneous low percentage of body fat. It is important to remember that above-normal BMI results in sportspeople do not necessarily indicate overweight or obesity, as they are associated with developed muscle tissue and usually a low body fat index. Therefore, other measures, such as electrical bioimpedance, BAI (body adiposity index) or BRI (body roundness index), should be used in studies. Future studies should also be directed at observing the further development or inhibition of drunkorexia after graduation.

In addition, research should aim to establish criteria for the diagnosis of drunkorexia and to recognise it as a separate diagnostic entity. Thus far, various scales, tests and questionnaires have been used in research to assess the degree of involvement in drunkorexia, but there is still considerable interpretative discretion associated with drunkorexia (some cases of this disorder are described as anorexia or bulimia with alcohol use disorder) [24]. New diagnostic criteria should differentiate drunkorexia from alcohol dependence syndrome and other eating disorders. Consideration should be given to criteria of the timing and frequency of symptoms (similar to bulimia), self-esteem (acceptance

of body mass and appearance) scale, pre-existing eating disorders, the source of the feeling of compulsion to consume alcohol, the presence of an abstinence syndrome and focus on alcohol consumption [25, 26]. With well-adapted diagnostic criteria, it will be possible to distinguish people with drunkorexia as a single disease entity and those with drunkorexia in the course of bulimia or anorexia. It will also be possible to distinguish appetite disorders and intentional abstinence from food in drunkorexia from appetite disorders in the course of alcohol dependence syndrome. Current diagnostic categories at the initial stages of this disorder may erroneously qualify behaviours occurring in drunkorexia as alcohol dependence or as other psychiatric disorders associated with self-destructive behaviours. Distinguishing drunkorexia as a new disease entity will allow psychotherapy and other treatment methods to be targeted appropriately.

Summary

Drunkorexia is a very serious and complex health problem. It has not been well studied yet, and it is necessary to establish criteria for the diagnosis of this disorder and to determine its prevalence in specific population groups. Studies conducted to date have focused on the epidemiology of this disorder in student populations, but the prevalence among adults and older adults has not been determined, so future studies should target these age groups [18]. It is also important to properly distinguish drunkorexia from other eating disorders and alcoholism. Education on how to cope with emotions, particularly stress, is needed, especially for young people.

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