

# Cognitive-behavioral therapy in ultra high risk states of psychosis (UHR)

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## Abstract

Ultra-high risk of psychosis (UHR) is a condition associated with a higher risk of developing schizophrenia or another psychotic disorder as compared to the general population. Three groups of symptoms are reported to be related to UHR states: attenuated psychotic symptoms (APS), brief limited intermittent psychotic symptoms (BLIPS) and genetic risk and deterioration syndrome (GDR). In addition, specific cognitive deficits within attention, verbal and visual memory, executive functions and processing speed are all described as linked to UHR. UHR individuals also manifest negative cognitive beliefs and attribution biases, which affect their everyday lives. Hence, a first-line treatment recommended in UHR states is cognitive-behavioral therapy (CBT), whose effectiveness has been assessed across different studies. In this paper we describe the characteristics of UHR states, including specific cognitive difficulties they are linked with, alongside therapeutic recommendations and specificity of dedicated cognitive-behavioral treatment options.

**ultra – high risk of psychosis; UHR, cognitive – behavioral therapy; CBT**

## 1. INTRODUCTION

Psychotic disorders, including schizophrenia, are among the most severe mental disorders, significantly affecting the functioning of patients in various areas of life. The prevalence of schizophrenia is estimated at about 1% in the general population [1]. As many as 30% of patients make at least one suicide attempt in their lives [1]. People diagnosed with psychosis have great difficulty taking on life roles, including keeping a job. It is estimated that only 10-20% of patients take up professional work [2]. A thorough understanding of the mechanism underlying formation and maintenance of psychotic symptoms is particularly important for planning effective

treatment. For about 20 years, mental health professionals have been particularly interested in the entire spectrum of psychotic disorders, including prodromal states, whose onset is reported to precede the outbreak of full-blown psychosis [3,4]. The notion of ultra high risk states (UHR) has been developed, and, although not included in any available classification of diseases, it is widely used in both clinical practice and scientific research [3,5]. The condition is associated with the risk of developing full-blown psychosis of 15% – 30% within one year from diagnosis to 36% within 3 years from diagnosis [6]. The appearance of prodromal symptoms does not determine the development of schizophrenia, however, researchers try to identify factors predisposing to the development of full-blown disease in patients at risk [4]. Early implemented interventions can significantly reduce this risk or contribute to improved functioning

of UHR individuals. Cognitive behavioral therapy has been recognized by the European Psychiatric Association (EPA) as a first-line intervention in high-risk states of developing psychosis [7]. This form of therapy may be particularly effective in UHR patients due to the specificity of their cognitive functioning. The aim of this review is to outline the characteristics of high-risk states of psychosis and therapeutic recommendations, discuss different CBT procedures that can be applied in this patient population and present available evidence on the effectiveness of therapy.

## 2. WHAT IS A HIGH-RISK STATE OF PSYCHOSIS?

The multifactorial etiology of schizophrenia includes such risk factors as genetic predisposition and environmental stressors (acting both in early childhood and later in life) that disrupt the functioning of the central nervous system and thus increase susceptibility to the onset of schizophrenia [8]. The concept of a high-risk state of psychosis (UHR) was first introduced to identify people who experience specific symptoms whose severity does not allow the diagnosis of any of the distinguished mental disorders, but whose occurrence is associated with an increased higher risk of developing schizophrenia or another type of psychosis within the next 1-3 years [6]. It is also sometimes referred to as the prepsychotic period or the prodromal phase of schizophrenia [4,8,9]. Although not all people reporting symptoms characteristic of UHR are bound to develop psychosis, their presence may herald the onset of a different mental disorder, or in themselves they may be a source of stress or functional difficulties [4,9]. In order to identify UHR patients and enable early intervention, diagnostic criteria of universal predictive value were created [5]. They include the presence of at least one of the following three groups of symptoms:

- attenuated psychotic symptoms (APS), which are present at least once per week for the past month and do not last longer than 5 years. These symptoms include, e.g. persecutory delusions, hallucinations affecting various senses, bizarre beliefs, or magical thinking;
- brief limited intermittent psychotic symptoms (BLIPS) that have occurred at least several times a week in the last 12 months but have resolved spontaneously and have not lasted more than a week;
- genetic risk and deterioration syndrome (GDR), identified in people who have first-line relatives with a psychotic disorder, or who have been diagnosed with schizotypal personality disorder and have experienced a significant deterioration of functioning lasting at least a month [8, 10, 11].

