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Comorbidity of a Serious Mental Illness with an Addiction to Psychoactive Substances

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1. Introduction

Available data from literature show that among patients suffering from serious mental illnesses it was observed that about 50% of them abused psychoactive substances during their lives (Kessler et al., 1996). And the dependence on such substances like cannabis, amphetamine, or cocaine is more common in patients suffering from schizophrenia than in other psychiatric patients (May-Majewski, 2002). It was found that in the North American population every fourth person suffering from schizophrenia abused alcohol (Helzer & Pryzbeck, 1998). The objective of this study is to analyze data from literature concerning the reasons for psychoactive substance abuse by persons suffering from psychiatric disorders and to discuss the most effective treatment strategies for them. A very important part of this analysis is the so called self-treatment hypothesis formulated by Khantzian (1985). Its definition embraces two elements. Firstly ill persons use psychoactive substances, because they decrease their psychological discomfort. On the other hand there is a great degree in psychopharmacological specificity in choosing the abused substance.

2. Definition of dual diagnosis

In the diagnostic process in psychiatry it often happens to set two or more diagnoses in the same patient. "Dual diagnosis" is a concept that doesn't appear in the official nomenclature of mental health and is not included in the ICD-10 and DSM-IV classifications. In a very general sense it concerns a patient who presents a psychopathological picture, in which we find simultaneously fulfilled criteria for two different psychiatric disorders. However, in recent years, the term "dual diagnosis" has become synonymous with the coexistence of psychiatric disorders and psychoactive substance dependence (Solomon et al., 1993) and this coexistence can consist of the following options:

1. Mental illness and drug dependence.
2. Drug dependence and personality disorders.
3. Acute psychotic disorders resulting from substance use.
4. Drug dependence, mental illness and organic disorders in different combinations (Sciacca, 1987).

Patients with a dual diagnosis can cause many problems in the diagnostic process and therapy at different stages of treatment both in the psychiatric and in the addiction

treatment systems. One of the most common examples of a dual diagnosis encountered in psychiatric clinical practice is comorbidity of schizophrenia or bipolar disorder and psychoactive substance dependence.

3. Epidemiology and demographics of dual diagnosis

In recent years, there has been a gradually growing awareness that the problems associated with abuse and addiction to psychoactive substances are very common in people with various mental disorders, including schizophrenia and bipolar disorder. But, although there is an increasing number of reports from the literature that these coexisting disorders are very common, as yet few therapeutic programs based on empirical data targeted specifically at this group of patients have been developed (Lewin & Hennesy, 1994). Based on available evidence, we can try to describe the scale of the problem. The incidence of bipolar disorder and coexisting abuse of psychoactive substances has been described *inter alia* in the Epidemiological Catchment Area Study (Regier et al, 1990). This study was conducted among participants from five different municipalities in the U.S.. It showed that, in comparison with patients with other psychiatric disorders, people with bipolar disorder had the highest comorbidity of disorders associated with alcohol use (46%) and drugs (41%). In addition, rates of disorders associated with the use of alcohol and drugs in people with bipolar disorder were much higher than the associated disorders in the general population (14% and 6%). It was also observed that in bipolar I there was a higher risk of coexistence of problems associated with substance abuse in comparison with bipolar II, which were respectively 61% and 48% (Lewin & Hennesy, 1994). These results were confirmed by further epidemiological studies. In the National Comorbidity Study (NCS) focused on the respondents with a lifetime alcohol or drug use disorder, recruited for the evaluation, it was found that 51,4% of them also met criteria for at least one lifetime mental disorder. 50.9% of the NCS respondents with a lifetime mental disorder also had a history of alcohol or drug abuse or dependence (Kessler et al., 1996). As mentioned above, one of the most common example of dual diagnosis is the coexistence of schizophrenia and addiction to substances. In the studies of Helzer and Pryzbeck (1998) it was found out that four times more alcoholic than non-alcoholic subjects suffer from schizophrenia. The abuse of stimulants four times more common in schizophrenic than non-schizophrenic subjects (Leduc & Mittleman, 1995). In New York State among each 100 patients hospitalised for their first episode of schizophrenia, 35% of them were addicted to illicit drugs. During the relapses of schizophrenia 22% of the patients use psychoactive substances (DeLisi et al., 1991).

