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Factors contributing to development of pathological gambling and substance-use disorder comorbidity according to patients and professionals

Czynniki sprzyjające rozwojowi współwystępowania patologicznego hazardu i używania substancji psychoaktywnych według pacjentów i profesjonalistów

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Abstract

Introduction: In psychiatry, comorbidity is defined as an overlap of two or more mental disorders. Understanding the problem of comorbidity is an important condition for meeting individual patients' needs. However, the problem is still insufficiently recognised in Polish conditions. Therefore the aim of this study is to determine what psychological and social factors can contribute to development of pathological gambling and substance-use disorder comorbidity.

Material and methods: A total of 65 semi-structured interviews were conducted of which 40 were

Streszczenie

Wprowadzenie: W psychiatrii współwystępowanie oznacza nakładanie się dwóch lub więcej zaburzeń psychicznych. Zrozumienie problemu współwystępowania jest warunkiem spełnienia indywidualnych potrzeb pacjentów. Tymczasem w polskich warunkach problem ten jest nadal niewystarczająco rozpoznany. Celem niniejszego badania było określenie, jakie psychologiczne i społeczne czynniki mogą przyczyniać się do rozwoju współwystępowania patologicznego hazardu i zaburzeń używania substancji psychoaktywnych.

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with people with comorbidity of pathological gambling and substance-use disorders and 25 interviews with professionals.

Results: Our study, apart from confirming what was already known, revealed new factors like: 1) substance-use helps to cope with the excitement associated with the expectation of winning, 2) gambling allows get rid of excess of energy after use of stimulants, 3) the search for new sources of stimulation and behaviours that are easy to hide, 4) need to earn peer respect, 5) spending time in the company of people who have problems with different addictions.

Discussion: The study revealed the internal (individual) and external (environmental) factors that contribute to the development of comorbidity. Using the perspectives of professionals and people with disorders allowed us to extend the catalogue of factors that may influence the development of comorbidity in comparison to previous studies

Conclusions: The awareness of the factors that contribute to the development of the comorbidity of pathological gambling and psychoactive substance-use disorders allows for inclusion of this knowledge both in treatment and prevention programmes.

Keywords: Pathological gambling, Substance-use disorders, Development of comorbidity, Qualitative studies.

Materiał i metody: Przeprowadzono 65 częściowo ustrukturyzowanych wywiadów: 40 wywiadów z osobami, u których współwystępowały patologiczny hazard i zaburzenia używania substancji psychoaktywnych oraz 25 wywiadów z profesjonalistami.

Wyniki: Badanie, oprócz znanych już zależności, ujawniło nowe czynniki: 1) używanie substancji psychoaktywnych pomaga regulować poczucie ekscytacji wynikające z oczekiwanej wygranej, 2) granie w gry hazardowe pomaga uwolnić nadmiar energii pojawiającej się po zażyciu stymulantów, 3) poszukiwanie nowych sposobów stymulacji i zachowań, które łatwiej utrzymać w tajemnicy, 4) chęć zdobycia uznania w oczach kolegów, 5) spędzanie czasu w grupie znajomych, którzy doświadczają problemów związanych z różnymi uzależnieniami.

Omówienie: Badanie ujawniło zarówno czynniki wewnętrzne (indywidualne), jak i zewnętrzne (społeczne) sprzyjające rozwojowi współwystępowania zaburzeń. Uchwycenie perspektywy profesjonalistów i osób ze zdiagnozowanym współwystępowaniem pozwoliło na rozszerzenie katalogu czynników, które mogą mieć wpływ na rozwój współwystępowania w porównaniu z poprzednio prowadzonymi badaniami.

Wnioski: Świadomość czynników, które sprzyjają współwystępowaniu patologicznego hazardu i zaburzeń używania substancji psychoaktywnych, pozwala na uwzględnienie tej wiedzy w programach leczniczych i profilaktycznych.

Słowa kluczowe: hazard patologiczny, zaburzenia używania substancji psychoaktywnych, rozwój chorób współwystępujących, badania jakościowe.

