

The Importance of Neuropsychopharmacology in the Development of Psychiatry

SÁNDOR KALMÁR

Private practice, Kecskemét

The author establishes that Psychiatry has been in a difficult situation especially in Hungary since closing down the National Institute of Psychiatry and Neurology. He reviews the most important factors which hold up the development of Psychiatry. He settles that the development of Psychiatry is inconceivable without a person's holistic approach which assumes the biological, mental, cultural-social and spiritual approach. Disturbances of perception have particular roles in the formation of psychopathological symptoms which are based on the operation of the nervous system. This fact emphasises the importance of the nervous system and the neuropsychopharmacology which we have known since the beginning of history although it is hardly half a century old. He pays the attention to the psychoactive medicine that was well-known in the ancient civilization. He reviews some of them which were actually the first neuropsychopharmacological pharmaceuticals. He emphasises the dichotomy of the psychopathological symptoms which are partly objective, partly subjective but based on the operation of the nervous system by all means. His statements not only establish a new kind of approach of both the person and the Psychiatry but enables the development of Psychiatry, the creation of a new sort of diagnostic system, eliminating the variance among the experts dealing with people, the neurologists, the psychiatrists, the psychologists, the sociologists, the philosophers and the theologians, ensuring the biological (neurological), psychological, cultural and spiritual perpetuity. The biological, genetic, psychic, cultural-social and spiritual approach, the application of nanomedicine that enable not only recognising the organic neurological bases of the psychiatric disorders that are all crucial for the future researchers but also essential in the development of the neuropsychopharmacology based on the function of the nervous system.

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It is a serious fact that the psychiatric provision in Hungary today is deeply underdeveloped according to its personal needs and its physical means comparing it to the international expectations and other similar developed countries. The tragic decision happened on 1st April, 2007 when the government eliminated the internationally respected National Institute of Psychiatry and Neurology by neglecting the experts' opinion and let most of the psychiatrists leave for abroad (Gaszner, 2007).

Much publication justifies the fact that Hungarian psychiatrists have always been concerned about the future of Psychiatry; particularly in the latter decades when the research of the nervous system was dra-

matically improved. The activity of the Hungarian National Institute of Psychiatry and Neurology became almost boundless, with recognized international success and scientific activity that expanded throughout the country. The ruins of the Hungarian National Institute of Psychiatry and Neurology resemble to me the remains of the Egyptian pyramids likewise (looted out but remain dignified) (Kalmár, 2013).

Most of the Hungarian psychiatrists' knowledge cures the psychiatric patients of foreign, rich countries while most of the Hungarian patients do not even get the minimal (essential) treatment. The number of psychiatrists was 841 in 1999, the number of child psychiatrists was 110, and these figures had been

significantly reduced by 2010. In that year the number of psychiatrists was 661, the number of children psychiatrists was 47 (Yearbooks of Health Statistics, 1999, 2010).

The crisis of Psychiatry is dealt by psychiatrists all over the world but most of the participants are "prisoners" of their own points of view and their previous knowledge and they cannot see the greater connections. It is difficult to find the reality and the right way between traditional Psychiatry and new trends. Among the new approaches it is not difficult to find the experts who are searching and supporting future possibilities but also those people who set back the quackery and the real solution, whose own interests are put in priority, and who consider themselves to be the only experts. It particularly reevaluates the scientific-based search of the nervous system, determining the neuropathological bases of psychiatric illnesses, specifying the symptoms and writing up the new diagnostic system and the up-to-date medical therapy principles. The most serious obstacle in the cure of patients suffering from psychiatric illnesses is the slowing down of the neuropsychopharmacological research.

IMPORTANT FACTORS

In understanding psychiatric illnesses most contradictions are caused by eliminating the important facts as below:

