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Alcohol use disorder according to DSM-5 Opportunities and constraints resulting from changing diagnostic criteria

Abstract: Another revision of the DSM manual (*Diagnostics and Statistical Manual of Mental Disorders – DSM-5*) appeared in 2013 and introduced far-reaching changes in the understanding of psychoactive substance use disorders. The most important breakthrough concerns the understanding of alcohol use. The move away from a dichotomous, binary understanding of alcohol dependence and abuse has allowed the creation of a new diagnostic category of *alcohol use disorder* (AUD).

The article addresses the issue of changes in diagnostic criteria for alcohol use disorder in the light of the latest DSM-5 classification. The location of the category of alcohol use disorder, its definition and diagnostic criteria will be presented. The author also compares the symptoms of alcohol use disorder according to DSM-5 with the corresponding ICD-10 *International Statistical Classification of Diseases and Related Health Problems)*criteria. The article ends with pointing out numerous controversies concerning the new category. The challenge for future research is to plan treatment according to the severity of the alcohol disorder.

Key words: alcohol use disorder, DSM-5, ICD-10, diagnostic criteria, alcohol addiction.

Introduction

In 2013, after twenty years, the fifth edition of the DSM was introduced. A revolutionary look at alcohol use was to pave the way for the introduction of programmes aimed at drinking reduction and care of a wide range of people who

did not receive proper assistance in addiction treatment facilities. Although 5 years have passed since its publication, the DSM-5 remains a rare tool in the diagnosis and treatment of alcohol-related problems (Miller, 2018; Yoshimura 2016; Martin 2018; McCabe 2017; Wakefield 2015; Hasin 2014; Strong 2014; Dyke 2014).

The aim of the article is to present changes in the criteria for recognizing alcohol-related disorders included in DSM-5. First of all, issues related to the assumptions underlying the draft of the fifth version of the classification of disorderswere raised. The category of alcohol use disorder, its definition and diagnostic criteria will then be presented. An attempt was also made to compare the symptoms of alcohol use disorder according to DSM-5 with the corresponding ICD-10 criteria.

Alcohol use disorder

The introduction in 2013 by the American Psychiatric Association of a new diagnostic category: *alcohol use disorder* (AUD) has changed the way we look at addiction (APA 2013). Until now, alcohol abuse, which is associated with harmful drinking, has been treated as a separate disorder. This diversity influenced the shaping of the therapeutic approach, since at the time of making a diagnosis of addiction, therapeutic measures were most often aimed at achieving permanent abstinence. For some patients this goal was unattainable and at the same time became a demotivating factor for introducing changes (Takashashi 2017; Mohler-Kuo 2014; Yoshimura 2016; Jakubczyk 2012; Modrzyński 2017, 2012; Chodkiewicz 2012; Bętkowska-Korpała 2013). The authors of DSM-5 propose to look at drinking alcohol as a process of increasing difficulties. This means that every person who drinks alcohol occupies a certain point on the scale related to alcohol use. In this perspective, the diagnosis is not something constant, but it changes over time, which makes it more individualized and requires increased observation. The transition from low risk drinking to excessive, harmful and disturbed alcohol use is dynamic and gradual (APA 2018, 2013; Morrison 2016; Edwards 2013; Martin 2018; McCabe 2017). For this purpose, the concept of *non-pathological drinking* was also introduced. It turns out that even if someone drinks small amounts of alcohol every day or occasional alcohol poisoning occurs, it is not always the case that the disease is diagnosed. The use disorder will develop in about 20% of those who drink alcohol (APA 2018; Morrison 2016).

So, how is alcohol use disorder understood and described by the authors of DSM-5 themselves? First of all, it is a set of cognitive, behavioral and physiopathological symptoms that result from brain changes. Drinking alcohol stimulates the reward system, which contributes to reinforcement of behaviors and creation of memories. The association of drinking with pleasure leads to the patient continuing to consume alcohol even if it results in growing problems in

his personal, professional or health life (APA 2018; Morrison 2018; Martin 2018; Clapp 2009; Cui 2015; Wojnar 2017).

According to the DSM-5, a problematic drinking pattern that causes a clinically relevant disorder can be said to exist if a person's behavior meets at least two of the criteria listed below and persists for 12 months (APA 2018).