Introduction

In psychiatry, comorbidity is related to overlap of two or more mental disorders [1]. In this article, the interest is limited to pathological gambling and substance-use disorders comorbidity. Mueser *et al.* [2] proposed 4 models that explain the comorbidity of mental and substance-use disorders as 1) common factors of disorders are predominantly the result of the same or similar risk factors that may be biological, personality, social and environmental or a combination of these factors; the development pathways of the two disorders can be the same, 2) mental health problems cause/promote substance-use problems, 3) substance-use problems cause/promote mental health problems and 4) a bidirectional model which presupposes a mutual interaction between disorders.

A similar classification specific to comorbidity of pathological gambling and mental disorder was developed by Winters and Kushner [3]. According to them, there are at least three ways to conceptualise the aetiological association of pathological gambling and comorbid mental disorders: 1) gambling may predispose vulnerable individuals to develop a particular comorbid disorder, 2) particular mental disorders may promote the development of pathological gambling in vul-

nerable individuals and 3) pathological gambling and comorbid condition may share the same underlying cause. It is always possible that there is no direct or indirect relationship between multiple disorders occurring in the same individual [4].

Of course it is difficult to prove that one mental disorder directly causes any other disorder of this kind, but it is impossible to overlook the fact that the risk of alcohol-related disorder is two to four times higher among patients treated for gambling than for those in the general population who show no symptoms of pathological gambling [5].

Co-occurrence of gambling disorder and alcohol-use disorders (AUD) is a quite common phenomenon. In many population studies, high rates of co-occurrence have been reported [6, 7]. Studies conducted from the late 1960s to the end of the 1990s show that 9-33% of patients who were treated because of alcohol-related problem also had co-occurring gambling disorder [5]. Between 2001 and 2002, a National Epidemiological Survey on Alcohol and Related Conditions (NESARC) was conducted in the sample about 43 thousands respondents. The prevalence of pathological gambling among respondents with a diagnosis of AUD was 1.62%. In turn, the rates of co-occurrence of alcohol-related disorders among pathological gamblers were much higher. More than 70% of pathological gamblers have had AUD [8].

Comorbidity between drug-related disorder and gambling disorder is not sufficiently recognised in the studies [9] and previous reports have come from studies involving patients in treatment [10]. Cowlishaw *et al.* [11] conducted a systematic review of the literature on the problem of prevalence of gambling disorder in addiction treatment. Results from particular studies ranged from 14% (co-occurrence of drug use and pathological gambling) to 23%, if problem gambling is also considered.

Steinberg *et al.* [12] determined that 15% of cocaine abusers were diagnosed with pathological gambling. Spunt *et al.* [13] reviewed the literature and found that problem gambling occurs among those with substance disorders (alcohol and drugs) 4 to 10 times more often than in the general population. In the study of 462 methadone treatment clients, 21% met the criteria for pathological gambling and 9% for problematic gambling [14]. In other study, 13% of drug treatment clients met the criteria for problem gambling [15].

These data suggest that problematic and pathological gambling are fairly common, although not recognised during drug-related disorders treatment, as patients do not demonstrate symptoms of gambling disorder during this treatment [16].

In the literature, the biological, psychological and social factors which favour comorbidity were identified. Theoretical literature suggests that there is a common aetiology of behavioural disorders and drug-related disorders [17] that may explain high rates of co-occurrence. A common genetic background is indicated as one of causes of coexistence of gambling disorder and substance-use disorders [18-20]. Physiological factors, in the opinion of researchers, can be related to development of both substance-use and gambling disorders [21, 22]. Some studies, in which the neuroimaging method was used, e.g. Petry [23], found that people with comorbidity of gambling and substance-use disorders in comparison to those with substance-use disorders merely performed worse on the gain-loss decision-making task and both groups performed more poorly than the control group. Some investigators hypothesised that pathological gambling and substance-use disorders may share neurotransmitter deficits [19].

General theories of addiction provide knowledge about the common psychological factors underlying addictions. Several theories of addiction identified that individuals with feeling of inferiority or inadequacy are predisposed toward addictive disorders [24, 25]. The desire for mood alteration, including the reduction of negative affect, underlies addictive behaviours [26-28].

