



## Some new approaches for prevention of schizophrenia spectrum disorders in patients exposed to exogenous stressors

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### Abstract

**Background.** Environment factors affects to the clinical phenotype of schizophrenia spectrum disorders.

**Aim.** To develop recommendations for the prevention schizophrenia spectrum disorders considering the influence of environment factors on the clinical pathomorphosis of the disease.

**Methods.** It was conducted the psychopathological and psychodiagnostic survey of 186 patients with schizophrenia spectrum disorders with an assessment of clinical features and level of social functioning. It was identified factors that have the most significant pathological effects on the course of disorders on the basis of the received data: the using of a cannabinoid in a family history, mother's infectious and somatic diseases during pregnancy, mother's using alcohol during pregnancy, consumption of alcohol in adolescent patients, fetal hypoxia or perinatal trauma of the patient at birth, problems with the group of primary support in the family of a child in childhood, maternal toxicosis, crisis relationships in the family, migration to different cultural environment.

**Results.** Clinical pathomorphism of disorders of the spectrum of schizophrenia under the influence of environment factors determines the features of psychotherapeutic interventions. In people with cannabinoids, it is important to eliminate the symptoms of anxiety through emotion-supportive measures, as well as to create a motivation to ask help in case of symptoms of schizophrenia spectrum disorders. In a group with perinatal complications, the emphasis should be put on cognitive methods in order to correct mental disorders and overcome hypochondria. Early measures to form a positive attitude towards themselves and the environment, supporting family relationships, overcoming depressive symptoms, and developing social activity are targets of psychotherapeutic interventions in people with schizophrenic spectrum disorders and psychological traumatic events.

**Conclusion.** Minimization of environmental factors influence in high risk individuals would postpone early manifestation, reduce disability in patients with schizophrenia spectrum disorders, as evidenced by the statement of leading health experts.

**Keywords:** schizophrenia, shizophrenia spectrum disorders, environment factors, clinical course, schizophrenia

## 1 Background

Schizophrenia has polyetiological and multifactorial etiopathogenesis. The impact of environmental factors on the clinical phenotype of the disease is widely discussed [1],[2],[3],[4]. Despite the variety of environmental factors (urbanization, population seasonality fertility, migration to a different cultural environment, psychological trauma in childhood, the use of cannabis, obstetric complications, post-natal infections) that have been proven to affect the demonstration of schizophrenia and the formation of the final state, no evidence-based recommendations on preventive interventions were created in this occasion [5], [6]. Measures to minimize the impact of environmental factors in premanifest period or in the first years after the onset of prodromal symptoms endogenous diseases targeted interventions in specific risk groups are expected to reduce the risk of manifestation, to delay it, to improve the prognosis of the disease. However, the evidence of the effectiveness of such interventions is minimal. In order for prevention to be effective risk factors should be identified and their role played in the development of schizophrenia [7]. Preventive measures should be integrated into the overall health system to create a comprehensive system of evidence-based interventions, begin from monitoring of pregnant women with a genetic risk of schizophrenia, care for women's reproductive health, early psychosocial interventions in specific risk groups, particularly directed into children in families where one parent suffers from severe mental illness, social support to marginalized adolescents, trauma-focused therapy for children who have been victims of violence, sexual abuse, short psychosocial interventions and community-based therapeutic programs for those who use alcohol, cannabinoids [8], [9].

**Objective:** to develop recommendations for primary and secondary prevention of schizophrenia spectrum disorders, taking into account the impact of exogenous factors on the clinical pathomorphosis of the disease.

## 2 Materials and methods

We have examined 186 patients with schizophrenia spectrum disorders according to ICD-10 headings F 20 - F 29. Patients' medical histories were detail examined for establishing of environmental factors impact on health. All

patients were treated in the Hospital of Medical Association "Psychiatry" in Kiev or as outpatients at the Ukrainian Research Institute of Social, Forensic Psychiatry and Drug Abuse. Three comparative groups were formed. In the first group were included patients with proven regular use of cannabinoids in premanifest period of illness. The second group consisted of those with perinatal complications (toxemia of pregnancy, physical or infectious disease in mother, birth trauma, fetal vacuum extraction, birth stimulation, fetal hypoxia below 8 points Apgar, Rh disease). Third group consisted of patients with the facts of psychological trauma (sexual or physical violence, antisocial parents who abuse alcohol, experienced tragic events as the loss of a parent or other family member, and so on). Comparison group consisted of patients with schizophrenia spectrum disorders without proven evidence of exogenous factors.