Attempts were made to determine which of the above-mentioned conditions is associated with the highest risk of conversion to a full-blown psychotic disorder. Nelson et al. (2011) demonstrated that the presence of BLIPS was associated with the highest, while GRD with the lowest risk of conversion.

In addition to positive symptoms, UHR individuals frequently manifest negative symptoms and cognitive dysfunction. There is evidence suggesting that this clinical population performs poorer on tests that measure cognitive performance compared to healthy controls but better relative to those with diagnosed schizophrenia [12].

It is difficult to clearly determine the incidence of high-risk states in the general population. Based on scientific reports, it is estimated that it may be between 4 and 8% [3,13]. UHR is most prevalent in adolescents and young adults. Diagnostic tools to identify high-risk states include the Structured Interview for Prodromal Syndromes (SIPS), the Comprehensive Assessment of At Risk Mental States (CAARMS), or the Prodromal Questionnaire (PQ-B) [8,14].

## 3. COGNITIVE FUNCTIONING OF UHR INDIVIDUALS

Neurocognitive deficits are frequently present in the course of psychotic disorders. Reduced efficiency of certain cognitive domains is observed in early childhood in individuals who will develop psychosis later on in life [9]. Cognitive impairment in people with UHR can be roughly divided into global (general cognitive decline)

and specific ones, with deficits within attention, verbal and visual memory, executive functions and processing speed described among the latter [15]. In addition to poorer cognitive performance particularly affecting certain domains, people in high-risk states report specific cognitive distortions, attribution styles, and beliefs that contribute to the formation and maintenance of symptoms.

Evidence suggests the key role of cognitive function in the etiology of UHR states, suggesting that negative cognitive schemas may be an important contributor to the appearance of psychotic symptoms in those who experienced childhood trauma [16]. An et al. (2010) demonstrated that UHR individuals exhibited attribution errors related to the perception of hostility from others and blaming others, which were associated with the development of the paranoid process [17]. A willingness to assess others as hostile and/or potentially harmful may imply a readiness to see signs they send, such as their nonverbal reactions, or statements they make as confirming one's assumptions about their negative attitude. This mechanism of cognitive distortion is called selective attention. Hostile attribution bias of other people can also cause more frequent use of another cognitive distortion – mind reading, i.e. assuming knowledge about what another person is thinking. What is more, attribution errors concerning the intents of others tend to affect behavior towards them, e.g. limiting interpersonal relations, controlling oneself or maintaining reserve during conversations, which may in turn contribute to a poorer quality of relationships and thus confirm initial (though erroneous) assumptions about their hostility.

Metacognition, otherwise known as 'thinking about thinking', plays an important role in the mechanism of the formation and persistence of symptoms underlying various mental disorders, including those linked to psychoses [18]. Via the ability to deduce, make decisions, concentrate attention or use memory, metacognitive processes are related not only to the perception of one's own thought processes, but also to the perception of the thought processes of other people.

Meta-analytic evidence suggests that young people at high risk of psychosis were more likely to perceive their thinking as dangerous and un-

controllable than healthy controls either seeking or not seeking help for reasons other than prodromal symptoms [18]. UHR individuals were also reported to express concerns about the efficiency of their memory and attention processes [18]. No differences in metabeliefs were observed between patients with UHR and those with full-blown psychosis [18]. In their meta-analysis, Baumgartner et al. (2020) did not show differences in metabeliefs between women and men experiencing prodromal symptoms. Metabeliefs can play an important role in the therapeutic process [19]. There was a correlation demonstrated between metacognition and functional improvement in patients diagnosed with schizophrenia, suggesting that interventions aimed at cognitive restructuring of maladaptive metaconvictions may also be effective in people with UHR [20].