A number of studies aimed at determining social and psychological factors that can contribute to comorbidity of discussed disorders were conducted, although most were from the second half of the 1990s and early 2000s. Financial problems caused by gambling can act as a psychological stressor and contribute to drug use or relapse incidence [29]. Alcohol can also be used to alleviate unpleasant emotional states [7, 20] like shame [30, 31]. The use of psychoactive substances can reduce the ability of rational judgment, and encourage risky behaviour like gambling [5]. Substance use can favour people spending more time gambling than they initially intended [32]. A significant increase was observed in the willingness to gamble when alcohol at lower doses was consumed [33]. In addition, gambling involves spending time in

places where alcohol is relatively easily available, which can promote its use [20].

The aim of this study is to determine what psychological and social factors according to those with pathological gambling and substance-use disorder comorbidity and professionals can contribute to development of this comorbidity. The authors' intention is absolutely not to adjudicate on any causality between the disorders. Rather, it is about identifying factors that respondents identify as likely to contribute to the occurrence of the next disorder or common factors that may underlie both.

So far the problem is insufficiently recognised, especially taking into account the Polish context, and requires a more insightful analysis not only for its theoretical potential but also for the implication for the clinical practice. Recognising the problem of comorbidity is important in meeting patients' individual needs [34]. The presence of comorbid disorders in the treatment-seeking population with a gambling disorder is associated with an increased severity of gambling behaviour, gambling-related consequences, psychiatric symptoms and psychosocial difficulties [35-37]. Psychiatric comorbidity may have an impact on the outcomes of treatment in terms of compliance, the success, the likelihood of relapse and the number of treatment attempts [35, 38, 39].

Material and methods

Selection of respondents

The study framework consisted of semi-structured individual interviews conducted at the turn of 2015 and 2016 in Warsaw and Wroclaw. The study sample included people with comorbidity of pathological gambling and substance-use disorders (20 persons recruited in drug treatment units and 20 in alcohol treatment units), 5 psychiatrists and 20 therapists employed in drug treatment units and in alcohol treatment units. Finally, 65 interviews were conducted. Eight qualitative interviews were conducted (2 interviews in each category of respondents) within the framework of the pilot phase of the study. The experience gained during the pilot study and feedback from the respondents was examined to improve interview guidelines.

For recruitment of respondents, purposive sampling procedure was employed with the aim to gain complete and comprehensive information from the research question perspective. The study was conducted in psychiatric hospitals and outpatient mental health clinics as well as in specialised facilities for pathological gambling and/or substance-use disorders.

The selection criteria for professionals were the status of the institution's staff and experience in working with people with comorbidity of pathological gambling and substance-use disorders. In the case of patients, the criterion for inclusion was the diagnosis by the treating physician of pathological gambling and substance-use disorder comorbidity. ICD-10 has been used to diagnose in Poland.

Sample characteristic

In the presented study, people with comorbid disorders are mainly men (n = 39). Patients' mean age was 40.1 years of age. The respondents were mostly single (n = 11), in a relationship (n = 9) or divorced (n = 9). Half of the respondents had secondary education (n = 20), every fifth higher (n = 7) or vocational (n = 6) and every eighth primary or lower secondary education. The group of respondents was dominated by slot machine players and casino goers. The SMS lotteries and bets were less popular forms of gambling. About 30% of respondents use the internet to gamble and the same percentage were out-of-casino card players who do not use the internet (n =12). Among the professionals, the vast majority were women as only three men took a part in the study. Every participant of the professional group had a higher education.

Guidelines for qualitative interviews

Two types of guidelines for the semi-structured interviews were developed, one for people with pathological gambling and substance-use disorders and the other for professionals. The first type of guideline covered history of addiction (order of appearance of disorders and contribution of one addiction to the occurrence), role of important life events in addiction development, needs related to the treatment and experiences with the treatment.

The guideline for professionals included topics related to the characteristic of those with comorbidity of gambling and substance disorders (their common features and differences to those with one addiction), contribution of one addiction to the

occurrence of another, needs related to the treatment and the possibility of fulfilling these needs.

Data analysis

A thematic analysis approach was employed for data analysis [40], which was initiated by reading the full interview transcript text and making notes on ideas for codes emerging from the research material. An analysis was conducted by two researchers, each coding the information independently. This kind of procedure of analysing data helps to ensure that all relevant categories were identified and data were similarly interpreted. A common analysis framework was created by discussing doubts and problems. All research material was then recoded and, in the next step, codes were selected for the topics relevant to the study aims. Next, codes were aggregated into thematic categories, which were assigned to the broader categories or rather dimensions. The research question dimensions featured were internal factors contributing to comorbidity of gambling and substance-use disorders (coping with unpleasant consequences, impairment of control mechanisms, desire to gamble triggered by alcohol and drugs, adrenaline and excitement seeking, transition to more easily concealed addiction and seeking money or respect) and external factors (availability of gambling at places where alcohol is consumed, spending time in a gamblers' group or risky substance use).