1. "The senses, the nervous system, the mind and the world were formed together, whereupon they are joined together mutually" (William James, 1892).
2. The base of all the psychiatric disorders just like the psychopathological symptoms is organic neurological disturbance. This is testified by a few facts, on the first hand, psychiatric disorders could be influenced, reduced or eliminated by adding some neuropsychopharmaceuticals, on the other hand, these medicines have side-effects which could be demonstrated with neurologic tests. With separating Psychiatry and neurology the possibility to examine patients suffering from psychiatric illnesses neurologically ceased, however, the detailed neurological examination of any patient with psychiatric illness could shed light on several "soft" neurological symptoms. Today several psychiatrists consider neurologic symptoms to be consequences and they do not even know or use the useful and most frequent evaluation scales for recognizing the soft symptoms (The Neurological Evaluation Scale, Cambridge Neurological Test, Heidelberg Scale, Lurija Neuropsychological Test etc.) (Salacz, Hidasi, Csibri, 2011).
3. Behind the psychopathological symptoms some kind of disturbance of perception might always be found that is the conclusion of the operational disturbance of the nervous system (Kalmár, 2009, 2010b). Today psychiatric textbooks classify perception disturbances among psychopathologic symptoms in a separated group (Kaplan, Sadock, 1991). The disturbance of perception, psychopathological and psychotic symptoms not only mean psychiatric illness or disorder. They depend on culture and happen frequently to healthy people as well (Kelleher et al, 2013).
4. A human individual consists of (at least) four parts:
 - Physical, biological and somatic individual.
 - Mental and psychological individual.
 - Cultural and social individual. Culture is important. 'A person's culture is deeply rooted in the human central nervous system, and also defines how we observe the world' (Hall, 1980).
 - Spiritual individual (the mystical and spiritual experiences always manifest themselves in altered states of consciousness based on changes in the nervous system). The holistic principle of up-to-date treatment considers the person to be a biological-psychological-cultural and spiritual unit, and separates these only for a didactic purpose, respecting the specialities of all the four parts (Kalmár, 2014).
5. All the four parts just like health are in a tight relationship with each other. 'Health is a state of complete physical, mental, cultural-social (and spiritual) wellbeing and not merely the absence of disease or infirmity.' The WHO report continues: 'Patients and physicians have begun to realize the value of elements such as faith, hope and compassion in the healing process' (WHO).
6. Understanding a person is possible by getting information through sense-organs, the skill of thinking joins them which is the primary, essential medium of the relationship with the outside world. According to ancient Indian psychology there are eleven sense organs: five organs of knowledge, five organs of action, and the internal organ or mind (Sinha J, 2008). Spirituality cannot be sensed in an objective way, its sense-organ is the faith.

7. Psychiatric symptoms and illnesses have an objective part which is based on the abnormality of the nervous system and could be examined with scientific methods, and there is a subjective part which is based on psyche and culture rather than being sociological and spiritual and could be examined hermeneutically, not scientifically. The person and the universe cannot be known completely with only scientific methods today but since recognizing the laws of the quantummechanics and nanotechnology, several physicists, brain-researchers and also the interested ones standing far from science have been delighted and they believe that quantum theory might explain the mystery of consciousness. The mystical and spiritual experiences could be experienced through altered states of consciousness actually, whose base of the changes of the nervous system and our belief decides if we accept its content or not. Several materials were used in the ancient initiative ceremony which modified the state of consciousness through nervous system effects. We know a lot of scientists who searched these two areas and treated them as not opposites (P. Chardin, I. Newton, C.G. Jung, A. Einstein, B. Koronkai, E. Frecska, etc). The negative attitude against Psychiatry and the somatic, mental, cultural and spiritual illiteracy based on the lack of education makes the development difficult (Kalmár, 2011).

ROOTS OF NEUROPSYCHOPHARMACOLOGY IN ANCIENT MYTHOLOGY AND CIVILIZATIONS

Although neuropsychopharmacology was born about half a century ago, it is the same age as the humankind, although its name was not 'neuropsychopharmacology' in ancient times. Since the beginning of the history of humankind there have been many substances with neuropsychiatric effects. Their intake into the organism creates several positive and negative influence, modifying the consciousness which is unexplained many times but it is always definite that their effects happen through the central nervous system.

Several other integrative, positive altered states of consciousness are known both in ancient and modern times which primordially belong to psychology and spirituality but are in a tight relationship with the central nervous system (Moksha: freedom from the differentiated temporal and mortal world of ordinary experience; Hinduism. Samadhi: contemplation of an object of meditation; Hinduism. Satori: sudden

enlightenment; Zen. Fana: the ecstatic union of the Sufi with the Divine; Islam. Peak experiences: a brief transcendental state of consciousness during which the subject has a sense of heightened understanding, intense wellbeing, and of being at one with the universe (Unio mystica); perception of time and space may be altered. Maslow peak experience; Numinous (spiritual, supernatural or mysterious) state by C.G. Jung, cosmic consciousness by Buck, flow by Csikszentmihályi, etc.). The experience is described as occurring usually in psychologically healthy persons. We do not know the perfect neurological bases of these states but we know that they mean altered states of consciousness which based on the function of central nervous system. Psychiatry today evaluates these states of consciousness as the part of psychopathology, not paying enough attention to the neurological changes behind them (Frecska & Wiesenmayer, 2005). This ancient knowledge is the basis of the modern, up-to-date neuropsychopharmacology.

