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Psychological factors of adherence to therapy in patients with urolithiasis

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Introduction

Research rationale

The problem of adherence to therapy occupies one of the most important places in modern medicine, as it has a significant impact on the outcome of treatment. The World Health Organization has labeled the problem of non-adherence to therapy as “a worldwide problem of staggering magnitude” (World Health Organization, 2003). A number of studies have highlighted the particular importance of adherence in chronic diseases, as prolonged periods of medication and lifestyle modification are leading factors in health maintenance (Peterson et al., 2003; Osterberg, Blaschke, 2005). However, it is noted that the majority of patients discontinue medication within six months (World Health Organization, 2003; Haynes R. et al, 2008). In addition to the obvious impact on the outcome of the disease, the issue of economic burden on the health care system becomes relevant, which is noted by domestic and foreign researchers (Omelyanovsky et al., 2012; Wermelt et al., 2017; Lloyd et al., 2019). Moreover, there are studies that show that the costs of developing and implementing methods to improve adherence to therapy can significantly reduce the cost of therapy in case of disease relapse. An annual cost of $1600 per patient for adherence measures has been shown to reduce therapy discontinuation rates by 15% to 30%. According to these data, the costs presented to improve adherence to therapy are significantly less than those costs incurred when patients abandon therapy, which naturally leads to worsening of the condition and subsequent treatment (Munakata et al., 2006). Despite the fact that these results were obtained by foreign researchers, it can be assumed that a similar situation is observed in the domestic health care system. Numerous studies of the past decades and modern research have shown that preventive measures aimed at preventing recurrences of the disease are much cheaper than therapeutic measures (Sartakova, 2020).

Adherence to therapy has received particular attention since the middle of the last century, but at the time it was more commonly referred to as ‘non-adherence’. More detailed consideration of terminology has led to methodological shifts, included a development of new concepts of health. For example, with the development of the biopsychosocial model, the patient’s involvement in therapy process began to play a greater role than in the traditional medical model, where the physician usually occupied the position “above”, fully directing the entire therapy process. In the process of studying the phenomenon adherence, researchers began to identify various factors that influence the degree of adherence to therapy. Those factors are generally categorized as patient-related, health-system related, provider-related and disease-related. However, more recent studies have emphasized the importance of psychological factors, which are currently not clearly identified as a separate category or as part of the group of patient-related factors. Nevertheless, numerous studies indicate that they have a significant impact.

Thus, therapy today appears to be a complex and multicomponent process. It includes not only psychological and biological, but also psychological and social factors that require further, more thorough research of its individual aspects, in particular, adherence to therapy (Lehtsier, 2009; Kondratiev et al., 2014).

The degree of scientific development of the research issue. In the clinic of urological diseases the research aimed at studying the personal characteristics of patients of this nosological group and their quality of life is conducted (Tyul'pin., 2004; Trubeckov et al, 2007; Tyurk, 2015; Zabolevaemost' naseleniya Rossijskoj Federacii v 2013 godu: Statisticheskie materialy: URL: http://mednet.ru/images/stories/files/statistika/zabolevaemost_vsego_nas... b olevaemost_2014.rar; Basulto-Martínez et al., 2020). However, the problem of adherence to therapy in this group still remains insufficiently investigated.

The urolithiasis is considered as one of the most prevalent diseases in the clinic of urology Despite the emergence of new methods of treatment and prevention, the incidents or urolithiasis in our country continues to increase since

2002 (Apolikhin et al., 2011; Gevorgyan, 2017). The prevalence of the disease in Europe is 5-9%, in Asia — 1-5%, in North America — 13% (Ramello, 2000). It is important to emphasize the high frequency of recurrence of the disease. According to the conducted studies about 50% of patients have at least one case of recurrence, and 10% of patients have multiple recurrence (Turk, 2015). Recurrent stone formation is influenced by a number of factors, such as chemical composition of the nodule, severity of the disease, and adherence to postoperative recommendations of the doctor. At the same time, it has been shown that following the simplest prescriptions of the doctor can significantly reduce the risk of recurrence. For example, fluid intake to achieve a daily urine volume of at least 2.5 liters reduces the recurrence rate of urolithiasis from 27 to 12.1% (Borghi et al., 1996), but according to available data, this recommendation is followed by less than 50% of patients. (Drongelen et al., 1998; Khambati et al., 2017).

Based on the mentioned above, it is relevant and necessary to conduct studies aimed at identifying psychological factors of adherence to treatment in patients with urolithiasis and then develop psychological interventions to improve patient adherence.

The goal of this study was to investigate individual-psychological and social-psychological factors influencing the formation of adherence to therapy in patients with urolithiasis.

Research objectives:

1. To study the level of adherence to therapy in patients with urolithiasis and its consistency with physician judgment.
2. Comparative study of the level of awareness of the disease and therapy, the formation of attitudes to compliance with therapeutic prescriptions, the formation of behavioral patterns in patients with different levels of adherence to therapy.
3. Comparative study of the types of attitudes towards the disease in patients with different levels of adherence to therapy.

4. Comparative study of time perspective and motivational sphere in patients with different levels of adherence to therapy.
5. Comparative study of the level of social frustration in patients with different levels of adherence to therapy.
6. Comparative study of the structure of social perspectives of the disease and therapy in patients with different levels of adherence to therapy.
7. Identification of psychological and psychosocial factors that most affect adherence to therapy in patients with urolithiasis.
8. Development of the basic principles of short-term clinical and psychological intervention aimed at increasing the degree of adherence to treatment in patients with urolithiasis.

Object of the study: psychological factors of adherence to therapy in patients with urolithiasis.

Subject of the study: structure of social perceptions of the disease and therapy, awareness of the disease, attitudes towards compliance with medical prescriptions and behavioral patterns; level of social frustration, type of attitude towards the disease, time perspective and motivation, relationship of psychological, social-demographic and clinical characteristics with adherence to therapy in patients with urolithiasis.

General hypothesis: individual-psychological and social-psychological characteristics of patients influence the level of adherence to therapy.

Hypotheses of the study:

- Adaptive types of attitudes to the disease increase the level of adherence to therapy, and maladaptive types decrease it.
- Increased social frustration decreases adherence to therapy.
- Awareness of the disease increases the degree of adherence to therapy.
- Patients with a high degree of adherence to therapy are characterized by a longer time perspective and a predominance of motivational objects aimed at physical self-preservation.

- Patients with high adherence to therapy are characterized by positive beliefs about the therapeutic process.

The theoretical and methodological basis of the study: a biopsychosocial model of human health and disease (Engel, 1977; Finegood, 2011; Karvasarsky, 2006; Wasserman, 2011), Health Belief Model (Rosenstock, 1974).

Understanding of the role of individual-psychological factors and the patient's social environment in relation to the disease and therapy is based on the ideas of modern psychosomatic medicine about the influence of these factors on the course of the disease and subsequent therapy (Gubachev, 1981; Berezin et al., 1998); Solozhekin, 2003). In this connection, individual-psychological and psychosocial characteristics of patients with urolithiasis were studied in this work. The study of attitudes to therapy and disease was based on the concept of V. N. Myasishchev (2013, 2004), according to which personality acts as a system of significant relationships.

The study of adherence to therapy was conducted in the context of modern ideas about the phenomenon of adherence to treatment and the factors that condition it, including psychological ones (Elfimova, 2009; Vlasova, 2001; Uryvaev, 2011; Strakhova, Arslanbekova, 2011; Becker, Maiman, 1975).

Research Methods. In this study, clinical-psychological and psychodiagnostic methods were used.

1. Author's structured interview for patients

2. Author's questionnaire for studying the assessment by doctors of the degree of adherence to the therapy of patients

3. Questionnaire "Compliance level" by R.V. Kadyrov (Kadyrov et al., 2014)

4. "Type of attitude toward disease" (TOBOL) (Wasserman et al., 2014)

5. "The level of social frustration" (Wasserman et al., 2004)

6. The "Motivational induction" test of J. Nuttin, adapted by N.N. Tolstykh (Nuttin, 2004; Tolstykh, 2005)

7. The method of prototypical analysis by P. Verges (Verges, 1992; 1994)

Mathematical and statistical data processing included: the χ^2-Pearson criterion, the U-Mann-Whitney criterion, the logistic regression method, a general linear model with repeated measurements, two-factor analysis of variance (ANOVA).