■ Results

Internal factors contribute to gambling and substance-use disorder comorbidity

Coping with unpleasant consequences

According to respondents, psychoactive substances help them cope with the long-term negative consequences of gambling as well as short-term emotional tensions. Drinking alcohol and using drugs enable respondents to forget about long-term consequences of gambling like debt and family and legal problems. Using substances is some kind of an escape from the reality and makes it possible to forget about ones experienced troubles.

At the time when I started to see the consequences, I began to seek help. I was still working, so I had to play the role of a relaxed person. In fact, I had debts to pay off and a conflict with my wife who was worried that I was always out and was losing everything. Then I started drinking. At that time, it seemed to me that it was still harmless, because I was able to work. At the same time, due to alcohol, I did not feel bad emotions about the gambling. (HD+A, 0903MWRO[1])

Alcohol and drugs were used to relieve unpleasant symptoms like sleep disorder and anxiety. Mental disorders and emotional problems that arose as a result of gambling were alleviated by using psychoactive substances, what can contribute to development of another disorder.

I had sleeping problems; I could not sleep. I felt anxiety and I could not sleep. I drank alcohol because it helped me go to sleep. (HD+A, 1305MWAW)

When I realised that I lost everything, I hurt others, I robbed them, and I was not able to cope with this awareness. I had sleepless nights, anxiety. When I drank alcohol I did not feel it. (HD+A, 0903MWRO)

Respondents use psychoactive substances in order to regulate mood and to reduce emotional tension. Alcohol or drugs bring them immediate relief in the event of a loss. One of the therapists compares it to the way in which people with alcohol disorder alleviate a hangover. The psychoactive substances also help to cope with the excitement associated with the expectation of winning.

In case of losing in the casino, alcohol can bring relief. This may be an attempt to improve your mood when you stop gambling. (DT, 2204KWRO)

Sometimes the patient starts to gamble under the influence of alcohol. But gambling could be the first one. In this case, alcohol relieves the state of overstimulation or intense stress associated with losing. Alcohol is an antidote to these disorders and emotional complications associated with gambling. (AT, 2104KWAW)

It is also the case that those who have stopped taking drugs are looking for another way to reduce tensions and regulate emotions. They can no longer use drugs for that purpose so they start gambling as a substitute for the drugs.

[1] The method of coding: HD+A – People with comorbidity of gambling and alcohol disorders; HD+D – people with comorbidity of gambling and drug disorders; AT – therapists employed in the alcohol treatment facilities; DT – therapists employed in the drug treatment facilities; XXXX – date of the interview; M – male, F – female; WRO – Wroclaw, WAW – Warsaw.

There is a group who have quit drugs and then gambling appears as a substitute, something that reduces the tension. (DT, 0611KWAW)

Unresolved psychological problems like the inability to regulate emotions in a constructive way can cause a specific susceptibility to addiction. People strive to weaken the emotions through using psychoactive substances or gambling.

I look at addiction as an emotion-related illness; the patient becomes addicted because he is not coping well with emotions. When someone has trouble dealing with tension, with emotions, they can easily get addicted to alcohol for example. When he tries drugs, just to find out what it is, a second addiction can then occur. (DT, 2204KWRO)

Gambling is often used in conjunction with psychoactive substance to provide the desired sensations on the basis of complementarity. While alcohol is used for relaxation, gambling is a response to a need for stimulation.

Alcohol causes relaxation of the patient, relief. And gambling often occurs during periods of drinking. Drinking offers a kind of relief while during gambling people are rather looking for adrenaline. It is rather a way of getting excited. (AT, 2104KWAW)

Impairment of control mechanisms

Using substances can weaken control mechanisms and pave the way to another addiction. Psychoactive substances change the state of consciousness, entailing changes in behaviour and functioning.