Psychopathological and psychodiagnostical examination of patients with symptoms of schizophrenia spectrum disorders was conducted with the evaluation of clinical features and the level of social functioning. In the survey patients filled out formalized card developed at the Ukrainian Research Institute of Social, Forensic Psychiatry and Drug Abuse, which consists of four parts:

- the first one included information on heredity, age of parents at conception, hazard use of drugs at conception or during pregnancy by mother;
- second one - complications during childbirth and the perinatal period features;
- third one - the features of the age, family composition and characteristics of education, emotional and social deprivation, material living conditions, psychological trauma in childhood;
- the fourth part included an information on substance use by patient at a young age.

On the basis of analysis and generalization of the study results, recommendations for the prevention of schizophrenia spectrum disorders were developed.

## 3 Results

On the basis of the obtained data, in the scale of the screening, factors that have the most significant pathologic

influence on the course of disorders of the spectrum of schizophrenia were identified.

Patients with schizophrenia spectrum disorders often met to such factors as: the use of cannabinoids in premanifest period, infectious and somatic diseases during pregnancy, the mother was drinking alcohol during pregnancy, alcohol consumption in adolescence (not reaching the level of addiction), fetal hypoxia or perinatal trauma at birth, problems with primary support group in the family in patient's childhood (usually antisocial parents, child abuse), toxemia in mother during pregnancy, relationship crisis in the family (physical or sexual abuse, alcohol abuse), migration to other cultural environment.

Significant differences were noted in the clinical picture of the disorder between groups of patients with schizophrenia spectrum disorders and the influence of various exogenous factors in their history.

Thus, in patients with schizophrenia spectrum disorders with the use of cannabinoids in premanifest period were observed prevalence of anxiety and positive symptoms (delusions, hallucinations and excitation). Patients exposed to the psychological trauma and perinatal injury were had preponderance of negative symptoms. In patients with perinatal complications were prevailed impairment of abstractive reasoning and stereotyped thinking, lack of spontaneity, smooth speech and account abuse and somatic anxiety. For patients with psychological trauma in the structure of negative symptoms more common were difficulties in communications impairment of abstractive thinking, stereotypical thinking, and a high level of guilt. Based on the clinical polymorphism of the schizophrenia spectrum disorders under the influence of exogenous factors, a method of prevention of schizophrenia disorder is proposed. This method consists of two steps and involves the specialists of the primary medical care (including family doctors) in first stage and multidisciplinary teams from the field of mental health (psychiatrists, psychologists, social workers) in the second stage (Table 1, Figure 2).

The first step is a primary prevention measures to identify individuals with a family burden of schizophrenia spectrum disorders. The formed groups will then require an increased attention in monitoring pregnancy in women and the development of their children for early signs of disorder.

For risk groups formation we propose a screening scale, which assesses risk factors for schizophrenia spectrum disorders in individuals with a family burden. At the core of this

scale there are factors that have the most significant impact in different periods of life of an individual, namely

- During conception and perinatal period: signs of hypoxic-ischemic brain damage, infectious bacterial disease in mother during pregnancy, such as influenza, rubella, toxoplasmosis, human herpes virus, genital and respiratory infections, especially in II trimester of pregnancy; Vitamin D3 and folic acid deficiency during pregnancy in mother, use of antivirals, antiepileptic drugs (valproic acid) and antidepressants, alcohol and other drugs use during pregnancy by mother, father's age at conception and late age of both parents at conception (over 40 years) and the short interval between pregnancies (less than 2 years);
- In the early child development: emotional deprivation, crisis in the family relationship, lack of forming parent-parent attachment, child abuse, the presence of social deprivation and trauma at an early age;
- In adolescence and early adulthood: substance use, including cannabinoids, psychotrauma and other forms of deviant behavior (antisocial, dependent behavior), especially in person's premorbid.

We propose risk groups formation on the basis of presence of endogenous-procedural disorder signs, cases of psychosis in a family history and the proportion of the above-mentioned exogenous factors.

The next step in prevention of schizophrenia spectrum disorders, when working with high risk groups, are recommended to be an early psychosocial interventions. Its basis is psychoeducational work with parents/caregivers for the creation of a favorable psychological climate in the family, the prevention of domestic violence and substance use, detection of neurocognitive and behavioral disorders and learning to timely detect early signs of the disorder and to address for specialized help.

Features of prevention for people with a genetic predisposition to schizophrenia spectrum disorders and psychological trauma early in life include identification and increased attention to children from the "unstable families" and those with passive and aloof behavior in the collective, and then addressing them, if necessary, to the clinical psychologist and/or psychiatrist.

The secondary prevention for those at risk of occurrence of schizophrenia spectrum disorders should include

Figure 1: Prevalence of exogenous factors in patients with schizophrenia spectrum disorders.