Scientific novelty of research. The present work is the first clinical-psychological and experimental-psychological study in Russia devoted to the study of psychological factors of adherence to therapy in patients with urolithiasis and the development of methods of short-term interventions for this nosological group aimed at improving adherence to therapy. For the first time in a clinical sample of patients with urolithiasis the level of adherence to treatment was determined, the degree of patients' awareness of the disease was assessed, and the formation of attitudes and behavioral patterns to comply with medical prescriptions and lifestyle modification was evaluated. The features of motivational sphere and time perspective, the type of disease attitude and the degree of social frustration were investigated for the first time in the context of adherence to treatment in patients with urolithiasis. Socio-demographic and individual-psychological characteristics of patients with urolithiasis were studied. A regression model was constructed, which allowed to determine the factors influencing the degree of adherence to therapy. It was found that such factors are the patient's awareness of the disease, the degree of formed attitudes and behavioral patterns for compliance with therapeutic prescriptions, as well as individual psychological characteristics of the patient (type of attitudes to the disease, features of time perspective and motivational sphere) and the degree of social frustration. For the first time, the basic principles and scheme of short-term clinical and psychological intervention for patients with urolithiasis aimed at increasing the degree of adherence to treatment were developed.

The theoretical significance of the study lies in the fact that the obtained data develops ideas about the phenomenon of adherence to therapy in the context of chronic somatic diseases. The existing data on personality characteristics of patients with urolithiasis and the influence of individual-psychological and

psychosocial characteristics on the degree of adherence to therapy is supplemented. The necessity of assessment of individual-psychological and psychosocial characteristics of patients that can influence the adherence of medical recommendation is substantiated. The necessity of a differentiated approach to the organization of psychotherapeutic and educational work with this category of patients on the basis of a probabilistic approach to their adherence to therapy was substantiated. In general, the results of this study contribute to the development of modern psychosomatic medicine.

The practical relevance of the study lies in the fact that the presented data can contribute to the development of complex methods aimed at increasing the degree of adherence to therapy in patients with urolithiasis. The identified psychological factors in the groups of patients with high and medium adherence to therapy make it possible to identify the targets of psychological work aimed at increasing the degree of adherence to therapy. Thus, it was shown that the degree of attitudes to perform appointments in the group of highly adherent patients is significantly higher, which gives grounds for assumptions about their influence on the degree of adherence to therapy. It was also revealed that the degree of adherence to treatment is significantly influenced by adaptive reactions to the disease. The obtained results allow to consider the type of attitude to the disease and the degree of attitudes to compliance with doctor’s prescriptions and the most significant targets of clinical and psychological interventions aimed at increasing adherence to treatment in patients with urolithiasis. Thus, the obtained results may serve as a basis for the introduction of specialized training programs for medical personnel to work within the framework of inpatient and outpatient treatment of patients with urolithiasis. The developed method of psychological intervention aimed at increasing the degree of adherence therapy of patients with urolithiasis can be used as a basis for other complex approaches to increase adherence to therapy of patients with this disease, which will make it possible to fill the exciting deficit of methods of psychological intervention in the clinic of urolithiasis.

The following statements are defended

1. Psychological factors influence the degree of adherence to therapy in patients with urolithiasis. Patients with different degrees of adherence to therapy are characterized by different individual psychological and psychosocial characteristics.

2. Among the studied individual-psychological characteristics of patients with urolithiasis such psychological phenomena as the type of attitude to the disease and social frustration have the highest prognostic informativeness in the context of adherence to therapy.

3. Patients with a high and average degree of adherence to therapy have the same level of awareness of the disease, but are characterized by a different degree of attitudes to compliance with medical prescriptions.

The reliability of the study is ensured by a meaningful analysis of modern domestic and foreign literature on the subject of the study; the representativeness of the sample of patients with urolithiasis; the use of mathematical and statistical processing of the results obtained. In the course of the study, valid methods were used; clarification of information in medical documentation; conversation with attending physicians.

Personal contribution of the author. The development of the study design based on a preliminary analysis of Russian and English-language literature, the development of patient questionnaires and for the expert evaluation of the doctor, the preparation of incentive material was carried out by the author of the work. The author independently conducted a survey of patients, conversations with attending physicians and operating surgeons, an analysis of available medical documentation, mathematical processing of the data obtained. Based on the study, the author developed methods of psychological intervention for the patients with urolithiasis aimed at increasing the degree of adherence to therapy, as well as practical recommendations for attending physicians.

Approbation of the research results. During the thesis preparation, the following articles were published in peer-reviewed journals:

1. Gadjiev N.K., Vasilyeva A.V., **Zaytseva D.V.**, Gorelov D.S., Gelig V.A., Obidnyak V.M., Kogai M.A., Petrov S.B. The implementation of the brief psychotherapeutic intervention to improve adherence to therapy in patients with urolithiasis // Urology Herald. – 2020. V. 8, № 3. – P. 120 – 133 (in Russian; **VAK, Scopus**);
2. **Zaitseva D.V., Isurina G.L.** Analysis of the degree of adherence to therapy in patients with urolithiasis at the stage of in-hospital treatment // The Bulletin of Psychotherapy. – 2022. V. 3 (83). – P. 40 – 48 (in Russian; **VAK)**;
3. **Zaitseva D.V.** Short-term psychological intervention in the urological clinic // The Bulletin of Psychotherapy. – 2023. (87). – P. 38 – 48 (in Russian; **VAK)**;

Conversations on the topic of the research were discussed at the meetings of the Department of Medical Psychology and Psychophysiology of Saint Petersburg State University and presented at the following conferences:

1. The theses presentation “Comprehension of the abstract and concrete iconic texts” // International Scientific Conference “Ananiev Readings – 2021. 55 Years of the Psychology Department at St. Petersburg State University: Generation Relay”, Saint Petersburg, 2021 (in Russian);

The dissertation includes introduction, three chapters, conclusion, glossary, list of references of 198 sources (84 in Russian, 114 in English), and 3 appendices. The main text is presented on 158 pages; the manuscript is illustrated with 23 tables and 11 figures.

CHAPTER 1. Analytical Review of the Research Topic

This chapter presents an analysis of modern theoretical views on the problem of adherence to therapy in medicine, as well as related terminology. The issue of assessing adherence to therapy and factors that can influence to it. The characteristics of urolithiasis, the main methods of its treatment and prevention are given. Special attention is paid to the risk factors of repeated stone formation and possible complications. Modern ideas about the influence of psychological factors on therapy and rehabilitation process are considered.

1.1 Development of Views on the Health Problem

The problem of human health has not lost its relevance for many centuries. Today, despite the development of medicine, the emergence of new methods of diagnosis and treatment of various diseases, this problem still remains unresolved, because it includes not only practical, but also methodological, ethical and other aspects of therapy. The complexity and ambiguity of this problem is indicated by the absence of a single accepted definition of health. There are different views and approaches to health issues that dominated in medicine for one time or another. In this regard, it seems appropriate to briefly consider the main concepts of health that have influenced the existing diverse definitions of the concept of health.

The medical model implies specific medical signs and characteristics of health, thus, health is understood as the absence of diseases and their symptoms. The biomedical model considers health as the absence of organic pathologies, as well as the absence of subjective feelings of ill health. There are biological factors that are singled out as the main criteria for the healthy functioning of a person and his vital activity.

Biosocial model. In this concept, in addition to biological factors, the importance of social factors is also noted, which are considered in unity, but at the same time social factors are given a leading role.

Value-social model. Within the framework of this model, health is the main value that serves as the basis for a full-fledged life of an individual, satisfaction of both material and spiritual needs, participation in cultural, social, scientific and other activities. This model is closest to the definition of health established by WHO (Nikiforov, 2006).

In this paper, we will adhere to the definition proposed by the World Health Organization. WHO defines health as “a state of complete physical, mental and social well-being, and not only the absence of diseases and physical defects” (WHO Constitution, 1948). Such a definition of health leads to an axiological understanding of health as an integral system (as opposed to a narrow medical approach).