First it is alcohol, which paves the way, weakens control and facilitates gambling. Everyone is an individual case and in fact has his or her own story. (DT, 0611KWAW)

It also happens that the substance is the trigger to start gambling. And patients often say that they would not gamble if they did not use drugs or alcohol. (DT, 1304KWAW)

Drug addiction has been linked to gambling. Under the influence of drugs, there are many ideas, you go to various strange places, and so I went to the place with slot machines. (HD+D, 0904MWRO)

Alcohol and drug gambling triggers

Alcohol and drugs (mainly stimulants) can increase the desire and drive people to gamble as, under the influence of alcohol and drugs, they felt they could win money. According to people with comorbidity of pathological gambling and substance-use disorders, substance use can be a gambling trigger.

It is very addictive. More and more, the heap of money on the table is the thrill. I've never played being sober, first I drank alcohol. (HD+A, 1705MWAW)

I'm addicted to gambling and alcohol, and if I start gambling, then I do not see the possibility of not drinking vodka. Vodka drives me, gives me a sense of power, a sharp kick. (HD+A, 1204MWAW)

Stimulant use (i.e. amphetamine, mephedrone) increases time spent gambling. It allows the discharge of excess energy after stimulant use.

When my friends and I drank alcohol and used amphetamine, we used to play vending machines, and I liked it. Sometimes I won something and then I got excited. Additional stimulation was amphetamine and alcohol and we were able spend all night gambling. (HD+D, 2705MWRO)

People who use amphetamines or mephedrone have the desire to gamble. They sit there like robots for hours. (HD+D, 2611MWAW)

Looking for adrenaline, excitement

As emphasised by therapists, people with comorbidity of pathological gambling and substance-use disorders have an increased need for stimulation in everyday life in general.

These people live very intensely in general. In their professional life, at work. Until they make changes to their lives, even in abstinence they hurt themselves in a different way. (DT, 0611KWAW)

When stimulation and adrenaline related to their first addiction ceases some look for new sources of desired sensations. An increased need for the stimulation was reported.

Use of substances prepares the brain for some kind of function, and people are looking for more intense experiences. Increased demand for stimuli paves the way for gambling. My patients said that the use of substances allowed them to gamble, to cross the next moral boundary. (DT, 0611KWAW)

Respondents replace one addiction with another to achieve euphoria and feel the adrenaline. Often, this happened after give up drug use, during methadone maintenance treatment, but there were also cases of replacing alcohol with gambling.

When I stopped taking drugs, for some time I replaced them with alcohol. I drank alcohol a lot, and then gambling came along. (HD+D, 1605MWAW)

It was only when I stopped drinking that I started playing the lotteries. It's like a lot of money is spent on it. Every week half of my salary was spent on repaying debts. (HD+A, 2902MWAW)

Patients combine addictions, or replace one addiction with another. Sometimes they stop drinking, they deal with the problem, but at the same time they start to gamble. It works as the exchange. (DT, 1304KWAW)

After undertaking the methadone maintenance programme, patients lose the sense of excitement so far provided by drugs. They can try to achieve similar emotions through gambling.

After entering the methadone programme I was still taking drugs, but less and less. Then I stopped and after a while I started playing slot machines. Maybe it was that I replaced the drug with gambling. When you win and you see these stars it is adrenaline and some euphoria. When you win the money, you are happy. It works like a drug, you feel so cool. (HD+D, 2611MWAW)

Gambling is easier to conceal than substance use

People with substance disorders in spite of taking substance-use disorder treatment, may look for another way to fulfil their needs, which will be more easily concealed before relatives and community. Gambling is easier to hide than substance use, as there are no external signs of addiction.

Patients start gambling when already coping well with substance abuse or during addiction treatment. Gambling replaces addiction to the substance. This is an addiction that can be hidden for a very long time. It is not visible to the human eye. Therefore the benefits are similar to the use of substances, but can be hidden from people. (DT, 0611KWAW)

Gaining money and respect

In the early stages, gambling can be a way of getting money to finance the purchase of psychoactive substances. The winnings can also be a way to earn colleagues' respect and admiration.