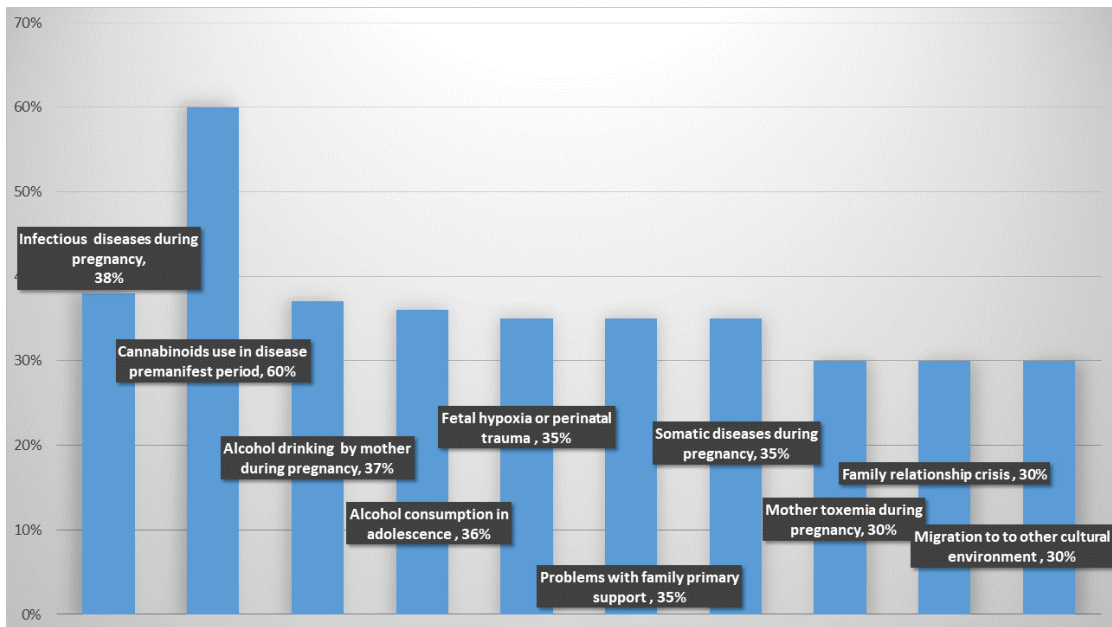
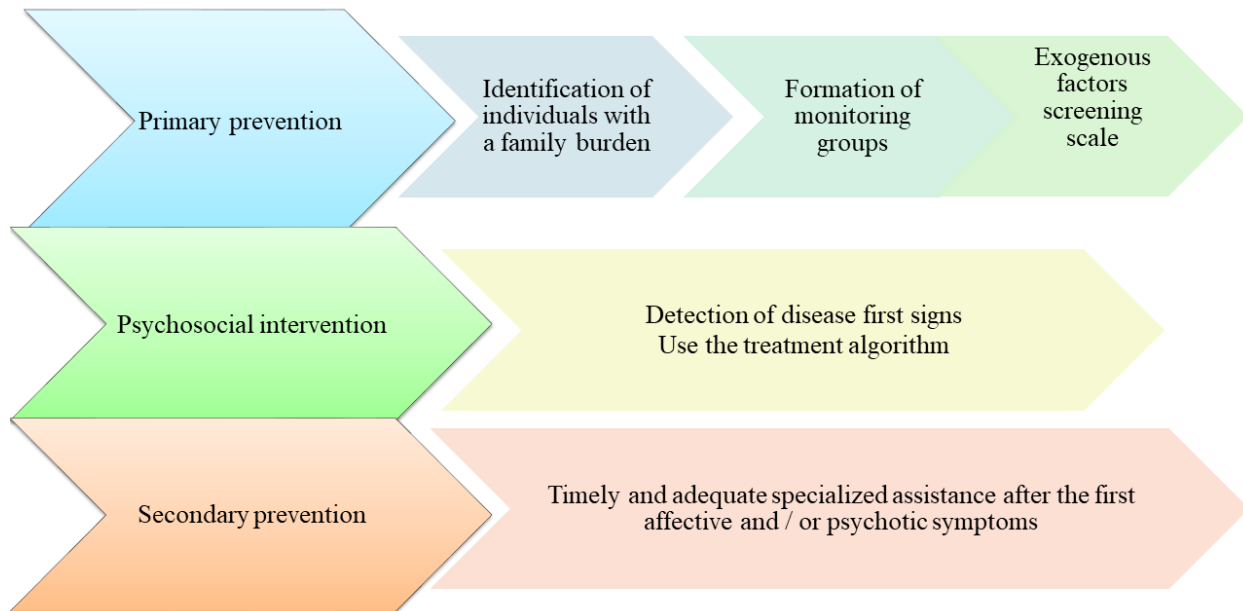


Figure 2: Prevention methods for schizophrenia spectrum disorders.



timely and adequate specialized assistance after the first affective and / or psychotic symptoms, psychotherapeutic support (Table 2).