#### 4. THERAPEUTIC RECOMMENDATIONS

The European Psychiatric Association (EPA) has developed therapeutic recommendations for people with UHR. Cognitive behavioral therapy is recommended as a first-line treatment in high risk states of developing psychosis [21]. Taking into account the symptom severity and effects of psychotherapeutic interventions, it may be required to consider add-on pharmacological treatment with low doses of second-generation antipsychotics [21]. When deciding to implement pharmacological treatment, special care should be taken, considering possible side effects and stigmatization. Moreover, the results of the research on the effectiveness of the interventions used in the UHR group suggest that pharmacotherapy with antipsychotic drugs did not bring long-term effects as a greater percentage of patients developed psychosis after drug discontinuation in comparison to those who received non-pharmacological interventions [22]. The same study indicated that pharmacological intervention was not effective in reducing the transition rate to psychosis in UHR people at 12 months, regardless of whether it was combined with CBT or not [22].

There are many arguments in favor of early intervention in people at high risk of developing psychosis. Firstly, reports indicate that the du-

ration of untreated psychosis significantly and adversely affects the effectiveness of pharmacotherapy, the number of hospitalizations, prognosis, the course of the disease, compliance and the consequences for the family [23]. The effects of untreated psychosis include greater severity of expressed negative emotions in the family system, which are a likely important contributor to relapse [23]. The main objectives of early intervention are: delaying or preventing the development of full-blown psychosis, reducing the duration of untreated psychosis, and preventing delays in the provision of mental health care [24].

CBT is one of the forms of psychotherapy recommended for patients who exhibit symptoms similar to those present in the UHR state. The Schizophrenia Patient Outcomes Research Team (PORT) provided a summary of current evidence-based psychosocial interventions for patients with schizophrenia in which they list CBT as one of 8 recommended interventions [25]. CBT in addition to adequate pharmacotherapy help to identify and monitor problems, and develop specific cognitive and behavioral strategies to deal with them [25]. Large, methodologically rigorous meta-analysis proved that there is an effect size regarding efficacy of CBT in reducing positive symptoms in schizophrenia patients [26]. Moreover, a meta-analysis comparing the effectiveness of different forms of psychotherapy in psychosis showed that CBT was more efficacious in reducing positive symptoms compared with other forms of interventions, such as supportive counseling, befriending, cognitive remediation, psychoeducation, and social skills training [27]. National Institute for Clinical Excellence (NICE) recommends to offer CBT to all patients with psychosis or schizophrenia and as a treatment option to prevent psychosis as well [28]. What is more, people at UHR state might present symptoms typical for depression or anxiety disorders in which CBT is also recommended [28].

## **5. CBT IN HIGH RISK STATES OF DEVELOPING PSYCHOSIS**

Available research and expert guidelines support addressing psychosocial interventions, particularly those based on behavioral and cogni-

tive techniques, at both UHR individuals and their families [11]. Systematic monitoring of symptoms, typical for CBT, facilitates early recognition of prodromal symptoms and early intervention, thus preventing the aggravation of psychosis, shortening its duration or alleviating its course. People at high risk of developing psychosis often suffer from depressive and anxiety disorders, which warrants the use of behavioral and cognitive therapy techniques of proven effectiveness in their treatment [23]. Since the same techniques have proved effective in relation to negative symptoms and cognitive dysfunctions in patients with schizophrenia, they may be all the more efficacious in the case of UHR individuals, who manifest similar symptoms but of a lower intensity [11]. Unusual sensations and disturbing symptoms occurring in people at high risk of developing psychosis are a source of distress, so techniques based on explaining and normalizing their experience can help them relieve tension. Reducing discomfort associated with symptoms alone is a desirable effect of therapeutic interventions. CBT techniques applied to UHR patients include primarily psychoeducation, as well as normalization and identification of cognitive distortions, which prevents catastrophic delusional interpretations of the experienced symptoms [20, 29]. In a Dutch study, the use of CBT in high risk individuals allowed to minimize the risk of conversion to psychosis by 50% [24]. Likewise, Morrison and colleagues showed the effectiveness of a six-month cognitive therapy program applied to aid high-risk individuals in reducing transition to psychosis over a 12-month period [30].