When a patient starts with alcohol or is already addicted to it, gambling is one of the ways to easily earn money. Sometimes it's the need to be admired or getting rid of emotional tension. (AT, 0812KWAW)

External factors contribute to gambling and substance-use disorder comorbidity

The opportunity to gamble in establishments where alcohol is consumed

The opportunity to gamble is often available in bars, pubs and hotels where there is easy access to alcohol and drugs. Availability of substances can be conducive to drinking while gambling. There are also people who visit these places to drink alcohol. They observe the players and sometimes they want to try themselves.

My colleagues used to play the slot machines in the bar after work and persuaded me to play too. Then on a business trip I stayed at the hotel and the slot machines were there as well. (HD+D, 3012MWAW)

While playing a slot machine in a bar I started to drink. At first for the taste, but the more often I went there, I also drank more and it has become inseparable. (HD+A, 1503MWRO)

Spending time with pathological gamblers or risky psychoactive substance users

An another factor that may contribute to the occurrence of the second disorder is spending time in the company of people who are pathological gamblers or have substance-use disorders or simply use substances or gamble.

Occurrence of one addiction may contribute to that of another. It is a matter of companionship. People go to play slot machines and by the way they meet people who smoke or take cocaine – it's a matter of falling into the company. (DT, 0611KWAW)

■ Discussion

The current study provides more insight into the psychological and social factors that, in respondents' opinion, contribute to comorbidity of pathological gambling and substance-use disorders. The study covered the internal (individual) and also the external (environmental) factors. The perspectives of professionals and people with pathological gambling complement each other. People with comorbidity based their statements on their individual experiences, while professionals did so on their knowledge and clinical practice, which gives them a broader view of the problem, as they deal with a lot of different cases. Taking into account the opinion of people with different

experiences allowed for the extension of the catalogue of factors that may influence the development of comorbidity.

The study confirmed the internal factors identified in the literature which can contribute to development of pathological gambling and substance-use disorder comorbidity. Psychoactive substances can serve to relieve an anxiety associated with negative consequences of gambling [7, 20, 41]; use of psychoactive substances can reduce the ability of rational judgment, and encourage risky behaviour like gambling [5, 32], a significant increase in the willingness to gamble when alcohol was consumed [33] and, in the early stages, gambling can be a way to finance the purchase of psychoactive substances [41].

At the same time, the study revealed some other internal factors or deepened the knowledge on those that have already been established. Both psychoactive substances and gambling are used to regulate emotions; alcohol or drugs bring immediate relief in the event of losing but, as the current study showed, can also help to cope with the excitement associated with the expectation of winning. It also happens that people who gave up drugs start to gamble to reduce tension and regulate emotions. Unresolved emotional problems and inability to regulate emotions in a constructive way can result in a specific vulnerability to addiction. People seek novel ways of dealing with difficult emotions. Alcohol and gambling can co-occur on the basis of complementarity. While alcohol is used for relaxation, gambling is the answer to the need for stimulation.

Psychoactive substances (mainly stimulants) can act as a trigger to gamble. Alcohol and drugs can raise the desire to do so, drive people on, not allowing them to stop and reduce the capacity for rational evaluation of the situation. Using stimulants (amphetamine, mephedrone) promotes longer time spent on gambling, which allows the release of excess energy.

As the current study demonstrated, some people seek new sources of stimulation when they give up one addiction or the first no longer provides the desired sensation. This applies, *inter alia*, to methadone maintenance programme clients. They get a substitute for the drug that however does not fully satisfy their need of excitement. Getting money for drugs and dealing with dealers is a source of excitement that is difficult to replace. Respondents did not mention this in the discussed study, but gambling can be a way to filling up free time previously allocated for the acquisition of drugs.

As gambling is easier to conceal, some began to gamble during or after treatment for substance-use disorders. Gambling behaviours are relatively easy to hide because there are practically no external signs indicating a problem. Keeping gambling a secret allows avoidance of negative social reactions and stigma [42].

As has been stated, gambling can be a way of financing the purchase of psychoactive substances especially in the early stages of addiction. However, as the current study has demonstrated, the winnings can, at the same time, be a way to earn colleagues' respect.

An external factor that can contribute to substance use and gambling comorbidity was determine by Abdollahnejad *et al.* [20] and is related to spending time in places where alcohol is relatively easily available. This factor was also detected in the current study. In addition, respondents pointed out that spending time in the company of people with psychoactive substance use problems can contribute to the occurrence of another disorder.