The idea of a systematic approach in Russian psychology is associated with the names of V.M. Bekhterev, A.F. Lazursky, V.N. Myasishchev, B.F. Lomov. The most important principle of the system approach is the principle of hierarchy. Thus, a person acts as a complex living system, which means that he functions at different, but interconnected levels of functioning: biological, psychological and social. Consequently, at each of these levels, human health has characteristic manifestations (Nikiforov, 2006).

The main approach on the most modern therapeutic models is based is biopsychosocial. As an example, it could be considered the patient-centered model of therapy, which leads to the creation of such methods of work as the organization of a team of specialists for individual work with each patient (illustrated by The Patient-Centered Medical Home). This model began to form in the 80s of the last century in pediatrics (Hayden, 2012). However, today it has spread to other areas of medicine. The essence of this therapeutic model is that a whole team is created not only of medical professionals, but also specialists in related fields who support the patient, his family and contribute to his further adaptation. There are studies devoted to the study of this model, which show the success of the program, in particular, a decrease in the number of patient calls to the emergency service due to consultations with specialists by means of additional communication: e-mail,

telephone, special visits. Thus, it is possible to achieve greater adherence of patients to therapy and reduce the percentage of cases of critical deterioration of health due to timely consultation with specialists (Reid et al., 2009). A similar model is followed by: the American Osteopathic Association (AOA), the American College of Therapists (ACP), the American Academy of Pediatricians (AAP), the American Academy of Family Physicians (AAFP) (Gottstein et al., 2021).

1.1.1 Biopsychosocial Approach

The biopsychosocial approach has replaced the biomedical one. It is based on the model proposed in the 70s of the last century by J. Engel, who illustrated the lack of a narrow medical approach, which was characterized by separation from social, cultural and psychological factors, since the absence of objective symptoms of the disease often does not lead to the recovery of the patient (Engel, 1977). An example is the statistical data obtained by different researchers. Thus, it was found that about 80% of patients who complain of such complaints as headaches, back pain, do not have any organic pathology that could cause such a patient's condition. (Blackwell, 1973; Deyo, 1986).

The biopsychosocial model reflects the need for a systematic approach to health and disease issues. For 30-40 years ago all the main attention was paid mainly to the diagnosis of physiological indicators (so-called objective), but contemporary medicine and therapy consider all aspects of human functioning and vital activity.

The psychosocial aspect reflects the subjective components of the patient's perception of the disease: personal attitudes, how the pathology affects his habitual lifestyle, family, friendly and working relationships. In addition, it is impossible to exclude the influence of culture on the perception of the disease and the attitude of others to a sick person (Wasserman et al., 2008).

Limitations of the Biopsychosocial Approach. Despite the fact that this approach covers almost all the main aspects of therapeutic relationships, some disadvantages should be mentioned.

The main disadvantage of this approach is about the research methods are used. If the narrow-medical approach, which prevailed for the past few decades, had objective methods of examination at its disposal, then with the inclusion in the structure of humanitarian areas, such as psychology and sociology, the situation has become more complicated due to the fact that these sciences can not offer objective measurement methods.

Most of the methods used in psychology for the study of cultural, semantic, motivational, personal, etc. constructs are self-reporting or descriptive, which is new for medicine. The quantitative characteristics obtained in medical sciences are easily controlled and statistically predictable, but these strategies are fundamentally impossible for a qualitative method. However, qualitative methods actively implemented into medical examinations. The correct use of quantitative methods in combination with qualitative ones allows to receive a more holistic view to various aspects of the patient's life.

Due to the fact that the biopsychosocial approach has replaced the biological one relatively recently, the problem of quantitative and qualitative methods, their correlation, and their correct implementation still remains a problem at the solution stage.

1.1.2 Subjective Perception of Pain

In scopes of the biopsychosocial approach, it is advisable to briefly consider the problem of the differences between “disease” and “disorder”, because it serves as a good illustration of the differences in the perception of the patient's own condition, and, consequently, the importance of including psychological and social components in the therapy process.

The disease is usually defined as an “objective biological event” that is associated with a direct violation of the anatomical integrity of the tissue of an organ or organ system, as well as a malfunction associated with a direct violation of the physiological substrate (Mechanic, 1986). In turn, “disorder” is a subjective experience that occurs during illness and causes physical discomfort. Thus, a disorder is how a person and his social environment react to the emerging symptoms of the disease and subsequent changes in the patient's life. Obviously, the difference between disease and disorder is similar to the difference between pain and nociception. Nociception is a physiological process that consists in transmitting a signal about tissue damage to the brain; in turn, pain is a subjective experience of the phenomenon of sensory stimulation, which is refracted through the personality characteristics of an individual and his experience (Danilov, 2010).

Thus, the biopsychosocial approach considers diseases as a dynamic process, its structure includes biological, social and psychological factors that have a two-way interaction. Biological determinants of the disease can influence the behavior of a patient, changing it in one way or another, as well as the system of his relationships with the social environment. In turn, the psychological state of a person can have the opposite effect on the biological state: on his vegetative system, on hormone production, thus changing the biochemical processes in the brain, its structure (Herta et al., 1985; Kyngäs et al., 1999). This concept is the basis of a numerous studies and in urology field, as well as the creation of comprehensive therapeutic programs (Smirnov et al., 2015). These examples refer to psychophysical and psychophysiological problems that have remained unresolved in psychology and philosophy since the XVII century.

As was mentioned earlier, the patient's physical condition, his subjective perception of pain can affect his psychological state and behavior. The most striking example in this vein is the relationship between severity pain symptoms and adherence to therapy. There are numerous studies in different fields of medicine, for various diseases that demonstrate greater adherence to therapy among patients with the presence of pain and a decrease in the level of adherence

with a decrease in pain symptoms. However, excessively prolonged painful experiences (namely physiological ones) can also reduce the level of adherence to the patient's therapy and negatively affect his quality of life (Hayden, 2012).

In this context, it also seems appropriate to consider the concept of the internal picture of the disease.

1.1.3 The Internal Picture of the Disease

In the context of the subjective “perception of pain and disease, it is also important to consider a phenomenon of “Internal Picture of the Disease”, which has a direct impact on the formation of adherence to therapy and its degree.

The term “Internal Picture of the Disease” was proposed by R. A. Luria in 1935 and developed the ideas of A. Goldscheider about the “Autoplastic Picture of the Disease”. R. A. Luria identified two levels of the subjective picture of the disease: sensitive and intellectual. The sensitive level is the sensations associated with the disease; the intellectual level is the thoughts and reasoning of the patient about his illness, well-being and condition (Luria, 1977). Later, V. V. Nikolaeva added emotional and motivational components to this model (Nikolaeva, 1987). Thus, four levels of the internal picture of the disease were identified:

1. Sensorial – a set of painful sensations
2. Emotional – emotional reactions to the disease
3. Intellectual – knowledge, patient's ideas about the disease and treatment
4. Motivational – the patient's attitude to the disease, the desire to change the lifestyle for the return and preservation of health

Different ratios are possible between these components. For example, in the case of an inadequate attitude of the patient to the disease, it is possible to change the hierarchy of needs and, as a consequence, a change in the personal sphere, and hence a change in the type of social relationships.

A person’s subjective perception of the disease has been studied by a number of national researchers, that led to the emergence of many concepts similar in meaning. For example, according to the definition of E. A. Shevalev, “the experience of illness” is a sensorial and emotional background, where ideas and sensations associated with the patient's illness manifest themselves. The author identified six types of illness experience (Shevalev, 1936). The concept of “adaptation reaction” was used by O. V. Kerbikov means a set of patient's techniques aimed at overcoming awareness of physical and mental limitations and shortcomings caused by the disease (Kerbikov, 1971). Other examples include concepts such as “attitude to the disease” by Y. P. Frumkin, “attitude to the disease” by L. L. Rokhlin, which the author defines as “consciousness of the disease”.