3.1 Young age of patients with dual diagnosis

Patients with dual diagnosis are often young people. De Millo (1989) observed the prevalence of various psychiatric disorders among adolescents addicted to drugs, which was much higher than a parallel incidence among adults, but he also emphasises the fact that there is a lack of standardisation of diagnostic tools for this population. According to Lysaker et al. (1994) among schizophrenic patients with concomitant use of cocaine, the age of first hospitalisation was earlier than in patients not biased. In turn, according to Menezes (1996) patients with dual diagnosis are mainly young men. These observations confirm the evaluations from the studies of Maynard and Cox (1998), who compared the demographic structure of patients hospitalised in psychiatric hospitals in the United States. They showed that among patients with dual diagnosis there was a larger number of younger ones

(average age of 36-37 years), compared with those which had only a single psychiatric diagnosis (mean age of 42-43 years).

A study done in Swiss population, which was conducted in different groups of schizophrenic patients presented a higher average age of subjects without addiction, and also of those who were solely dependent on alcohol, in comparison with patients with a history of illicit drug abuse (Modestin et al., 2001).

Similarly, Kavanagh et al. (2004), examining patients with dual diagnosis in the population of Australia, found that the incidence of alcohol use in patients with dual diagnosis did not depend on the age group, whereas the use of other psychoactive substances was higher in younger groups. Epidemiological studies in England showed that the average age of patients with dual diagnosis is within the range of 34-38 years, but recent trends show a gradual decline of this age (Frisher et al., 2004).

3.2 Sex differences among dual diagnosis patients

When discussing issues related to the comorbidity of a serious mental disorder and addiction to psychoactive substances, an important factor to be considered is the sex. Lewine (1981) in his review of the literature devoted to the differences between men and women suffering from schizophrenia emphasises that men are characterized by poorer premorbid social functioning, earlier age of first hospitalisation, more severe negative symptoms, more severe disease. Better premorbid functioning of women with schizophrenia is an element often emphasised in the literature. Women at the time of onset have a better social contacts, higher education, more permanent job, most of them have already left home, got married, or have a regular partner (Kalisz et al., 2001). Girls more often than boys have a secondary education (Krupka-Matuszczyk, 1998). Research on gender differences in schizophrenia have shown that women experience a milder form of the disease than men, which is associated with better premorbid functioning. Gearon and Bellack (2000) draw attention to the gender difference in patients with dual diagnosis. In the group of outpatients with coexisting schizophrenia and psychoactive substance dependence found that women, despite a better premorbid functioning and later age of onset, experience a deterioration, when they begin to use drugs. This may indicate that women are particularly susceptible to the adverse effects of psychoactive substances. The use of these substances and related social deficits, and reduced ability to process information in them may impair the ability to recognise hazards, such as the threat of violence or rape and protect themselves against them (Bellack & Gearon, 1998). Prevalence of drug use also has a correlation with gender. As noted Sieroslawski, in studies conducted in Poland and Europe in the early 90's, the prevalence among boys was more than twice higher than in girls, though he stressed that in some other countries, like Britain or the USA differentiation based on gender was not so clear (Sieroslawski, 1998). Since the age of onset of schizophrenia in men is lower than in women, and drug use among young men is more prevalent, perhaps it may result in a fact that the population of patients with dual diagnosis is dominated by young men. Numerous studies show a predominance of males among people with dual diagnosis. In 1994 DeQuardo et al. evaluated the frequency of substance use among schizophrenic patients. In a population of addicts analysed by them, there were 48% of men and 20% of women. Maynard and Cox (1998) analyzed cross-sectionally a population of patients hospitalized in the U.S. due to various psychiatric disorders, and they found that among those with a dual diagnosis, the majority were males. Swartz et al. (2000) conducted