1. Alcohol is often drunk in large quantities or for longer than intended.
2. There is a persistent urge or there are unsuccessful attempts to interrupt or control alcohol consumption.
3. A large amount of time is spent on activities necessary to obtain alcohol, drink it or reverse its effects.
4. Urge, strong need or compulsion to drink alcohol.
5. Repeated drinking causes difficulties in fulfilling important basic duties at work, school or home.
6. Continuing to drink alcohol despite being aware of the established or recurring social or interpersonal problems caused or exacerbated by the effects of alcohol.
7. Abandoning or reducing the frequency of important social, professional or recreational activities due to alcohol.
8. Recurrent substance use in situations in which it is physically hazardous.
9. Continuing to drink alcohol despite being aware of the existence of permanent or recurring physical or mental problems that have been caused or aggravated by alcohol.
10. Tolerance defined as any of the above:
    a) The need for a clear increase in the amount of alcohol drank to achieve intoxication or the desired effect.
    b) A clear reduction in the potency of alcohol when drinking the same quantity.
11. Withdrawal, characterized by each of the following:
    a. Typical alcoholic withdrawal syndrome (see the following table) Criteria A and B in the set of Alcohol Withdrawal criteria).
        A. Ending a period of prolonged and intensive alcohol consumption (or reducing the amount of alcohol drunk).
        B. At least two of these symptoms, developing within a few hours to a few days after the cessation (or reduction) of alcohol consumption:
            1. Stimulation of the autonomous system (e.g. excessive sweating or tachycardia).
            2. Increased hand trembling.
            3. Insomnia.
            4. Nausea and vomiting.
            5. Transient hallucinations or visual, sensory or taste illusions.
            6. Psychomotor agitation.
            7. Anxiety.
            8. General tonic-clonic seizures.

  b. Alcohol (or closely related substances such as benzodiazepines) is used to reduce the severity of- or avoid withdrawal symptoms.

These symptoms were divided into four groups. Each of them is assigned a specific symptom.

1. Impaired control (symptoms 1–4).
2. Social impairment (symptoms 5–7).
3. Risky substance use (symptoms 8–9).
4. Pharmacological criteria (symptoms 10–11).

By understanding alcohol use disorders as a growing process, the authors have enabled therapists to determine the severity of the disease. DSM-5 suggests the following severity of the disorder depending on the number of symptoms: the presence of 2 to 3 of the above mentioned criteria leads to the diagnosis of mild AUD, 4 to 5 – moderate AUD, 6 or more – severe AUD (APA 2018, 2013; Wojnar 2017).

Another important change in the understanding of alcohol use disorder is the introduction of remission and relapse periods into the diagnostic criteria. It has been observed that after stopping drinking, some patients maintained abstinence for a long time, followed by a period of controlled drinking. Starting to drink may or may not lead to an increase in alcohol consumption and the associated problems (Agrawal 2011; Li 2006; Napierała 2013; Jakubczyk 2012). In the light of the studies carried out, early remission may occur when symptoms do not appear for at least three months, whereas permanent remission is recognized when symptoms do not appear for at least 12 months. During periods of remission, alcoholic hunger, strong urge or need to drink may occur (Samochowiec 2015; Saunders 2006; Takahashi 2017; APA 2018). It should be stressed that remission does not mean cure, it is nothing more than a withdrawal of symptoms. The concept of remission is used when the disorder is chronic and cannot be fully cured. However, this word is often misused when there are problems with alcohol drinking.

The authors of DSM-5 emphasize that the alcohol use disorder is wrongly considered as an incurable condition. In the previous paradigm, alcohol dependence was a chronic and incurable disease (Saunders 2006; Takahashi 2017; Mohler-Kuo 2014; Yoshimura 2016).

To sum up, the main characteristic of alcohol consumption disorder is that significant amounts of alcohol are drunk, which leads to suffering and impairment of functioning. Assessment of the severity of the disorder is based on a number of diagnostic criteria.

To what extent do the diagnostic criteria of the DSM-5 fit into the ICD-10?

Can the two systems be combined in therapeutic practice to improve the diagnosis of addiction? The use of DSM-5 diagnostic criteria allows to confirm