Thus, the internal picture of the disease is presented as a holistic and multicomponent psychological phenomenon that reflects the individual characteristics of the patient's experiences associated with his disease and his personal meaning (Wasserman et al., 2008). According to A. Sh. Tkhostov, the personal meaning can be negative, positive, or conflictual. Negative personal meaning refers to the predominance of psychological defenses, for example, denial, as a result, there are changes in the degree of awareness of the existing threat (disease). The reason for the formation of a denial reaction is the unbearability of the present situation for the patient, especially with unmotivated manifestations of anxiety and fear. In extreme cases, it is possible to develop maladaptive behavior in the form of pathological denial of the disease, which, first of all, prevents receiving medical care. Consequently, a negative personal meaning can hinder the adequate person functioning and the realization of his needs. Positive personal meaning can be characterized as the patient's desire to benefit from the current situation of the disease. In turn, a conflicting personal meaning arises when the disease has a beneficial effect on achieving certain motives, but at the same time hinders others. For example, in situation of life threatening due to

disease, the motive for saving life could be actualized, which occupies the main position regarding person activities (Konradi, 2007; Sirota, Yaroslavskaya, 2011).

Another model, which was proposed by T. N. Reznikova and V. M. Smirnov, is based on the concept of “cerebral information field of the disease”. This construct is a relatively stable functional brain structure formed on the basis of information that relates to the patient's disease. The cerebral information field of the disease also has a material substrate – long-term memory matrices that record incoming information about the disturbed processes of the functioning of the body. A special place in the organization of the cerebral information field of the disease is occupied by the body schema system, thanks to it various sensations of discomfort and/or pain zones are inscribed in the spatial coordinates of the body. The “disease model” is the functional center of the psychological zone of the cerebral information field of the disease, which includes the following submodels: logical, sensory-emotional and submodels of major disorders.

The formation of personal programs and goals aimed to struggle with the disease are a consequence of the formation of the disease model and the need to overcome it. Emotional and motivational behavior is a response to the need to get rid of various manifestations of the disease and its purpose is to receive treatment. Further a “prognosis model” of the disease is formed, based on which a “model of expected treatment results” is formed. The next stage is the formation of a “model of the obtained research results”. Thus, the leading role in the formation of the internal picture of the disease is assigned to the individual (Sirota et al., 2011).

R. M. Voitenko identifies the factors that determine the internal picture of the disease: biological (everything related to changes in the somatic state, trauma, intoxication, etc.), sociogenic (related to changes in the patient's relationship with his close environment) and autopsychological (related to the patient's self-esteem, his assessment and perception of himself, his fate) (Voitenko, 1981).

In V. A. Tashlykov's model, the structure of the internal picture of the disease is represented by three aspects: cognitive, emotional, and motivational-behavioral. The cognitive aspect is determined by the physical or psychogenic

concept of the disease, which is formed by patients during the experience of painful sensations. The “somatic concept” is formed from the patient's basic ideas about those physical painful processes occurring in his body. In turn, the “psychogenic concept” includes the patient's ideas about the psychological causes of the disease. The emotional component is the predominant types of experiencing the disease (depressive or phobic), motivational and behavioral is represented by features of self–esteem, pathogenic situation and conflict, as well as adaptation systems — psychological protective reactions, adherence to therapy, the formation of an appropriate lifestyle (Tashlykov, 1984).

Psychological analysis of V. N. Myasishchev's concept, considers the attitude to the disease in three semantic perspectives: emotional, behavioral and cognitive. Thus, the emotional component reflects the feelings and experiences of the patient caused by the disease; motivational-behavioral – illustrates the formation of strategies for the patient's behavior in the conditions of the existing disease (for example, struggling with the disease or ignoring it, positive or negative attitudes, acceptance or denial a “role” of a patient), adaptive or maladaptive reactions to the disease; cognitive – awareness of the patient about the disease, his awareness, understanding the influencing of the disease on his life and possible prognoses (Wasserman et al., 2014).

Most of the researchers of this phenomenon identify mainly three factors that influence the formation of attitudes to the disease (Ibid.):

1. Premorbid personality traits
2. The nature of the disease
3. Socio-psychological factors

Thus, the consideration of the attitude toward disease from the psychology of relationships point of view includes an analysis of all three factors due to the fact that the attitude toward disease, like any other attitude, is individual, selective and conscious, therefore, it reflects both the individual and personal level. Any relationship has a subjective-objective character, it acts as a meaningful phenomenon and is not considered outside or the subject of these relations. In

addition, the attitude toward disease is formed in a certain environment, a microsocium and in society in general, who have certain ideas about the disease, about how the “patient” should “behave” within the framework of a disease and about the possible psychosocial consequences associated with this particular illness.

The attitude toward disease could not be considered isolated, because it is an element of the psychological analysis of the holistic system of relations. In addition, the patient's attitude toward disease becomes highly important, therefore it can affect other human relationships. Thus, for a comprehensive consideration of the phenomenon of attitude toward disease, it is important to take into consideration a broader context, taking into account the attitude to the areas of the patient's personality, which can be influenced by both the disease and the patient's attitude to it.

It is also important to mention that the subjective picture of the patient's perception of his own disease directly affects the course of therapy. In this vein, a number of studies have been conducted, the results of which show that the cognitive aspect of the perception of the disease directly affects not only the adherence to therapy, but also how the patient's self-perception changes, how his habitual way of life changes (Yaltonsky et al., 2015; Bacigalupe, 2015).

Thus, it can be noted that the concepts discussed above, correlating with the internal picture of the disease, reflect the individual experiences of the patient in a situation of illness. In this way, it makes sense to consider the concept of quality of life of patients.

1.1.4 Patients' Quality of Life

Another aspect that refers to the importance of a systematic approach in therapy is the study of the patients’ quality of life with various diseases. In contrast to the internal picture of the disease, the quality of life is an interdisciplinary concept and reflects a holistic approach to the patient within the framework of

therapy. Moreover, the World Health Organization calls for considering the patient's quality of life as the main criterion for effective therapy in the absence of an objective threat to the patient's health. It is important that the patient's subjective experiences come to the fore to a certain extent as opposed to objective clinical and diagnostic indicators. Thus, the quality of life acts as an integral unit not only of the physical characteristics of the patient, but also psychological and social, which are based on the subjective perception of the state of a person's health and general well-being (Wasserman et al. 2014).

In the methodological aspect of studying the quality of life in scopes of the holistic provision of the patient, a comprehensive assessment is necessary, including subjective experience, a system of relationships, awareness.

According to existing research papers, patients, especially with chronic diseases, are often forced to completely change their way of life, which obviously can affect to their family, work, friendship and other relationships (Abramov et al., 2013; Kondratiev et al., 2014; Kuznetsky et al., 2007; Petrov et al., 2010; Ryazantsev et al., 2013). The results of these studies show that complex therapy (including psychotherapy, patient education and additional consultations) can significantly improve the patients' quality of life and facilitate their further adaptation.

1.2 Adherence to Therapy. Establishing the Conceptual Construct

The considered approaches to the concept of health and related phenomena such as the internal picture of the disease and the quality of life are directly correlated with the problem of adherence to therapy. A number of modern studies show that a low-level patients' quality of life, especially with chronic diseases, leads to a decreasing the level of adherence to therapy, or negatively affects its maintenance at the level necessary for successful therapy. For example, low adherence to therapy is observed in patients who must take medications for a long time (peptic ulcer, bronchial asthma, ulcerative colitis, rheumatoid arthritis, etc.),

follow complex hospital prescriptions (for example, complex drug regimens in combination with medical procedures) (Dawood, 2010). In addition, about 66% of patients stop taking medications because of fear of side effects or possible harm from prescribed treatment (Benson, 2003). Here we are faced with one of the factors that prevents the formation of a high level of adherence to therapy – a lack of information and knowledge of the patient about the disease, possible therapies, their pros and cons.

So, the implementation of new models of therapy required the development of a new conceptual construct. To this date, a number of concepts have been formed that characterize the same phenomenon, but from different sides. Hereinafter, the basic concepts that are found in the literature more often than others will be considered: compliance, adherence to therapy, concordance.