an epidemiological study including drug addicts in the U.S.. Among the people who developed a dual diagnosis, 70% were males, and most of them were in the age group of 30-40 years. Salyers and Mueser (2001), studying a group of 404 patients with schizophrenia and schizoaffective disorder, found that in the subgroup that had used alcohol or drugs, women constituted a minority. Other sources of demographic and social analyses of patients with dual diagnosis indicate that the population of such patients consists mostly of men, who often do not work and are poorly educated (Drake & Mueser, 2000). Hambrecht and Hafner (2000) conducted research among a population of a billion participants from Germany, noting that among patients with the first episode of schizophrenia, male gender is a greater risk factor when it comes to cannabis abuse. Similar observations were made by Cantor-Graae in studies conducted in Sweden (2001) in which it was found that among patients with schizophrenia who use substances were far fewer women. French researchers analysed the demographics of patients with schizophrenia and the use of psychoactive substances. It turned out that in that group only 16.7% were women (Dervaux et al., 2003). Kavanagh et al. (2004) examining the incidence of substance use psychoactive drugs in patients with psychoses of various aetiologies noted a prevalence of males in the evaluated group.

3.3 Level of education in the population of dual diagnosis patients

As stated by Chouinard et al. (2003), the first episode of a serious mental illness usually appears at the beginning of adult life, and this is the age when people take important life decisions on, inter alia, the occupation. Suffering from psychiatric disorders is often associated with failure to achieve an adequate education, which may be a consequence of reduced social and economic status. In a Polish follow-up study conducted by Krupka-Matuszczyk (1998) on a group of adolescents including 142 persons, it was observed that after the first hospitalisation 30% of young people did not continue education interrupted by illness. Patients with schizophrenia or bipolar disorder often appear to be poorer, positioned (economically and socially) in worse groups and regions. Achieving a lower educational level may be also the result of the use of psychoactive substances. Swaim et al. (1997) repeatedly observed a higher proportion of drug users in those who interrupted their education prematurely. In a study conducted in Australia it was found that weekly marijuana use in adolescents increases the risk of disruption of school before completing it (Lynskey et al., 2003). Oboth and Anthony (2000) found that among young Americans intravenous drug use causes frequent interruptions of education in high school. In further studies, Kavanagh et al., (2004) observed that having a lower educational attainment was correlated with the use of cannabis, but there was no such correlation with other drugs. In another study, devoted to patients with dual diagnosis, it was found that patients with schizophrenia addicted to alcohol or drugs achieve worse education in comparison to patients with schizophrenia without concomitant dependence (Potvin et al., 2003). Thus, the coexistence of addiction and a serious mental illness may imply in a summation of the associated adverse factors affecting the level of education of the patients.

4. Diagnostic problems

Conducting epidemiological studies is complicated by the fact that the described problem is associated with a number of diagnostic questions. For example it is possible that some of the observed elevated rates of coexistence of bipolar disorder, or disorders of the bipolar

spectrum, such as cyclothymia, and addiction may be caused by the effects of consumption of psychoactive substances. This diagnostic error is less likely in patients with chronic, severe bipolar disorder or in those patients who clearly developed symptoms of bipolar disorder before they began using substances (Lewin & Hennesy, 2004). It is also sometimes difficult to make a differential diagnosis between schizophrenia and a drug related psychosis. Some helpful observations from the patient's behaviour may suggest the clinician the possibility of substance abuse by persons treated for various mental disorders. For example, patients can often ask the nurse for painkillers, and pharmaceuticals to treat different symptoms. This behaviour often distinguishes them from patients without substance abuse problems who are reluctant to take medications because of unpleasant experiences with side effect and because of an association with a stigma of a mental illness. Another clue suggesting addiction is a behaviour of the patient in the community of patients. Patients with a co-dependency often show a better functioning in a group of mentally ill persons. They show higher social skills and they are more adequate in the field of sexual behaviour. Patients with a co-dependence more often have a tendency to intimidate others, causing fear and respect among the staff and other patients (Solomon et al., 1993).