the diagnosis made according to ICD-10 criteria. Under U.S. law, medical entities covered by the *Health Insurance Portability and Accountability Act* are required to use ICD-10 codes since 2009. The publication of DSM-5 led to some confusion about the fees for the therapy in relation to the proposed type of further treatment (abstinence or reduction of drinking). The result of efforts to integrate both systems is the so-called "**big five**". The symptoms diagnosing alcohol addiction according to ICD-10 are included in the 5 DSM-5 criteria. It is highly likely that people with a diagnosis based on these DSM-5 symptoms will also meet the ICD-10 dependency criteria. They are presented below. Why are these criteria indicative of a disorder? According to DSM-5 assumptions, the appearance of these symptoms indicates **a control impairment** which is a fundamental aspect of addiction (Pużyński 2000; Hoffmann 2014; Saunders 2017; AMA 2018; ICD-10 2009).
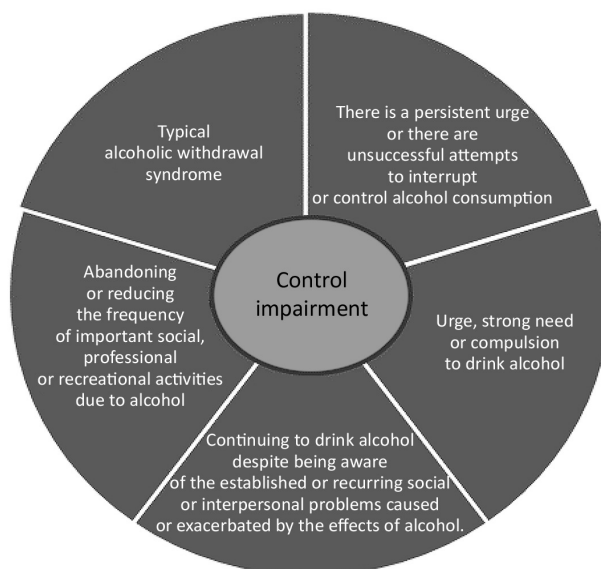

Figure 1. Summary of alcohol use disorder criteria according to DSM-5 and ICD-10
Source: own study.

Clinical modification of ICD-10-CM *(International Classification of Diseases, 10th Revision, ClinicalModification)* codes in force in the USA was released in October 2015. This publication allowed the researchers to compare the diagnostic criteria of both ICD-10 and DSM-5 classifications. Notable is the different approach to harmful drinking, which has been broken down into 4 criteria. The corresponding symptoms are shown in the table below (Pużyński, 2000; Hoffmann, 2014; AMA, 2018; ICD-10, 2009).

Table 1. Summary of diagnostic criteria for ICD-10 and DSM-5

Symptoms of addiction according to ICD-10	Corresponding symptoms according to DSM-5
Strong urge or sense of compulsion to drink.	Urge, strong need or compulsion to drink alcohol.
Impaired ability to control drinking behavior…	There is a persistent urge or there are unsuccessful attempts to interrupt or control alcohol consumption.
Physiological symptoms of abstinence syndrome…	Withdrawal, characterized by…
Changed (mostly increased) alcohol tolerance…	Tolerance defined as…
Due to alcohol consumption – the growing neglect of alternative sources of pleasure or interest…	Abandoning or reducing the frequency of important social, professional or recreational activities due to alcohol.
Insistent drinking of alcohol despite the obvious evidence of harmful effects..	Continuing to drink alcohol despite being aware of the existence of permanent or recurring physical or mental problems that have been caused or aggravated by alcohol.
Harmful drinking according to ICD-10-CM	Corresponding symptoms according to DSM-5
Drinking alcohol in risky situations that can lead to consequences, damage	Recurrent alcohol use in situations in which it is physically hazardous
Continuation of drinking alcohol despite the associated physical, mental or psychological problems	Continuing to drink alcohol despite being aware of the existence of permanent or recurring physical or mental problems that have been caused or aggravated by alcohol.
Unhealthy, harmful or destructive behavior and social problems resulting from alcohol consumption	Continuing to drink alcohol despite being aware of the established or recurring social or interpersonal problems caused or exacerbated by the effects of alcohol.
Conflicts with other people caused by drinking alcohol	Continuing to drink alcohol despite being aware of the established or recurring social or interpersonal problems caused or exacerbated by the effects of alcohol.

Source: own study.

DSM-5 criticism

Diagnostic difficulties result from the excessively broad approach to addiction. The DSM-5 offers a simplified diagnostic system. The advantage of such an approach is to avoid the problem of so-called "diagnostic orphans", i.e. people who have met the two criteria for DSM-IV addiction, but none of the criteria for abuse. However, the main allegation made against DSM-5 is that the disorder is defined as two of the 11 criteria and not as a single syndrome. There are over

two thousand combinations of diagnostic criteria that meet the requirements of the disorder. This is an approach that is too broad and too diverse, yet not very useful in clinical practice (Miller 2018; Wakefield 2015; Hasin 2014; Strong 2014; Dyke 2014).