1.2.1Compliance

The basic concept accepted in medicine, which describes the behavior of the patient, the interaction with the doctor and the patient within the framework of therapy is compliance, compliance (“behavior in accordance with a request or instruction; obedience”, Cambridge Dictionary). The reviewing the problem of compliance have been started since the beginning of this century, but initially it sounded like “noncompliance” therapy and the most research was devoted to it, not the problem of compliance. The earliest works date back to the 70s of the last century (Becker et al., 1975; Blackwell, 1973), but then this problem was not as acute as it is now, at least in national medicine.

The main problem is absence of any broadly accepted definition of the term “compliance”. The term can define a set of procedures: taking medications and taking them poperly, performing non-drug prescriptions (exercise, diet), forming a healthy lifestyle in general (Haynes et al., 2012; Jin et al., 2008; Rafii et at., 2014). It can be used only in a narrow medical sense, i.e. only taking medications (Cramer et al., 2008). Thus, both interpretations of this term can be found in foreign

literature. Some Russian authors also point to the possibility of using both versions of the interpretation of the term “compliance” (Lehtsier, 2009).

The lack of commonly accepted definition leads to the complication of international studies of this phenomenon. In addition, the term is widely used not only in medicine, but also in law, business environment, banking, etc. This term is translated literally into Russian.

The failed attempts to create a generally accepted definition provoced the emergence of synonymous expressions, which in some cases are used as interchangeable concepts, and in others as two fundamentally different terms. For example, Cramer's article provides a point of view according to which medical compliance is a synonym for adherence to therapy (Cramer et al., 2008). Gardner K. and some other researchers come to the same conclusion (Bissonnette, 2008; Khair, 2014).

Some other authors, on the contrary, point out that the term compliance has a negative connotation, since it indicates the passive and subordinate role of the patient in therapeutic relationships, and seek to use a different terminology in their works (Playle et al., 1998; Vermeire et al., 2001; Kisa, 2003; Stromberg, 2006). In this context, there is a problem of the so-called paternalistic model of doctor-patient interaction, where the patient is assigned the position of passively following the authoritarian figure of the doctor. However, modern realities show that for a successful therapy process, it is necessary to actively involve the patient himself in the treatment process and distribute responsibility. In addition, the purely physical approach of the doctor to the problem of the patient's illness only provokes additional misunderstanding in the course of therapy, which is noticed by both national authors (Lehtsier, 2009) and foreign ones (Borrell-Carrio, 2006).

Despite this, the use of the term “compliance” is still widespread and can have both a narrow meaning representing only taking medications and a broader definition – following all medical recommendations. A similar phenomenon is observed both in English-language literature and in Russian.

1.2.2 Adherence

In 2003, the World Health Organization coined the term “adherence to therapy/treatment”, defining it as “the extent to which a person's behavior – taking medications, following [diet] and/or lifestyle changes – complies with the agreed recommendations of a health care provider”.

However, despite the fact that WHO has introduced this term into use and defined it, there are still cases in the literature of the use of the concept of “adherence to therapy”, i.e., both in the narrow medical sense – taking medications, following the regimen of taking medications and dosages, and in a broader one, which includes both drug treatment, and non-drug treatment.

The complexity of studying this phenomenon lies in the fact that adherence to therapy is an interdisciplinary concept and the factors influencing adherence to therapy can vary from discipline to discipline.

Currently, there are some factors affecting adherence to therapy: factors related to the patient (with his personality, socio-demographic characteristics, etc.), factors related to doctors, and factors related to the healthcare system. Each of these factors is divided into a number of factors that are almost impossible to take into account. Such detailed separation and classification of factors determining adherence to therapy that underlie research problems. It is extremely difficult to develop a method that could examine all aspects of a patient's adherence to therapy. Moreover, in each specific disease, a number of specific factors are identified that are fundamentally important and must be taken into account when measuring the level of patient adherence. At the moment, there are several not only psychological, but also general medical methods that evaluate certain aspects of adherence to therapy.

Based on the literature analysis, the following trend can be noted – the concept of “adherence to therapy” has replaced “compliance” as having a less negative connotation, which has traditionally been associated with the fact that the doctor was assigned a large dominant role over the patient (Murphy et al., 2001).

In case of use the term “adherence to therapy”, this emphasis shifts to the communication process and assigning the patient greater autonomy and responsibility for the course of treatment.

1.2.3 Concordance

Conditionally, the appearance of this concept is associated with the release in 1997 of the work “From Compliance to Concordance: Achieving Shared Goals in Medicine Taking”, released by the Royal Pharmaceutical Community. It was then that new model of patient-doctor interaction was proposed, assigning a greater role to the patient in the therapy process. It is important to mention that, this article was about drug treatment, greater awareness of the patient: which drug, what dosage, discussion of alternatives and possible side effects (Kyngäs et al., 1999). The same approach was promoted in the field of hormonal contraception – greater awareness of women about the effect of the drug, dosages, etc. (Foster et al., 1998).

Later, this approach gradually spread to other areas of medicine and began to relate not only to drug treatment, but also to the therapy process as a whole, thus, the emphasis on greater patient awareness gradually shifted towards greater patient participation, discussion of therapy, treatment methods.

Other authors associate the appearance of this term with the development of a biopsychosocial approach in medicine, according to their works, concordance interprets the treatment process as cooperation between a patient and a doctor in term of equality of both participants (Vermeire et al., 2001; Horne et al., 2005; Trubetskov et al., 2007).

To this date, the concept of concordance in its most common meaning implies a greater involvement of the patient in the therapy process, which includes the possibility of an open discussion with the doctor about treatment.

However, there is no generally accepted meaning too. Some authors use the term in the sense of “the state or conditions of an agreement, harmony that is

achieved through negotiations in a therapeutic alliance. This is a type of partnership in which both sides are equal" (Chakrabarti, 2014; Stromberg, 2006).

Despite the fact that this term could be found quite often in the literature, the concept itself has not become widespread due to the fact that the patient's overly active position in treatment on an equal basis with qualified specialists, can slow down the therapy process or harm him.

In national works, the use of the term concordance is practically not found, deu to the idea underlying the terminology. In this paper, we will use the definition proposed by WHO – adherence to therapy.

1.2.4 Socio-demographic Factors of Therapy Adherence

Socio-demographic factors of adherence to therapy are currently the subject of close attention not only by doctors, but also by psychologists (Horne et al., 2005; Jin et al., 2008; Fritsche et al., 2012; Shepeleva et al., 2019).

Currently, there are a large number of studies of socio-demographic, socio-economic, and other factors of adherence to therapy in both chronic and acute diseases. Therefore, we will not consider this issue in detail, but only briefly consider the main factors that matter in the context of this work.

One of the most significant criteria that stands out in the studies of various nosological contingents is marital status (Viktorova et al., 2014; Sherwood, 1983). According to available data, patients who are married or have close and trusting relationships are more likely to be less at risk of incompetent behavior than patients who have difficulties in interpersonal relationships or are divorced. Researchers explain these results by the fact that patients in families are able to receive support and care that can motivate the patient to take medications, to form an appropriate lifestyle (Viktorova et al., 2014; Sherwood, 1983 Arafa et al., 2010; Pereira, 2017).

Studying the gender aspects of this problem, illustrates contradictory results. Thus, some authors claim that there are no significant differences between men and

women in terms of adherence to therapy (Kiortsis et al., 2000; Vik et al., 2004). Others believe that women are more often characterized by compliant behavior than men (Nelidova et al., 2015; Kyngäs et al., 1999; Balbay et al., 2005; Lertmaharit et al., 2005).

There are also works that demonstrate the relationship between personal characteristics and socio-demographic, i.e., influence of various social and demographic factors, type of personality, in the case of disease treatment (Shepeleva et al., 2019; Jin et al., 2008).

Another factor that is also quite important is the age of the patient. There is evidence that in the case of some diseases, patients become more committed to therapy with age (Vermeire et al., 2001). According to other sources, older patients are less committed to therapy (Balbay et al., 2005; Hayden, 2012). However, such a decrease in adherence to treatment is explained by the fact that it is often difficult for elderly patients to understand the medication regimen or plan the entire regimen that is prescribed by the attending physician. Another reason for low adherence lies in the forgetfulness of patients, which occurs with age in a fairly wide range of individuals (Hayden, 2012).