5. Reasons for substance abuse among mentally ill people

Why are disorders related to substance use so common in patients with serious mental illnesses? One of the attempts to explain this phenomenon is the self-medication hypothesis formulated by Khantzian (1985). In defining the self-medication, he draws attention to its two aspects. 1) There is a considerable degree of specificity in the choice of a psychoactive substance. 2) People use, abuse and become addicted to psychoactive substances because they reduce the feeling of psychological discomfort. This suggests that people with psychiatric disorders use specific substances (e.g. use heroin during a manic episode or stimulants during a depressive episode) in an attempt to prevent or "self-medicate" unpleasant symptoms, which ultimately leads to the re-use of these substances. The motivation to do it is often a result of subjective profits that the patients using them experience. The patients with schizophrenia use those substances in order to handle depression, to experience more profoundly different emotions, and to reduce the side-effects of the medication they are prescribed. The data show that illicit drugs are used to reduce depression (72%), and tension (64%) to increase pleasant emotions (62%), to enhance the ability to work and to learn (17%), to decrease the side-effects of the medication.(15%), to reduce hallucinations (11%) , suspicion (4%) and other symptoms (Dixon et al., 1991). The analysis of the causes of abuse of psychoactive substances by subjects with schizophrenia was made by a Canadian team, which attempted to balance gains and losses incurred by the patients reaching for psychoactive substances. In the patients' opinion marijuana and alcohol improved their social functioning. However besides the positive outcomes, the respondents emphasised that the reduction of depressive symptoms was often only their wish, because except for achieving such effects as relaxation, pleasure, being more active etc., the psychoactive substances may happen to be an uncontrolled and unexpected reason for an increase of depressive symptoms. In addition, in spite of achieving a feeling of increased satisfaction, the patients might experience an exacerbation of existing, or develop new positive symptoms of schizophrenia (Addington & Duchak, 1997). When evaluating the attractiveness of different substances for the patients suffering from schizophrenia it is very

important to distinguish between positive and negative symptoms of this disease. The positive symptoms usually implicate the abuse of tranquilisers, and the negative symptoms are most frequently a reason to develop a dependence than the positive symptoms. The incidence of negative symptoms is usually accompanied by increased suffering and the patient uses the substance to reduce it even if the relief is only transient. The study done in Australia (1995) was very important. 53 patients with comorbid diagnoses of schizophrenia and addiction to psychoactive substances were interviewed with the use of Brief Symptom Inventory and Schizophrenia/Substance Abuse Interview Schedule. Most of the patients reported that the use of substances was the reason for a development or exacerbation of their disease, 80% of them used drugs to handle their dysphoria and anxiety. The amphetamines caused their subjective improvement better than alcohol, however the choice of the substance depended mainly on what they could afford. Only cannabis exacerbated the positive symptoms and only amphetamines reduced negative symptoms (Baigent et al., 1995). In other studies it was proven that different substances have influence on different problems related to the disease. For example alcohol, cannabis and cocaine decrease depression, cannabis and alcohol decrease the level of anxiety and cocaine increases it (Coben & Levy, 1998). The analysis of subjective experiences of the patients shows that handling the positive symptoms is the most difficult for them as alcohol has here only a limited influence, cannabis increases these symptoms and the effect of cocaine may be diverse depending on the individual patients.