Moderate alcohol use disorders according to DSM-5 are expected to be equivalent to alcohol addiction according to ICD-10. However, a diagnosis of moderate severity may or may not meet the three ICD-10 dependency criteria. In practice, we may be dealing with a patient who devotes a lot of time to drinking alcohol, often in larger quantities than he intended. They do it despite conflicts and repeat it in physically risky situations. Such a person according to the DSM-5 criteria would be diagnosed as a patient with moderate alcohol use disorder, but in this situation, only two ICD-10 classification criteria are met (Lee 2017; Baggio 2016; Wakefield, 2015; Crewell, 2016; Miller, 2018).

If we compare the moderate alcohol use disorder with harmful drinking, the question is which of the two criteria of harmful drinking refers to it? A combination of two or three criteria, out of eleven contained in DSM-5, can result in the diagnosis of a mild disorder without the need for the harm to health criterion (Pużyński 2000; Hoffmann 2014; Saunders 2017; Lee 2017).

Summary – clinical implications

From a practical perspective, the question of diagnostic compatibility of DSM-5 in relation to other classification systems becomes the most relevant issue. The compatibility of both diagnostic systems, i.e. DSM-5 and ICD-10, becomes apparent at the stage excluding the diagnosis of addiction. Individuals who do not meet the criteria for alcohol use disorder according to DSM-5 are also not classified based on the ICD-10. Similarly, people with severe alcohol use disorder according to DSM-5 receive a diagnosis of alcohol addiction (ICD-10).

Very interesting conclusions are obtained from the analyses of Norman Hoffmann and Albert Kopak (Hoffmann 2014), who compared more than 7,000 people for the diagnosis of addiction and harmful drinking based on ICD-10 and DSM-5 criteria. It turned out that 65% of people with moderate and 10% people with mild alcohol use disorder (DSM-5) met the criteria for the diagnosis of addiction according to ICD10. A great similarity was observed in the assessment excluding the diagnosis. In 96.4% there was a consensus on excluding addiction using both DSM-5 and ICD-10.

However, differences and incompatibilities appear for people with a mild to moderate disorder level diagnosis. The severity at this level of the disorder (DSM-5) is not accurately reflected in the possibilities of diagnosis based on the ICD-10.

The topic requiring further research is the diagnosis and planning of treatment depending on the severity of the alcohol consumption disorder. In the Polish

system of treatment of alcohol addiction in the last decade, the psychotherapeutic offer has been expanded. In addition to an approach aimed at maintaining alcohol abstinence, patients benefit from alcohol drinking reduction programmes. For clinicians, it can be a problem to properly direct the patient in therapeutic work related to setting a target for abstinence or reduction of drinking. In choosing the path of operation, it is necessary to precisely diagnose alcohol problems and assess the overall functioning of the patient.

The diagnosis and therapeutic strategies to date have been mainly based on the ICD-10 criteria with DSM-IV and have concerned people with diagnosed alcohol addiction. The population of alcohol addicts has been shown to overlap with people with alcohol use disorders of at least moderate severity. However, there is a lack of methods used in therapeutic work with people with mild forms of alcohol use disorder. This opens up a broad perspective to interventions that have not been accepted in traditional addiction therapy until now.

In the case of people with low levels of alcohol use problems, it is advisable to have an impact aimed at reducing drinking. The challenge for people providing help to people with alcohol problems is to extend the therapeutic offer with a group of people who do not accept abstinence as a therapeutic goal. The proposal of therapeutic work in a drinking reduction or abstinence-oriented program is determined not only by the readiness of the patient, but above all by the nature and severity of the AA symptoms. It is in this aspect that the criteria proposed in the DSM-5 are superior to the ICD-10. Above all, it makes it easier for specialists to conduct a diagnostic interview and to diagnose AA and assess its severity from light to heavy. The diagnosis taking into account the dimensions proposed in the DSM-5 allows to assess the importance of alcohol use in the overall bio-psycho-social functioning of the patient and optimal targeting in psychotherapy aimed at abstinence or reduction of alcohol consumption.

The changes in the DSM-5 also allow for the development of new programs to improve drinking reduction skills. A team of specialists (dr. hab. Barbara Bętkowska-Korpała, dr. Robert Modrzyński, dr. Jolanta Celebucka, dr. Katarzyna Olszewska, Justyna Kotowska, M.Sc.) on behalf of the Department of Medical Psychology of the Chair of Psychiatry of the Jagiellonian University Collegium Medicum has undertaken to develop a web platform and smartphone applications aimed at helping to change the behavior of problem drinkers and those seeking support on the Internet aimed at reducing alcohol consumption. The project is co-financed from the funds for the implementation of public health tasks specified in the National Health Programme for 2016–2020.