It should be noted that considered the sociodemographic characteristics are closely related to the field of psychology. Therefore, the creation of programs to increase adherence to therapy of patients with various diseases will be more successful with the involvement of psychologists, because often it is the personal traits of the patient that play a key role in his perception of not only the situation of the disease, but also the social situation that exists at the time of the illness.

1.2.5 The Role of the Doctor-patient Relationship in the Context of Therapy Adherence

As mentioned earlier, modern medicine is moving to the basics of the biopsychosocial model, which means changes of the doctor role. If earlier the relationship between the doctor and the patient had a paternalistic vertical

character, i.e. the doctor was a figure who completely led the therapy process, and the patient was assigned a passive and subordinate role, then at this stage the doctor–patient relationship is gradually moving to the horizontal level of interaction. This means that now the patient also acts as an active participant in the therapy process, for example, the patient has the right to be informed about treatment options and the choice of one or another option. However, at the same time, the patient is expected to take a more conscious approach to the therapy process and take responsibility for the decisions made.

Despite the fact that the biopsychosocial approach assumes a division of responsibility between the doctor and the patient, this division is not equivalent. First of all, because of many factors depend only on the doctor, for example, informing a patient about a disease, a course and possible outcomes, moreover, in addition to therapy, patients need emotional support and strengthening their motivation to follow the prescribed treatment. Numerous studies confirm that relationship built between the doctor and the patient plays a primary role in the outcome of therapy (Hayden, 1979). However, working with a patient in a psychological way should not be part of the duties of a doctor, within the framework of a biopsychosocial approach, it is assumed that specialists of various profiles share responsibilities, so the presence of a clinical psychologist in a somatic hospital solves one of the most important tasks – working with the psychological state of the patient, strengthening his motivation for a successful outcome of treatment.

1.2.6 Methodological Issues of Measuring Adherence to Therapy

Despite the fact that in modern science there are a number of techniques that measure the patient’s adherence to therapy, this issue still cannot be considered fully resolved. The main problem here is that diagnostic methods are self-reporting, which can often differ from objective diagnostic methods (for example, measuring the level of the drug in the patient's blood or urine, or changing their

biochemical composition, which may be if the patient does not follow the prescribed diet, etc.).

The most common and one of the easiest-to-use tests for determining the level of adherence to therapy is the Morisky-Green test (Lukina et al., 2016). Despite the fact that this technique has good reliability and validity, as well as versatility of application in various diseases, the scale is not protected from the phenomenon of social desirability. Complex techniques are more protected, but they are more difficult to use, since they have more questions, which means they require more time to complete.

Another problem is the unintentional distortion of the patient's self-report results. An example of such distortions is the patient's idea that he follows the prescribed therapy despite the fact that he can change the dosage of the drug or skip the day of admission, but considers such cases as insignificant and still sees himself as a highly compliant patient.

The way out in this situation is a comprehensive approach: the use of psychological assessment methods (psychological questionnaires), medical (objective indicators of the physiological state of the patient), as well as reports of specialists who work with this patient (attending physician, junior medical staff, etc.).

1.3 Motivation and its role in the formation of adherence to therapy

Currently, understanding the phenomenon of motivation depends on the approach we rely on. Despite the development of various psychological schools and ideas, there is no single definition of this phenomenon. Motivation can be interpreted both as a set of motives, and as an incentive that directs the organism to perform a certain activity, and as a set of factors that determine behavior. In addition, some authors consider motivation as a process of mental regulation. Thus, the definitions of motivation can be conditionally divided into two types:

motivation as a set of motives or factors that determine behavior, and motivation as a process.

A number of researchers (Bakanov et al., 1983; Kolesov, 1991; Kovalev, 1988) consider motivation through the prism of needs, thus explaining the manifestations of human activity. So, when the tension caused by the need appears, the living being goes into an active state in order to relieve this tension and satisfy the need that has arisen, therefore, the higher the tension, the more intense the urge should be. However, this concept is not able to fully explain the purposeful activity of the organism, the choice of specific means to meet the need that has arisen. Experiments have shown that, for example, research activity can manifest itself in the absence of a primary need, and when playing, it is not at all possible to find an object that causes a deficit. In addition, it was shown that with an increase in the demand voltage, there is not always an increase in activity aimed at discharging this voltage, i.e. there may not be a direct dependence.

Some Russian authors (Leontiev, 1971; Bozhovich, 1968; 1972) also note the impossibility of the need to determine the purposeful behavior of a person. According to their proposed concept, the motive for activity is an object capable of satisfying the need. It is also important that the motivator of activity is not just an object, but its meaning for the subject. Similar ideas were voiced by K. Levin, describing events and objects as neutral, but having different effects depending on the subject. The disadvantage of this concept is that it does not explain such characteristics of the motive as stability and strength, in addition, different objects may have different degrees of attractiveness for the subject, but this characteristic describes the object itself rather than the motive.

In the works of Western researchers (Murray, 1938; Atkinson, 1964; Allport, 1937), the view of the motive as a stable personal characteristic prevails. According to these concepts, personality characteristics can determine an individual's activity to the same extent as external stimuli. However, the question of the separation of personality traits and needs remains open, for example, the

desire for security, creativity, enjoyment, etc., are rather the needs of the individual than the stable characteristics of the personality.

Another aspect, actively discussed in Western psychology (Heckhausen, 2003; Skinner, 1974), raises the question of the division of motivation into internal (intrusive), related to the needs, drives, attitudes of the individual, and external (extrinsive), due to environmental influences. However, further discussion of the problem showed the impossibility of a pure division of motivation into external or internal, because in the process of human activity, it is possible to attribute certain properties and qualities to external objects that have a motivating force for an individual.

Numerous modern studies, as well as studies of past years, indicate that the motivational component is an important aspect in the formation of adherence to therapy, regardless of nosology (Sorokin, 2016; Wilkinson, 1997; Schmidt et al., 2020). Thus, various studies (To et al., 2020; Steiner et al., 2021) demonstrate the importance of the patient having both internal motivation aimed at changing the regime or lifestyle, and external. External motivation is more often mentioned in the context of the patient's interaction with the attending physician, as well as other medical professionals, who in this way act as an external motivating force, for example, additional reminders about taking medications, regular visits of the patient to the doctor during outpatient observation — can enhance the external motivation of the patient, which increases the degree of adherence to therapy. It is interesting to note that during psychotherapeutic and psychocorrective measures aimed at maintaining the internal motivation of the patient, the need for external motivation decreases, and even its absence does not have a negative impact on the degree of adherence to therapy (Lehtsier, 2009).

The Model of Motivation of J. Nuttin

The concept proposed by J. Nuttin is similar to the ideas of Russian psychologists (Rubinstein L.S., Leontiev A.N.), as it focuses on the unity of a person and the world around him.

The proposed formula of individual behavior looks like “individual-environment”, it shows that the organism and the environment are interconnected and cannot be considered separately from each other, because together they form a functional unity. The key point is not what determines behavior: the environment or personal characteristics, but how these elements are interconnected in a behavioral act. Speaking about the motivational component of activity, it is indicated that the behavior of an individual is equally determined by the goals and the situation itself perceived by him. The main ideas of this concept can be summarized in the following provisions:

1. the individual and the environment are in a “relational” unity, where the individual acts as a “subject-in-a-situation”, and the environment is a “situation-for-the-subject”
2. the “individual-environment” system is represented by a functional system and has a dynamic nature, where the individual as a living organism maintains and develops its own functioning by participating in behavioral relationships with environmental objects
3. the individual as a biological and psychosocial integrity is formed in the process of interaction with the environment, where the motivational aspect acts as an interconnection in the structure of the “individual-environment”
4. the main purpose of motivation is to actively direct and regulate behavior of an individual on the way to the goal object, i.e., scattered activity is transformed into meaningful action
5. the behavioral act, by virtue of its dynamic nature, is internally motivated to the extent that it is aimed at the final goal
6. needs are innate, but they develop and transform into motives and target objects, as well as under the influence of the cognitive processing of the individual
7. since the “individual-environment” system is a dual source of motivation arousal, it can occur both from the internal needs of the individual and from the object of the environment, which is able to activate the latent need.