Some of these are well-known in the daily practice, for instance alcohol and other kinds of psychoactive substances, and also the positive and negative effects of several medicinal plants.

The Old Testament mentions Noah, who behaved uncritically while being drunken (Moses I. 9. 21-22). The story of Lot's daughters is similar but more serious, who not only made their father get drunk but they slept with him as well (Moses I 19. 31-38) (Holy Bible, 1998).

A few decades ago the ancient Indian Rauwolfia alkaloids were a useful product in the treatment of both hypertension and manic states.

Recently Hungarian researchers/scientists have been dealing with the role of the agents/ingredient of some psychoactive plants within the human nervous system and organism, especially with their positive effects (e.g. Ayahuasca). The drug of this plant is N,N-dimethyltryptamine (DMT). It is classified as a naturally occurring serotonergic hallucinogen of plant origin. It has also been found in animal and human tissues and regarded as an endogenous trace amine transmitter (Frecska, 2014). The first clinical examination with dymethyl-tryptamine was in Hungary at the National Institute of Psychiatry and Neurology in the beginning of the 1950s, when Steven Szára, András Sai-Halász, Zoltán Böszörményi and Györgyi Brunecker examined 30 volunteers. They reported their experiences in 1956, 1958 and 1959 in several journals. Later the connection between schizophrenia and dimethyltryptamine was examined but they authors failed to prove any association (Szára, 2007).

The Vedic literature originating from thousands of years ago contained hundreds of poems which not only detail their knowledge of a person but also the interventions influencing mental state. Different substances and procedures are presented which have an effect on the nervous system and through this on the mental state.

Beside the 'gross body' which contains the five gross elements: ether, earth, fire, water, and air, they distinguish a 'subtle body' which contains intelligence, ego-sense, mind, five sense data, five sense organs and five organs of action. The third component of human being is the soul which is incomprehensible for the humans, because they have no sense organ for it.

The effects of medicinal herbs and minerals were particularly well-known and are used by physicians of Ayurveda today, not only in India but all over the world as well. The origin of several medicinal plants and medicines made from them used in our country dates back to India. Certainly, other ancient civilizations also knew and used these and similar medicines were used in Egypt, ancient Greece, Siberia, America. The holistic view of ancient Indian medicine includes a complex view of the human, in other words the physical-somatic, mental-psychic, cultural, social and spiritual unit. This approach already appeared in Western medicine today in the definition of health, and in the somatic, mental, cultural-social and spiritual model.

One of the first gods of the ancient Indian Mythology was Indra, the king of gods, the 'Soma-drinker' which shows that they knew substances that could modify the state of consciousness through the nervous system by means of psychoactive plants. The sap of the soma was inebriating. Soma is not only a magic potion but also one of the most prominent deities. The Soma juice which is intoxicating is frequently termed 'sweet draught' or 'the bright drop'.

Soma juice was brought from the sky to the earth in the beak of an eagle, similarly to the case how Prometheus brought the fire in the Greek Mythology. Soma has been identified with many plants over the course of time. People thought that Soma was the drink of immortality. According to our knowledge today Soma was a psychoactive substance which was pressed from the stems of the like-named plant and they had consumed purely or with milk, presenting sacrifice to the gods with it. It might have been the first neuropsychopharmacological of the ancient Indian gods and people.

It had such a big respect that they named the god of Moon after it. Vritra, the dragon-god's story is also

well-known who after drinking a lot of Soma picked a quarrel with Indra but Indra destroyed him. Indra's martial strength mostly depended on this drink. Rig Veda's poems encouraged him to drink more to enlarge his strength by saying, "Here is the Soma. Pour it into your stomach!" (III. 42. 5.) (Schmidt, 1923). About the Soma there are more than 120 hymns in Rig Veda. The poem of VIII 48 is about the positive and harmful effects of the state after drinking Soma, and it is called the drink of sweet life that provides immortality. In several poems the somatic, psychic, cultural and spiritual effects of Soma are written about in detail, about the hallucinations and trance.