6. Impact of substance use on the course of psychiatric disorders

The observations of the clinicians treating the dual diagnosis patients concerning the influence of the substance abuse on the course of the mental illness are inconsistent. According to some of them the patients suffering from schizophrenia abusing substances present less positive and negative symptoms, according to others the substance abuse highly deteriorates the course of the disease. Especially the stimulants like cocaine have a negative impact on the intensity of psychiatric symptoms. According to data from literature the only result of substance abuse is the increase of frequency of hospitalizations (LeDuc & Mittleman, 1995), and according to some other studies the impact on different symptoms may be diverse, e.g. alcohol causes an increase of positive symptoms, and it is also responsible for a higher frequency of suicidal attempts (Soyka, 1994). We have available data from the literature on the relationship between substance use and severity of clinical symptoms. Lysaker et al., (1994), found that patients with schizophrenia who use cocaine have less intense negative symptoms than patients, who do not use cocaine. Serper et al. (1995) found in schizophrenic patients with a concomitant use of cocaine lower scores of negative symptoms and higher scores of depression and anxiety. Salyers and Mueser (2001) examining patients with schizophrenia who used alcohol and drugs, observed lower intensity of negative symptoms than in patients without concomitant dependence. However, Soyka et al., (2001) found that the coexistence of addiction, causes only minor differences in the scores of positive and negative symptoms. Clearer differentiation of severity was related only hallucinations among patients with dual diagnosis. Norwegian authors who analysed the relationship between substance use and severity of PANSS scores in psychotic patients who used and who did not use psychoactive substances, did not observe differences in positive negative and general symptoms (Moller & Linaker, 2004). In contrast, Canadian researchers found that patients with dual diagnosis had a higher score in

PANSS than patients with schizophrenia alone (Margolese et al., 2003). Buhler et al (2002) examined populations of nonabused patients with schizophrenia and those addicted to alcohol and drugs (mainly cannabis). They found that patients with dual diagnosis experienced more severe positive symptoms. Similar results have also resulted in a study conducted by Green et al. (2002). In the work of Addington and Addington (1997) there was no overall significant difference in symptoms measured by PANSS scale between the group using and not using psychoactive substances. The exception was the subgroup of people who used cocaine, in which a higher severity of positive symptoms was observed. In a study conducted by Pencer and Addington (2003) analysing the cognitive functions in patients with first episode of psychosis, using psychoactive substances, an assessment of PANSS at the start, after one year and two years of observation was done. There was no difference in negative symptoms between the two groups, while those who did not use drugs had less severe positive symptoms. It must be remembered that the subjects throughout the period of observation have used psychoactive substances. Substance abuse can also have a negative impact on the course of the bipolar disorder. For example, it may be associated with earlier age of onset of the disorder and cause more difficulties in the therapy of the subtypes of the disease, such as rapid cycling, dysphoria and mixed states. Salloum et al. (2002) conducted a study covering 256 patients with acute manic episode, done in a municipal psychiatric ward, in which it was found that patients with severe symptoms of disease, abusing alcohol presented a significantly higher lability of mood, impulsivity and increased incidence of aggressive behaviour than patients with an acute manic episode without accompanying alcohol abuse. Furthermore, the coexistence of bipolar disorder and substance abuse is associated with an increased number of psychiatric hospitalisations and it is more difficult to achieve remission of acute manic episodes.

7. Treatment strategies for patients with dual diagnosis

These observations lead to a conclusion that a specific approach for the treatment of comorbid mental illness and disturbances associated with the use of psychoactive substances is necessary. Currently, clinicians must often rely on their own observations rather than on empirical data to determine which therapies are best for this group of patients.

7.1 Pharmacological treatment

In schizophrenic patients with comorbid substance abuse the treatment with second-generation antipsychotics may have beneficial effects on their symptoms. There are reports in the literature, which indicate the ability of these drugs to reduce other symptoms of the disease, as well as reducing the amount of drug used by patients treated with them.