Implementation of psychosocial interventions in patients with schizophrenia spectrum disorders exposed to the exogenous factors in premorbid should include:

1. Explaining the nature of schizophrenia spectrum disorders, discussion of significant facts and myths associated with the disorder;
2. Awareness about the disorder's etiology and the role of exogenous factors in the pathogenesis;
3. Formation of the behavioral strategies for different situations, social skills training, planning regime of the day;
4. Training for overcoming anxiety, adaptive learning

strategies in stressful situations;

5. Training for solving interpersonal problems and problems related to the social role;
6. Informing about the required duration of treatment, possible adverse drug reactions for the formation of an adequate compliance with the patient.

Clinical pathomorphosis of schizophrenia spectrum disorders influenced by exogenous factors determines the peculiarities of psychotherapeutic interventions. In persons with the use of cannabinoids is important to eliminate the symptoms of anxiety through emotional and supportive measures and creating motivation for recourse in case of schizophrenia spectrum disorders symptoms. In the group with perinatal complications accent should be put on cognitive methods for correction distortion of thinking and overcoming hypochon-

Table 1: Algorithm preventive measures for persons with influence of various exogenous factors in history.

Sign	Persons with use of cannabinoids	Persons with perinatal injury	People with psychological trauma	Individuals without evidence of exogenous factors
Primary Prevention	Detection teens who use cannabinoids and early detection of symptoms spectrum disorders schizophrenia	Detection and increased attention to mothers during pregnancy and childbirth with a history of schizophrenia, and oversee the development of their children for early diagnosis of disorders of psychological development	Detection and increased attention to children with "problem family" and children in the group are kept closed and passively, and further sending them to the clinical psychologist	Observation by family doctor the persons, whose relatives suffer from schizophrenia spectrum disorders
Secondary prevention	Timely and adequate specialized assistance after the first affective and / or psychotic symptoms, psychotherapeutic support			
	Psychoeducation work to exclude the use of cannabinoids, timely treatment in case of occurrence of psychotic or manic symptoms	Improvement the social level of functioning	Timely and adequate assistance to people with depressive-paranoid symptoms	Constant reception of supportive treatment, early rehabilitation to prevent the development of personality changes

driacal symptoms. Early steps to create a positive attitude towards themselves and the environment, supportive family relationships, overcoming the depressive symptoms of social activity are targets of psychotherapeutic interventions in patients with schizophrenia spectrum disorders influenced by exogenous factors.

## 4 Discussion

According to the medical literature data, the basis for early interventions is psychoeducational work with parents/caregivers, screening biological markers of risk manifestation, including neurocognitive disorders, early detection of endogenous disease signs. The need for such measures is due to the fact that assistance to patients with schizophrenia spectrum disorders should include not only treatment, but also prevention, psychosocial, rehabilitation and preventive actions [10], [11]. An important task for the physician is timely identification of high risk individuals, who were exposed to the environmental factors and have a genetic predisposition to such disorders.

## 5 Conclusion

The measures developed at the primary level of medical care are aimed specifically at these actions. To fully implement all the proposed recommendations on the secondary level should be coordinated and organized the work of multidisciplinary teams that include not only doctors, but also psychologists and social workers, who hold a job in the field. Minimization of environmental factors influence in high risk individuals would postpone early manifestation, reduce disability in patients with schizophrenia spectrum disorders, as evidenced by the statement of leading health experts [12],[13],[14].

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Table 2: Treatment recommendations for people with schizophrenia spectrum disorders who were exposed to the various exogenous factors

Symptom	Individuals with the use of cannabinoids	Individuals with perinatal injuries	Individuals with the psychological trauma	Individuals without evidence of exposure to exogenous factors
Treatment recommendations	Normotimics and antipsychotic drugs in case of manic symptomatology	Antipsychotic drugs in case of problems in cognition and somatic concerns	Antidepressants in the case of depressive symptoms	Ensure continuous treatment
Psychotherapeutic intervention recommendations	Explained algorithm recourse in case of symptoms of schizophrenia training in overcoming anxiety, emotional and supporting activities	Focus on cognitive techniques to correct cognitive and hypochondriacal symptoms	Creating a positive attitude towards themselves, surrounding and situations, forming good family relationships, facilitation of social activity	Development of social communication skills, avoiding social isolation

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