In June 2018, the WHO presented a draft of the new, eleventh version of the disorder classification. The ICD-11 was adopted at the World Assembly in 2019 and will be officially applied from January 2022 (ICD-11, 2018; ICD Project Plan, 2018). Despite emerging information on the convergence of the global diagnostic criteria DSM-5 and ICD-11, the two classifications for alcohol use remained

different (APA 2013; ICD-11 2018; ICD Project Plan 2018; Malearine 2015; Łoza 2015; Saunders, 2006). This raises natural questions and concerns about the future of addiction treatment in Poland. So, will the changes that have enabled the introduction of DSM-5 have a chance to be developed with the proposal to change the understanding of alcohol-related disorders according to ICD-11?

References

[1] Agrawal A., Health A.C., Lynskey M.T., 2011, *DSM-IV to DSM-5 : the impact of proposed revision on diagnosis of alkohol use dis order*, „Addiction", nr 106.

[2] American Medical Association, 2018, *ICD-10-CM. The Complete Official Code book*, AMA, Chiago.

[3] American Psychiatric Association, 2013, *Diagnostic and statistical manual of mental disorders (DSM-5)*, APA, Washington.

[4] American Psychiatric Association, 2018, *Kryteria Diagnostyczne Zaburzeń Psychicznych DSM-5*, Edra Urban&Partner, Wrocław.

[5] Baggio S., Studer J., Dupuis M., Gerhard G., 2016, *Subthreshold Problem Drinkers in DSM-5 Alcohol Use Disorder Classification*, „The American Journal on Addictions", nr 25.

[6] Bętkowska-Korpała B., 2013, *Osobowościowe uwarunkowania dynamiki zdrowienia u osób uzależnionych od alkoholu*, Uniwersytet Jagielloński Collegium Medicum, Kraków.

[7] Chodkiewicz J., 2012, *Odbić się od dna? Rola jakości życia w przebiegu i efektach terapii osób uzależnionych od alkoholu*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź.

[8] Clapp P., Bhave S.V., Hoffman P.L., 2009, *How adaptation of the brain to alkohol Leeds to dependence: a pharmacological perspective*, „Alcohol Res Health", nr 31.

[9] Crewell K.G., Bachrach R.L., Wright A.G.C., et al., 2016, *Predicting Problematic Alcohol Use With the DSM-5 Alternative Model of Personality Pathology*, „Personality Disorders: Theory, Research, and Treatment", nr 7/1.

[10] Cui C., Noronha A., Warren K.R., et al., 2015, *Brain pathways to recovery from alkohol dependence*, „Alcohol", nr 49/5.

[11] Dyke V., David J., 2014, *Systemic critique of the DSM-5: A medical model for human problems and suffering*, „Journal of Psychology and Christianity", nr 33/1.

[12] Edwards A.C., Gillespie N.A., Aggen S.H., Kendler K.S., 2013, *Assessment of Modified DSM-5 Diagnosis of Alcohol Use Disorder in a Genetically Informative Population*, „Alcohol Clin Exp Res", nr 37/3.

[13] Hasin D., 2014, *Truth (validity) and use despite consequences: The DSM-5 substance use disorder unidimensional syndrome*, „Addiction", nr 109/11.

[14] Hoffmann N.G., Kopak A.M., 2014, *How Well Do the DSM-5 Alcohol Use Disorder Designations Map to the ICD-10 Disorders?*, „Alcohol Clin Exp Res", nr 39/4.

[15] Jakubczyk A., Wojnar M., 2012, *Całkowita abstynencja czy redukcja szkód – różne strategie terapii uzależnienia od alkoholu w świetle badań i międzynarodowych zaleceń*, „Psychiatria Polska", nr 46/3.

[16] Lee S.Y., Choo H., Lee H.K., 2017, *Balancing bet ween prejudice and fact for Gaming Disorder: Does the existence of alcohol use disorder stigmatize healthy drinkers or impede scientific research?*, „Journal of Behavioral Addictions" nr 6/3.

[17] Li T.K., Hewitt B.G., Grant B.F., 2006, *The Alcohol Dependence Syndrome, 30 years later: a commentary*, „Addiction" nr 102.