In the studies of subjects with schizophrenia and schizoaffective disorder, previously diagnosed as drug resistant, a subgroup of patients with dual diagnosis was selected. When they were switched on clozapine from classical neuroleptics in within six months, the authors noted that patients with a coexistence and without a coexistence of drug dependence responded equally to the treatment (Buckley et al., 1994). Similar observations were made Volavka (1999), who noted that during a 6-month treatment with clozapine it could not be determined whether the difference in the treatment response between patients with schizophrenia and schizoaffective disorder depends on the fact if they use or do not use psychoactive substances. In turn, Zimmet et al (2000) found that over 85% of patients who

used psychoactive substances during their treatment with clozapine reduced the quantities of abused psychoactive substances. To similar conclusions also led the studies by Green et al., (2002) and also by Drake et al., (2000) in relation to patients who use alcohol, as well as research of Buckley et al. (1998) embracing patients with dual diagnosis abusing alcohol, cigarettes and cocaine. As it turned out, the classical neuroleptic treatment did not reduce the amount of abused substances. Probably the positive effects of clozapine treatment is due to the fact that it acts on mesocortical and mesolimbic dopaminergic neurons that are associated the reward system (Green et al., 1999). According to Noordsy et al., (2003) in patients with schizophrenia the reward system does not function properly, which increases the susceptibility to substance use. This may also underly the poorer tolerability of conventional antipsychotics in patients with dual diagnosis and the effectiveness of clozapine and, to a lesser extent, of other atypical antipsychotics in the treatment of this group of patients. According to Stip et al., (2003) and Weisman (2003) in the treatment of patients with dual diagnosis the most promising results were obtained with clozapine, and slightly worse results with olanzapine and quetiapine. Other studies have shown a reduction in the frequency of alcohol use after the change of treatment from classical neuroleptics to risperidone (Huang, 1996).

As for the effect of various drugs used to treat bipolar disorder, a summary is made here Maremmani et al (2010). According to them, for example, carbamazepine is beneficial in preventing relapse in abusers of cocaine and has a positive effect on discomfort associated with fluctuations in mood, but it has no effect on the behaviour directed to obtain the substance. Selective response to lithium is achieved in alcoholics with a coexisting depression. Oxcarbazepine has a good effect of aggressive patients, while valproic acid generally is considered the drug effective in patients with coexisting bipolar disorder and addiction, but also in people with anxiety disorders and the accompanying dependence on psychoactive substances. The authors of that study conclude that some of these medicines are safe and effective agents that can be used in the treatment of addicted persons with mood disorders.

7.2 Psychotherapy and rehabilitation

Due to the above-described specific problems associated with diagnosing and treatment of patients with dual diagnosis, specific treatment programs should be developed for them, which combine elements of both psychiatric treatment and addiction therapy. Understanding the causes of the problems described above is necessary for an effective prevention of drug abuse by people with mental illnesses. An example of therapeutic program for dual diagnosis patients with comorbid addiction to substances, with which the authors have a possibility to co-operate, is the Therapeutic Community "Familia" in Gliwice, Poland, which was founded by May-Majewski in the 80-ties. A comprehensive model of treating patients with dual diagnosis, offered by the Center for Addiction Treatment "Familia" allows them to move freely between the settings of two therapeutic models. The program is stationary, conducted in three separate buildings. They have registered 100 beds. The whole program employs three psychiatrists, 6 psychologists and 8 specialists in addiction therapy and nurses. The therapy takes place in a therapeutic community in which the average age is 23 years and in various small groups depending on the current needs of the patient. The treatment of the patient in the psychiatric ward usually follows a complex