Cognitive-behavioral therapy is conducted based on individual conceptualization of the patient's problems, taking into account factors contributing to the development of symptoms and strategies supporting them. Therapeutic efforts are designed to achieve specific goals of the patient, thus reducing the risk of iatrogenic effects of the intervention. A good example of an individual treatment approach is cognitive therapy based on the Morrison model of psychosis, with proven effectiveness in reducing psychopathological symptoms and preventing or delaying conversion to psychosis [30]. According to a Korean study, 55% of subjects undergoing CBT responded with a 30% reduction in PANSS

positive symptoms [31]. In this study, CBT was conducted with the use of the so-called GRAPE (Green Program for Recognition and Prevention of Early Psychosis) program, including, among others, psychoeducation, alternative explanations of symptoms, work on key and metacognitive beliefs, self-esteem and social isolation [31].

In addition to individual cognitive-behavioral therapy, different forms thereof are developed that best correspond to the characteristics of high-risk states of psychosis. The onset of psychotic disorders usually takes place in adolescence or early adulthood, significantly affecting social and cognitive development of patients as well as the functioning of their entire family systems. Developed by Landa and colleagues, the group-and-family-based CBT (GF-CBT) method considers the important role of the family system in the therapy of UHR individuals [32]. This therapeutic protocol assumes conducting 15 sessions, some of which involve educating family members of young UHR patients about their psychotic experiences and individual CBT techniques [32]. The education of relatives and close ones not only fosters the use and application of the knowledge obtained in the process of psychotherapy in the home environment, but also supports the entire family system and enables faster recognition of mental health deterioration in UHR patients. The theoretical basis for this form of therapy were systemic and cognitive theories, a model of resilience and research on information processing in individuals experiencing delusions [32].

In one of the subsections of this work, we presented the important role of metacognition in UHR individuals. Morrison's cognitive model assumes the critical impact of both cognitive processes and metacognitive beliefs on the development and maintenance of schizophrenia [33]. The so-called Metacognitive Training (MCT), derived from this model, has been shown to be effective in reducing quasi-psychotic symptoms, anxiety and depression in young UHR individuals, conditioning improvements in their overall functioning [33]. The advantage of this form of training is its short-term duration compared to conventional CBT procedures [33]. In addition, it can be easily replicated, and thus used on a large scale, also in the form of group psychotherapy.

Cognitive-behavioral therapy can help a person at UHR state to monitor emotions, control behavior, and challenge cognitive biases, leading to cognitive restructuring of negative beliefs about one's own cognitive functioning [9]. Additionally applied cognitive remediation (CR) might be useful as a method focusing on improving cognitive functioning. Studies indicate that there were significant effects on verbal and working memory, attention, reasoning, problem – solving, processing speed and visual learning in schizophrenia patients [9, 33, 35].

Nowadays, digital methods are increasingly used to support the process of pharmacological or psychotherapeutic treatment. Applications are developed to remind people to take medications, enable self-assessment of symptom severity or facilitate personal work between therapeutic meetings. Kimhy and Corcoran (2008) conducted a case study in which they investigated a patient's subjective assessment of the efficacy of a palmtop as an add-on to standard therapy [36]. Their conclusion was that the use of the PDA was considered acceptable and resulted in a significant increase in personal homework [36]. Thanks to this method, a great amount of data was obtained about the patient's daily functioning and symptom severity during treatment. The use of modern technologies can be a valuable adjunctive to the therapy of UHR patients, especially due to the fact that this condition mostly affects young people who willingly use various types of electronic devices in everyday life and may use them for real time interventions and assessment [37]. Virtual reality technology using 2D computer screens or 3D infrastructure can be used for various interventions, enabling patient to experience specific situations through head-mounted displays (HMDs). VR helps patients to improve their coping skills by providing standardized, virtual environments that can be manipulated in real-time to evoke cognitive, emotional and behavioral responses similar to those triggered by real-world situations. It is an effective therapeutic tool applied successfully in treatment of many mental health conditions including social fears, specific phobias or obsessive compulsive disorder, and also for the assessment and treatment of more complex and severe mental health conditions such as psychosis. VR might be helpful not only in assessment

of paranoid ideation, but also in cognitive and psychosocial rehabilitation or social skills training [38].

To sum up, CBT is a recommended psychotherapeutic method for working with patients at high risk of developing psychosis. Due to the fact that the concept of UHR appeared in psychiatry and psychology quite recently, further research is required to provide new information both on the very specifics of the functioning of UHR individuals, as well as on the efficacy of various therapeutic interventions. Psychotherapists working with people at high risk of developing psychosis should systematically update their knowledge to maintain the highest standards of psychotherapy.

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