A whole hymn (X. 119) is a monologue in which Indra, intoxicated with Soma, boasts of his greatness and his might (Macdonell, 1970).

Other psychoactive substances are mentioned in Rig Veda that are not identical with Soma but they are psychoactive, hallucinogenic. One of these is called 'Visa' which means both drug and poison. This substance was made by Kunamnamá goddess and she gave it to Rudra (later Shiva god) and Kesin, who was a yogi (Rig Veda, 2000). The 'devas' (brilliant goddess) and 'asuras' (demons, the gods who became anti-gods) tried to make the drink of eternal life from 'milk-ocean' which the god of Vishnu's some hair fell into and the Indian hemp (*Cannabis sativa indica*) outgrew of it. The infusion of hemp was used in the ceremony of 'suttee' (self-immolation of widows) and the human sacrifices in Persia. In the Harappan-Civilization of the Indus River (c.2600-1900 BC) a hallucinogen 'sacred liquid' a so called 'Indoarier' was prepared from *Amanita muscaria* (a mushroom).

The hemp was known in China five thousand years ago, the Emperor of Shen Nuwa's book contained it BC in 2737. We can find several neuropsychopharmacologically active substance-containing ones among some seven hundred plant-medicines in the Ebers papyrus. The most famous pharmaceutical is 'Sal Thebaicum' (*Morphinum hydrochloricum*). Although knowledge has significantly grown about the neurobiology of action of psychoactive substances recently, yet there are several unknown factors (Furst et al., 2013).

It would be worth re-examining the psychoactive substances and plants causing altered states of consciousness from a neuropsychopharmacological point of view with the help of nanotechnology.

POSSIBILITIES AND OBSTACLES OF THE DEVELOPMENT OF PSYCHIATRY

In spite of BNO and DSM, in the same patient the symptoms of psychiatric illnesses and diagnoses are judged differently by psychiatrists belonging to different psychiatric schools and also by the population in different societies and cultures. On the basis of that we can surely state that the symptom catalogue of psychiatric disorders is uncertain, not organic, and the precise definition of certain symptoms and defining diagnoses still particularly depend on ages, cultures, subcultures, psychiatrists, psychiatric schools and somatic, mental, (emotional), cultural and spiritual literacy or intelligence (Juhász-Pethő, 1983; Kalmár, 2011). In spite of this, a schizophrenic patient can be treated well with up-to-date, effective antipsychotics in our country, as well as in Alaska, South-America, New Zealand, India, China, Russia or anywhere else.

Some parts of our central nervous system are suitable for the intake and comprehension of the events occurring in the world around us (sound wave, heat, light, chemical composition, etc.). However, if the environmental events are outside the scope of the sensory channels (radio waves, spirituality) one may no longer be able to directly detect these events. The nutrition of the nervous system is provided by stimuli from the outside world. If the stimuli flow stops, the perception is distorted, and the internal world of the nervous system starts to live an independent life, causing various psychiatric signs and symptoms. For instance, the reduction of hearing often results in auditory hallucination and the formation of delusions, the serious reduction of seeing results in visual hallucinations, certain phantom pains appearing in cases following the loss of a limb is the result of the game of the nervous system. The perceptual experience consists of physical, biological, psychological, cultural and spiritual activities, and these activities cannot be separated from the functioning of the nervous system. These experiences have physical realities that constantly interact with each other and change within space, time and culture. Therefore one may not deduce higher-order operations directly from physical realities, just as one cannot know the complete properties of salt by just knowing the characteristics of the sodium and chlorine (Kalmár, 2010b).

The "mental and spiritual nutriment" have their own metabolism, and a peculiar mental and spiritual digestive systems are responsible for these processes. Just as in case of any nutriment there exists normal intake according to the needs, as well less

intake than needed (malnutrition), incomplete intake (deficiency disease), more intake than needed (overdose), harmful intake (poisoning), this is true in case of perception as well. Deficiency disease, injury caused by overdosing, perception-pollution, caused by intake of harmful information are possible within the sense-organs.