1.4 Urolithiasis

“Urolithiasis is a metabolic disease that, due to a violation of the physico–chemical balance of urine under the influence of endogenous and exogenous factors, is manifested by the formation of stones in the urinary tract” (Komyakov, 2018). The following factors influence the development of urolithiasis: genetic, geographical, climatic and dietary.

According to the European Urological Association, it is customary to distinguish the following types of stones based on their etiology:

- Non-infectious stones (calcium oxalates, calcium phosphates, uric acid)
- Infectious stones (magnesium and ammonium phosphate, apatite, ammonium urate)
- Stone formation due to the influence of genetic factors (cystine, xanthine, 2.8-dihydroxyadenine)
- Stone formation due to drug therapy

Risk Factors for the Stones Formation.

- Common factors that can influence stone formation:

  Family history of cases of urolithiasis

  Violation of calcium metabolism

  Chronic infectious diseases of the genitourinary system (formation of infectious stones)

  The only kidney

- Factors associated with diseases that can provoke the formation of stones:

  Hyperparatheriosis

  Metabolic syndrome

  Polycystic kidney diseas

  Nephrocalcinosis

  Diseases and pathologies of the gastrointestinal tract

  Spinal cord injuries

  Neurogenic bladder

- Genetic factors:
  1. Cystinuria (types A, B, AB)
  2. Primary hyperoxaluria
  3. Renal tubular acidosis type 1
  4. Lesh-Nihan syndrome
  5. Cystic fibrosis
  6. Xanthinuria
  7. 2.8-dihydroxyadeninuria
- Factors associated with taking medications that provoke stone formation.
- Factors related to anatomical and urodynamic disorders:
  1. Obstruction of the pelvic-ureteral segment
  2. Diverticulum or cyst of renal calyx
  3. Horseshoe kidney
  4. Ureterocele
- Environmental and occupational factors:
  High environmental temperature
  Exposure to lead and cadmium

1.4.1 Epidemiology and Prevalence of Urolithiasis

According to epidemiological studies, the incidence of urolithiasis in economically developed countries: USA, Germany, Japan, Italy has increased approximately twice in recent decades, it is noted that a special increase in the number of cases has occurred in recent years (Nikiforov, 2006; Romero et al., 2010; Sorokin et al., 2017).

In the United States of America, about 200 new cases of urolithiasis are registered annually. In 2012, according to the statistic, 10.6% of the male population and 7.1% of the female population were registered, while in 1994 this figure was 6.3% of men and 4.1% of women (Strope et al., 2010; Scales et al., 2012).

In European countries, urolithiasis is especially common in the southeastern regions, in England, the Netherlands, as well as Germany and France. In Germany, by the beginning of the century, the incidence rate increased from 0.54% to 1.47%. Studies indicate a true increase in morbidity that is not associated with improvements in diagnostic methods (Hesse et al., 2003).

Epidemiological analysis of the countries of the Middle East has shown that the spread of urolithiasis in regions with a dry climate is especially high. The presence of urolithiasis was detected in 19.1% of the surveyed population (Ahmad et al., 2015).

In the Russian Federation, urolithiasis reaches 40% of all urological diseases (WHO Statute, 1948; Viktorova et al., 2014; Gevorkyan, 2017). According to official statistics of the Ministry of Health and Social Development of the Russian Federation, the absolute number of registered patients with urolithiasis for the period from 2002 to 2009 increased by 17.3% despite the fact that in some periods there was a slight decline, the general trend indicates an increase in the incidence.

1.4.2 Kidney Stone Disease Recurrence

A distinctive feature of urolithiasis is a high recurrence rate, reaching 30-50% within 10 years after the onset of the disease. At the same time, 10% of patients have two or more cases of relapse of the disease (Turk, 2015; Ramello et al., 2000). It is believed that the re-formation of stones is influenced by factors such as the chemical composition of the concretion, the severity of the disease, genetic factors, nutritional characteristics, and measures to prevent relapse (Turk, 2015; Panferov et al., 2019).

It should be mentioned that most of the preventive measures of urolithiasis are quite simple and do not require expensive procedures or medications. For example, sufficient fluid intake to achieve a daily urine volume of at least 2.5 liters reduces the recurrence rate of urolithiasis from 27 to 12.1% (Borghi et al., 1996). However, studies show that less than 50% of patients follow this recommendation

within 6 months after consulting a nutritionist (Drongelen et al., 1998; Khambati et al., 2017).

1.4.3 The Main Lines of Psychological Research in the Clinic of Urolithiasis

Numerous modern studies, both domestic and foreign, have shown that urolithiasis can have a significant negative impact on the patients' quality of life, the sphere of family and labor relations (Tulip, 2004; Trubetskov et al., 2007; Panferov et al.,2019; Rollnick et al., 2012).

Foreign studies show that the greater the number of episodes of renal colic or surgical intervention noted by patients, the more significantly it affects their standard of living. Studies of the influence of various methods of stone removal and their impact not only on the patient's physical condition, but also on the standard of living, emotional well-being are also actively conducted (Luria, 1977; Kyngäs et al., 1999; Lieske et al., 2006).

There is also a significant influence of patients' awareness of the disease (Zaitseva et al., 2022; Begrambekova et al., 2022), and attitudes towards the implementation of therapeutic prescriptions on adherence to therapy. The results of these studies are consistent with the results of the study of adherence to therapy in other nosologies (Machilskaya, 2016; Saverskaya et al., 2017; Kostin et al., 2020).

In this context, it is important to note modern works on the translation into various languages and adaptation of the questionnaire of living standards specifically for patients with urolithiasis, which takes into account key aspects specific to this disease (Sorokin et al., 2016; Shestaev et al., 2018; Lertmaharit et al., 2005; Curhan, 2007; Arafa et al., 2010; Sorokin et al., 2017; Liu et al., 2018). These works allow a more detailed approach to solving the problem of creating preventive and rehabilitation measures specifically for patients with urolithiasis.

However, despite the fact that there are currently a large number of different programs for the rehabilitation of patients with chronic diseases, the problem of

patients' adherence to the necessary procedures remains unresolved, and therefore it seems appropriate to consider existing methods aimed at increasing the degree of commitment of patients, in particular, the motivational interview method, which according to the latest research has been successfully implemented in various fields of medicine and contributes to increasing the degree of patient adherence (Chien et al., 2015; Binning et al., 2019; Zabolypour et al., 2020; Parwati et al., 2021). The urolithiasis clinic also notes attempts to integrate this method to increase the degree of adherence to therapy (Hajiyev et al., 2019).

1.5 Short-term Iterventions. History of the Method

Short-term intervention is a method of psychological counseling based on the principles of motivational interviewing (MI). For the first time, the method of motivational interviewing was described in 1983 for patients with alcohol dependence by Miller V. (Miller, 1983). Since the 1990s, this method has been actively introduced into other areas of therapy, especially when working with patients with chronic diseases: cardiovascular, diabetes mellitus, hypertension, psychosis, etc. (Kopylova et al., 2022; Hardcastle et al., 2013; Soderlund, 2018; Li et al., 2020).

1.5.1 Method Description

The MI method based on the principle of activating the patient's motivation to change the adherence to therapy. The idea of the approach can be described in the following terms: cooperation, actualization of memories, recognition of patient autonomy. Cooperation is understood as the partner work of a specialist with a patient in those areas where work on behavior change is necessary. The directive instructions of the specialist are replaced by an active partner conversation designed to develop the decision-making process. Actualization of memories is an emphasis on the patient's available resource for further changes. The patient may not do what is expected of him, but each person has their own goals, values,

dreams. This part of the MI is designed to link behavior change with what the patient wants, with his values and concerns. Recognition of the patient's autonomy – despite informing the patient and consulting him, the responsibility for further actions or non-actions lies entirely with the patient.