[18] Martin C.S., Verges A., Langenbucher J.W., et al., 2018, *Algorithm Analysis of the DSM-5 Alcohol Withdrawal Symptom*, „Alcoholism: Clinical and experimental Research", nr 42/6.

[19] McCabe S.E., West B.T., Jutkiewicz E.M., Boyd C.J., 2017, *Multiple DSM-5 substance use disorders: A national study of US adults*, „Hum Psychopharmacol Clin Exp", nr 32.

[20] Miller J.D., Lamkin J., Keller-Maples J.L., et al., 2018, *A Test of Empirical Profile and Coherence of the DSM-5 Psychopathy Specifier*, „Psychological Assesment" nr 30/7.

[21] Modrzyński R., 2012, *Co leczy w podstawowym programie terapii uzależnień? Przegląd badań nad efektywnością terapii uzależnienia od alkoholu*, „Alkoholizm i Narkomania" nr 25/4.

[22] Modrzyński R., 2017, *Abstynencja czy ograniczanie picia? Znaczenie zasobów w przewidywaniu abstynencji osób uzależnionych od alkoholu we wczesnej fazie zdrowienia*, Difin, Warszawa.

[23] Mohler-Kuo M., Foster S., Gmel G., Dey M., 2014, *Dermota P. DSM-IV and DSM-5 alcohol use dis order among Young Swiss men*, „Addiction", nr 110.

[24] Morrison J., 2016, *DSM-5 bez tajemnic. Praktyczny przewodnik dla klinicystów*, Wydawnictwo Uniwersytetu Jagiellońskiego, Kraków.

[25] Napierała M., 2013, *Redukcja szkód i strategia picia kontrolowanego – nowy paradygmat w leczeniu uzależnień od alkoholu*, „Hygeia Public Health" nr 49/2.

[26] Pużyński S., Wciórka J., 2000, *Klasyfikacja zaburzeń psychicznych i zaburzeń zachowania w ICD-10. Opisy kliniczne i wskazówki diagnostyczne*, Wydawnictwo Medyczne Vesalius, Warszawa.

[27] Samochowiec A., Chęć M., Kołodziej Ł., Samochowiec J., 2015, *Zaburzenia używania alkoholu: Czy nowe kryteria diagnostyczne implikują zmianę strategii terapeutycznych?*, „Alkoholizm i Narkomania", nr 28.

[28] Saunders J.B., 2006, *Substance dependence and non-dependence in the Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of Diseases (ICD): can an identical conceptualization be achived?*, „Addiction", nr 101.

[29] Saunders J.B., 2017, *Substance use and addictive disorders In DSM-5 and ICD 10 and the draft ICD 11*, „Addicive Disorders", nr 30.

[30] Strong T., 2014, *DSM-5 and two insider critiques*, „Journal of Medical Ethics", nr 5/1.

[31] Takahashi T., Lapham G., Chavez L.J., et al., 2017, *Comparison of DSM-IV and DSM-5 criteria for alcohol use disorders In VA primary care patients with frequent heavy drinking enrolled in a trial*, „Addict Sci Clin Pract", nr 12/17.

[32] Wakefield J.C., 2015, *DSM-5, psychiatric epidemiology and the false positives problem*, „Epidemiology and Psychiatric Sciences", nr 24/3.

[33] Wakefield J.C., Schmitz M.F., 2015, *The harmful dysfunction model of alcohol use disorder: revised criteria to improve the validity of diagnosis and prevelance estimates*, „Addiction", nr 110.

[34] Wojnar M., 2017, *Medyczne aspekty uzależnienia od alkoholu*, PARPA, Warszawa.

[35] Yoshimura A., Komoto Y., Higuchi S., 2016, *Exploration of Core Symptoms for the Diagnosis of Alcohol Dependence In the ICD-10*, „Alcohol Clin Exp Res", nr 40/11.

Internet sources

[36] *ICD Project Plan, ICD-11 Joint Linearization for Mortality and Morbidity Statistics: Project Plan 2015–2018*, http://www.who.int/classifications/icd/revision/icdproject-plan2015to2018.pdf?ua = 1 (access data: 20.11.2018).

[37] *ICD-11 Timeline*, http://www.who.int/classifications/icd/revision/timeline/en/ (access data: 20.11.2018).

[38] *International Statistical Classification of Diseases and Related Health Problems*, ICD-10, Volume I, 2009, https://stat.gov.pl/Klasyfikacje/doc/icd10/pdf/ICD10TomI.pdf (access data: 4.11.2018).