We nourish in four different ways: (1) somatic (2) psychic or mental, (3) cultural-social and (4) spiritual nutrition. All forms of nutrition are in a relationship with the nervous system. The mental nutrition: stimuli from the outside world and from the mind. The nervous system does not use the information received and processed by the sense-organs only on its own but it processes the information collected by the different sense-organs, it modifies them with thinking and it forms it into a higher format, as a poet writes poems from words, or an artist creates a painting from paints, similarly to the somatic nutriment which builds and operates the human body from the feeding nutriment into organism. Even the slightest disturbance may lead to a disorder, a part of it is corrected by the nervous system but it does not work in every case. The means of this correction are pharmaceuticals and this increases the importance of neuropsychopharmacology. In appearances of all diseases the central nervous system and the mental state have significant roles. It is a well-known fact how mood disorders and anxiety disorders based on the changes of the nervous system influence the mortality related to the circulatory system. The mortality of ischaemic heart diseases (and other diseases) could be reduced remarkably with adequate anxiolytic and antidepressant therapy but this knowledge has not spread widely among primary healthcare and other physicians.

The injury of the central nervous system on account of (1) organic brain damage, (2) intoxication, (3) psychoactive substance use, (4) monotonous songs, (5) lent, (6) dance, causes the disturbances of perception and somatic, psychiatric, cultural and spiritual signs and symptoms i.e. disturbances of consciousness, altered states of consciousness, trance, mood and anxiety disorders, psychosomatic and adjustment disorders, personality disorders, chrono-biological disturbances, etc. We can establish the damage of the central nervous system behind the slightest mental disorder even if we have not known it in every detail yet.

Nowadays, psychiatrists diagnose mental disorders from subjective psychopathological signs and symptoms, the behaviour of patients but this does not exclude the neurological origin of the psychi-

atric disorders. It is not necessary for the surgeon to take out the ill appendix to establish the fact of inflammation, yet the reason of the illness is still somatic origin, the inflammation of the appendix. Most psychiatric dictionaries take notice of the subjective factors almost exclusively, so the changes of the nervous system are taken out of consideration as if they would not even exist. Numerous studies have shown that the central nervous system plays an important role in the development of every psychiatric disorder, and several brain metabolic changes associated with psychopathological signs and symptoms. There are no diseases without the damage of the nervous system at all.

In case of alcohol withdrawal delirium there is no question about the damage of the nervous system caused by alcohol, however, the patient's behaviour, the content of the hallucination are determined by his/her cultural, social and spiritual situation. The delirium is immediately recognizable from the signs and symptoms but from the content of the hallucinations (disturbances of perception) we are not able to diagnose and treat it. The therapy is not defined on the basis of the content of hallucinations (the patient drives the pigs, cows or horses, builds a cowshed or a pigsty or takes threads out from his/her mouth). The same thing happens to patients suffering from other psychiatric disorders. Several research results prove the organic origin in patients suffering from schizophrenia but all psychiatrists know that treatment does not happen based on the content of the hallucination (Kalmár, 2013).

The treatment of patients is always a complex medical task but it has a number of obstacles, out of these the most important one is the uncertainty of diagnoses. Apart from the obligatory ICD and DSM systems, several other, sometimes even better diagnostic systems exist, however, they are rarely used in daily practice. The most promising one is the CODE System, (Composite Diagnostic Evaluation of Psychiatric Disorders) of which some details are available in Hungarian too (Ban, 1989, 2001; Gaszner, 1998; Kalmár et al., 2004; Kalmár & Kalmár, 2007).

The psychiatrist for whom choosing the right therapy for a psychiatric disorder, the knowledge concerning the underlying changes in the nervous system and their treatment by pharmaceuticals does not occupy the first place, his/her knowledge is insufficient. However, for that it is necessary for a correct, reliable psychiatric diagnosis. If there are not several brain metabolic changes, there is no psychiatric disorder. The most important task of the researchers

of the future is the exact, reliable definition of the neurological changes behind the psychopathological signs and symptoms and psychiatric disorders. In the research of the nervous system and neuropsychopharmacology, nanotechnology, quantummechanics, string theory, etc. opened newer perspectives in newer knowledge about the constructions and functions of the kinds of the subatomic particles: quark (any of a group of subatomic particles), lepton (any member of a class of fermions), boson (subatomic particle with integral spin). Nanotechnology promises to impact medical treatment in multiple ways. E.g. more than half of the new drugs developed each year are not water-soluble which makes their delivery difficult. In the form of nanosized particles, however, these drugs are more readily transported to their destination, and they can be delivered in the conventional form of pills. Nanotechnology may enable drugs to be delivered to precisely the right location in the body and to release drug doses on a predetermined schedule for optimal treatment. The success of nanotechnology lies in that between 10-100 nanometres (1 nanometre: 10^{-9} metre = 10 angstroms) the substance works based on such physical, chemical and biological laws which do not appear in higher dimensions (The New Encyclopaedia Britannica, 2005; Szebeni, 2011).