diagnostic process. Depending on the patient's current condition, which for example may be acute or chronic, the patient may continue his or her treatment in a therapeutic community. The most important rules of the program are: 1) authority, 2) clear rules and principles. The fulfillment of these conditions is essential in building a therapeutic offer for the patients with an addiction to psychoactive substances and psychiatric disorders. These standards apply in therapeutic communities, where adherence to rules and principles is possible through the common responsibility of all members of this community, both therapists and the patients. The most important factor in a successful therapy are: receiving feedback from others, allowing to express emotions, a sense of belonging to a group, giving feedback to others, discovering that others have similar problems, receiving support from others, giving support to others, receiving tips and ideas from others. The participant of a therapeutic program is expected to make a gradual transition from the periphery of the therapeutic community to a position, when he or she takes over certain responsibilities (May-Majewski, 2002). Training of social skills is also a very important part of rehabilitation of patients with dual diagnosis. It includes skills such as: communication, interpersonal problem solving, active participation in their pharmacotherapy, learning to take care of their own health (Sawicka, 2001). A very important element that should be included in these programs is also a cognitive skills training, because, according to the literature, patients participating in cognitive skills training significantly improve their performance on neuropsychological tests, they increase their insight. Keshavan and Hogarty (1999) developed the concept of "social cognition", which is associated with the term "emotional intelligence". The so-called "social cognition" is the central element of pathophysiology of certain mental disorders like schizophrenia. People predisposed to the development of schizophrenia may use immature (concrete as opposed to abstract) styles which are inadequate for the more complex and abstract cognitive requirements specific to adults. In this way, they do not understand the essence of the subtleties and nuances of social interaction (Lewis, 2004). It appears that cognitive impairment is associated with various aspects of social functioning and problems in vocational activities. Data from literature suggest that they are particularly important for social functioning, quality of life, social skills, ability to benefit from learning new skills (Tamminga, 1998).

8. Conclusion

Understanding the causes of the problem described above is necessary for effective prevention of substance abuse by people with mental health problems. The results of available studies suggest that these patients have an increased risk of a relapse of both the disease and the addiction to substances. In addition to the symptoms they experience, one of the very important problem in the lives of these patients is their difficulty in social functioning. Effective therapy for these individuals should include: making it possible to create a protective environment, assisting these people in making important changes in their lives, such as finding a good job, friends abstaining from drugs and alcohol, a group of people who can help the patient to find sense their lives. Patients directed to a therapeutic program must be motivated to make changes in their current life. This decision must be conscious and be a free choice of the patient. It is also necessary to apply specific, individualized forms of therapy of, mental disorders and those associated with substance abuse.

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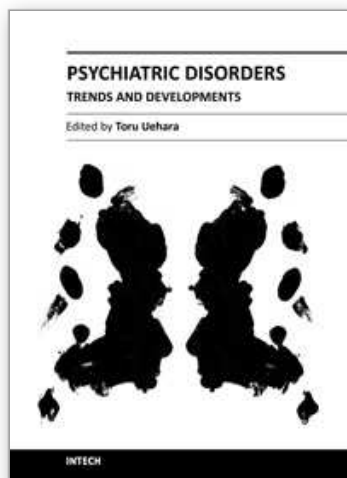
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Due to their prevalence, pervasiveness and burden inflicted on men and women of today, psychiatric disorders are considered as one of the most important, severe and painful illnesses. This impairment of cognitive, emotional, or behavioural functioning is in some cases tragic. Aside from knowing the physical organic factors, such as infections, endocrinal illnesses or head injuries, the aetiology of psychiatric disorders has remained a mystery. However, recent advances in psychiatry and neuroscience have been successful in discovering subsequent pathophysiology and reaching associated bio-psycho-social factors. This book consists of recent trends and developments in psychiatry from all over the world, presented in the form of multifarious and comprehensive articles. The first two sections of the book are reserved for articles on schizophrenia and depression, two major illnesses present in this field. The third section of the book is reserved for addiction psychiatry, related not only to socio-cultural but also biological alterations. The last section of the book, titled Biological Neuropsychiatry, consists of three topics - updated molecular biology, fundamental neuroscience and clinical neuropsychiatric conditions. Doubtlessly, this book will be fruitful for future developments and collaboration in world psychiatry.

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