Research conducted in the field of addictions employs models of impulsivity to explain the predisposition to drug use and lack of capacity to maintain abstinence [43-45]. A positive correlation between impulsivity and gambling disorder was demonstrated in numerous studies [46-48]. Robinson and Berridge [49] argued that people with substance-use disorders are highly sensitive to the rewarding cues provided by drug use and fail to control their desire to engage in the problematic behaviour. They continue the behaviour despite its negative consequences, demonstrating rash impulsivity [50]. In principle, the same can be said about those with a gambling disorder [45]. The rewards for people with substance-use disorders and those with gambling disorder are very often the same, for example avoiding unpleasant consequences (physical and mental) or gaining the desired emotions, and thus are factors that promote the development of comorbidity identified in the current study.

Stewart *et al.* [28] clustered 158 community-recruited people with gambling disorder who drink while gambling into three distinct subtypes according to their answers to the Inventory of Gambling Situations. The first cluster was la-

belled *enhancement gamblers,* and these individuals gambled solely for positive reinforcement, i.e., to increase positive emotions and excitement. The second was named *coping gamblers* who gambled mainly to relieve worry and other unpleasant feelings. The last one included people who did not report gambling for reasons directly related to the modulation of affect; there were *low emotion regulation gamblers.* In particular, *enhancement* and *coping gamblers* demonstrated elevated rates of alcohol-use problems in comparison to *low emotion regulation gamblers.* The motives for excessive gambling among enhancement and coping groups appear to be similar to that for excessive drinking among those with alcohol disorder [51]. The factors identified in the current study that favour the comorbidity overlap with the motives of gambling among *enhancement gamblers* and *coping gamblers*. At the same time, these two subtypes with gambling disorder demonstrated elevated rates of alcohol-use problems. It seems that, the development of comorbidity can be conditioned by, among other things, motives for gambling and use of psychoactive substances.

Most of the factors identified in the current study are, according Mueser's *et al.* [2] classification, common factors that can lie at the root of both pathological gambling and substance-use disorders; for example increased sensation seeking or impairment of the control mechanisms modulating emotions. At the same time, in the current study, the example of a first model of comorbidity was identified as mental health problems were shown to cause/favour substance-use problems: gamblers spend time in places where alcohol is available and the second model example is when substance use problems have been seen to cause/favour mental health problems; people with substance-use disorders may transfer to gambling as easier to conceal than substance use. In the current study, any factors that would indicate the mutual interaction of disorders were identified.

Limitations. One of the study limitations is sample selection as only those who already had experiences with some kind of treatment participated, so the perspective of those outside the care system has not been included. The second limitation is that qualitative data could be more easily influenced by the researcher's personal values and beliefs. This problem has been addressed by means of two experienced researchers analysing the data independently. This helped to ensure that list of categories is comprehensive and data has been reliably interpreted.

It is important to have in mind that factors promoting development of pathological gambling and substance-use disorder comorbidity were established on the basis of respondents' statements, reflecting their subjective ideas related to the problem. Moreover, therapists in Poland with expertise in addiction are educated according to the psychological and social paradigm and presumably have little awareness of the biological determinants of disorders.

■ Conclusions

The awareness of the factors that contribute to the development of the comorbidity of pathological gambling and psychoactive substance-use disorders allows for inclusion of this knowledge both in treatment and prevention programmes.

Conflict of interest/Konflikt interesów

None declared./Nie występuje.

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Ethics/Etyka

The research received the approval of the Bioethics Committee of the Institute of Psychiatry and Neurology, no 16/2015. /Na badanie otrzymano zgodę Komisji Bioetycznej Instytutu Psychiatrii i Neurologii, nr 16/2015.

The work described in this article has been carried out in accordance with the Code of Ethics of the World Medical Association (Declaration of Helsinki) on medical research involving human subjects, Uniform Requirements for manuscripts submitted to biomedical journals and the ethical principles defined in the Farmington Consensus of 1997.

Treści przedstawione w pracy są zgodne z zasadami Deklaracji Helsińskiej odnoszącymi się do badań z udziałem ludzi, ujednoliconymi wymaganiami dla czasopism biomedycznych oraz z zasadami etycznymi określonymi w Porozumieniu z Farmington w 1997 roku.

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