The present diagnostic systems have not been suitable for making exact and reliable diagnoses in everyday practice, because they are not in accordance with the neurological changes, we do not even know most of them. It would be good if there were an easy-to-use diagnostic device in practice which would help, for instance, to establish one of the psychiatric disorders from blood. This could be the Holy Grail of Psychiatry, significantly reducing the stigmatization caused by the mental disorders (Pajer et al., 2012; Kalmár, 2013). The present diagnostic tools are subjective. A psychiatrist does not have objective diagnostic devices yet today but we have efficient pharmaceuticals which forced the past memories of the old, frightening lunatic asylum back, together with the image of invalid persons lying there or standing by the wall or in the corner with their serious symptoms and side effects. Among patients treated with modern, effective pharmaceuticals, we can see several people who live complete, successful and happy lives.

The psychopathological signs and symptoms and psychiatric disorders manifest in four dimensions. The treatment is always complex but the neuropharmaceuticals are the determinative factors. Psychiatric treatment is always a reintegration on biological,

mental, social and spiritual levels which on the neuropsychopharmaceuticals (Freckska & Luna, 2006). The physical, biological, genetic, psychic, cultural-social and spiritual approach, the application of nanomedicine enables not only recognising the organic neurological bases of psychiatric disorders that are all crucial for the future researchers but are also essential in the development of the neuropsychopharmacology based on the function of the nervous system. This is the only way Psychiatry can remain within medicine on neurological bases, applying the experience of psychology, culture, sociology and spirituality of course.

Correspondence: Kalmár Sándor, 6000 Kecskemét, Károlyi u. 16.
E-mail: kalm-r@t-online.hu

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A neuropszichofarmakológia jelentősége a pszichiátria fejlődésében

A szerző megállapítja, hogy nehéz helyzetben van a pszichiátria, különösen Magyarországon az OPNI megszüntetése óta. Áttekinti a pszichiátria fejlődését akadályozó legfontosabb tényezőket. Megállapítja, hogy a pszichiátria fejlődése elképzelhetetlen az ember holisztikus megközelítése nélkül, amely feltételezi a biológiai, mentális, kulturális-szociális és spirituális megközelítést. Különösen nagy jelentőségük van a percepciózavaroknak a pszichiátriai tünetek kialakulásában, amelyek az idegrendszer működésén alapulnak. Ez a tény kiemeli az idegrendszer és a neuropszichofarmakológia jelentőségét, amely, bár alig fél évszázados, a történelem kezdete óta ismerünk. Felhívja a figyelmet az ősi civilizációkban is jól ismert pszichoaktív szerekre, ismertet néhányat közülük, amelyek valójában az első neuropszichofarmakológiai (gyógy-)szerek voltak. Hangsúlyozza a pszichopathológiai tünetek kettősségét, amelyek csak részben objektívek, részben szubjektívek, de mindenképpen az idegrendszer működésén alapulnak. Megállapításai nemcsak megalapozhatják egy újfajta megközelítését az embernek és a pszichiátriának, de lehetővé teszi a pszichiátria fejlődését, egy újfajta diagnosztikai rendszer megalkotását, megszüntetve az emberrel foglalkozó szakemberek, neurológusok, a pszichiáterek a pszichológusok, a szociológusok, a filozófusok és teológusok közötti ellentmondást, biztosítva a biológiai, (neurológiai) pszichológiai, kulturális-szociológiai és spirituális kontinuitást. A jövő kutatói számára elengedhetetlen a biológiai, genetikai, pszichés, kulturális-szociális és spirituális szemlélet, a nanomedicina alkalmazása, amely lehetővé teszi nemcsak a pszichiátriai zavarok organikus neurológiai alapjainak a pontosabb megismerését, de az idegrendszer működésén alapuló neuropszichofarmakológia fejlesztését. Csak így maradhat meg a pszichiátria az orvostudomány keretein belül, neurológiai alapokon, természetesen felhasználva a pszichológia, a kultúra, a szociológia és a spiritualitás tapasztalatait is.

Kulcsszavak: neuropszichofarmakológia, percepciózavarok, holisztikus megközelítés, módosult tudatállapot, indiai pszichológia és mitológia.