The main principles of motivational interviewing:

- The desire for change should come from the patient, and not imposed on him from the outside. MI is based primarily on the identification of actual needs, the mobilization of internal resources of the patient and his goals for behavior change
- Only the patient himself is able to formulate and resolve his ambivalence, but not the specialist who works with him. Ambivalence is a conflict between unmet needs and behaviors that are aimed at satisfying these needs. Each such line has both positive and negative sides, which are realized by the patient. The analysis of contradictory and confusing needs is a tool that can help the patient learn to better understand himself and his behavior.
- The method of resolving contradictions as a patient's conviction is ineffective. Convincing the patient of the “seriousness” and “importance” of the problem will not bring the expected success. Such actions can only strengthen the patient's resistance and suppress his will, therefore, within the framework of MI, this strategy is unacceptable.
- The MI tone should be aimed at getting the patient information about himself, i.e. a calm and revealing tone. Arguments with the patient, criticism, etc. are not allowed within the framework of this approach.
- The specialist can guide the patient's attempts to analyze and resolve ambivalence. According to MI, changes in problematic behavior will not occur in the case of conflicting needs or insufficient understanding of all available behavioral possibilities. Thus, for the gradual development of the process of changes, it is enough only to direct the patient's efforts in the necessary direction.

- The willingness to change behavior reflects the dynamics of interpersonal interactions, and is not a stable value. Particular attention, when working with the MI method, should be paid to the manifestations of motivation or to the manifestations of resistance of the patient. If the patient's resistance increases, it may indicate an incorrect assessment of the patient's readiness for changes.
- A partnership relationship should be built between the specialist and the patient, excluding the vertical "expert-performer" model. The specialist should respect the patient's free will and freedom of choice in matters of their own behavior. The patient's self-confidence and self-efficacy should be a value for the specialist.

Fundamentals of MI:

- recognition of the patient's freedom and independence in his choice
- striving to understand and present the patient's value system
- acceptance of the patient's point of view, his opinion and position
- attentiveness and encouragement of even the slightest manifestations of the patient's recognition of the problem and the desire to change it
- monitoring of the patient's readiness for any changes
- avoiding strategies that provoke the development of patient resistance

Conclusion. The paradigm shift in medicine from a purely biological approach to a biopsychosocial one, as a result of which the role of the patient in the therapeutic process has also changed, has led to the emergence of a number of issues that still require more detailed study, in particular, the problem of adherence to therapy, which is quite difficult to measure in real therapy. The conducted empirical studies demonstrate the presence of a number of factors that can influence the degree of commitment, which are conventionally divided into medical (related not only to medical personnel, but also to the entire healthcare system as a whole), socio-economic and patient-related factors (individual psychological characteristics, factors due to the situation of the disease). Despite the presence of many factors, no unambiguous influence of any specific factors on

adherence to therapy has been established. Thus, it would be logical to assume that following therapy depends on a set of factors that may vary depending on the disease, its duration and severity, and the individual characteristics of the patient.

In the stone disease clinic, adherence to therapy becomes a predictor of repeated stone formation. Despite the appearance of various, more advanced methods of surgical and therapeutic interventions, relapse statistics remain high not only in our country, but also abroad. However, it has been shown that following even the simplest preventive prescriptions can significantly reduce this risk. Thus, the search for factors determining adherence to therapy for urolithiasis is an integral component for the development of preventive measures aimed at reducing the risk of relapses.

CHAPTER 2. Materials and Research Methods

2.1 Research Materials

The study was conducted in three stages.

The first stage is the study of socio–demographic, psychosocial and biomedical characteristics of patients by using a specially designed structured interview, the study of medical documentation, as well as an expert assessment of adherence to therapy using a specially designed questionnaire for attending physicians.

The second stage is psychometric. At this stage, the psychological characteristics of patients were studied using a set of psychodiagnostic techniques that were selected based on the objectives of the study.

At the third stage, the formation of experimental groups of patients was carried out based on the level of adherence to therapy according to the data of a psychodiagnostic study.

As a result, two groups of patients were formed:

Group 1. Patients with high degree of adherence to therapy

Group 2. Patients with average degree of adherence to therapy

No patients with low adherence to therapy were identified in the study.

2.2 Participants

The study included 114 patients with urolithiasis who were on inpatient treatment at the Urology clinic of the I.P. Pavlov First St. Petersburg State Medical University.

Criteria for inclusion in research:

- Localization of a stone in the kidney (diagnosis according to ICD N20.0)

- Age from 35 years [1]
- The presence of repeated hospitalizations

Criteria from exclusion from the research:

- Significant level of physical asthenia due to the severe course of the disease
- Cognitive decline that prevents the understanding and completion of psychodiagnostic tests

Table 1 contains the main socio-demographic characteristics of the sample: gender, age, education, marital status, place of residence.

Table 1. Socio-demographic characteristics of the sample

Socio-demographic characteristics		Patients with high degree of adherence to therapy (n=67)	Patients with average degree of adherence to therapy (n=47)	Total (n=114)
		n, %	n, %	n, %
Sex	Men	26 (39)	24 (51)	50 (44)
	Women	41 (61)	23 (49)	64 (56)
Age	M (SD)	52±11,2	51±11,7	52±11,3
Educational level	Secondary education	6 (9)	8 (17)	14 (12)
	Secondary special education	23 (34)	14 (30)	37 (33)
	Incomplete higher education	4 (6)	1 (2)	5 (4)
	Higher education	34 (51)	24 (51)	58 (51)
Marital status	Single	2 (3)	6 (13)	8 (6)
	Civil marriage	3 (5)	0	3 (3)
	Married	43 (64)	34 (72)	77 (68)
	Divorced	9 (13)	3 (6)	12 (11)
	Widow	10 (15)	4 (9)	14 (12)
Place of living	City	63 (94)	40 (85)	103 (90)
	Suburb	3 (4)	4 (9)	7 (6)
	Countryside	1 (2)	3 (6)	4 (4)

The data in Table 1 show that in both groups, patients are uniformly distributed by gender and age. Most of the patients in the groups with a high and medium degree of adherence to therapy are married, have mainly secondary specialized or higher education, and live in the city.

1 Exclusion from the sample of patients younger than 35 years is associated with the peculiarities of the course of the disease at a young and older age

Table 2 presents the main clinical characteristics of the sample: the duration of the disease, the frequency of hospitalizations over the past year and limitations due to the disease.

Table 2. Clinical characteristics of the sample

Clinical characteristics		Patients with high degree of adherence to therapy (n=67)	Patients with average degree of adherence to therapy (n=47)	Total (n=114)
		n, %	n, %	n, %
Duration of a disease	<1 year	12 (18)	4 (8)	16 (14)
	1-3 years	12 (18)	9 (19)	21 (18)
	3-6 years	9 (13)	12 (26)	21 (18)
	>6 years	34 (51)	22 (47)	56 (50)
Frequency of hospitalizations due to the urolithiasis (in the last year)	no hospitalizations	13 (19)	14 (30)	27 (24)
	1-2 hospitalizations	38 (57)	26 (55)	64 (56)
	3-5 hospitalizations	15 (22)	5 (11)	20 (17)
	>5 hospitalizations	1 (2)	2 (4)	3 (3)
Limitations related to the existing disease	a large number of restrictions	6 (9)	4 (8)	10 (9)
	average number of restrictions	37 (55)	20 (43)	57 (50)
	minimum number of restrictions	24 (36)	23 (49)	47 (41)

The Table 2 demonstrates that more than half of the patients in both groups have more than 6 years of medical experience and have had 1-2 hospitalizations over the past year, while in the group of patients with high adherence to therapy there are more restrictions due to the disease (55%) than in the group of patients with average adherence (43%).

2.3 Research Methods

To solve the problems posed in the study, a methodological complex was created to study the psychosocial and individual psychological characteristics of patients with urolithiasis.

This section describes the clinical, psychological and psychodiagnostic methods that were used in this study.

In this study, the clinical and psychological approach is presented by a specially designed structured interview aimed at studying socio-demographic and psychosocial characteristics (Appendix 1).

2.3.1 Structured Interview for Patients

According to the objectives of the study, a structured interview was developed. It consists of 24 questions and aimed at studying socio-demographic and psychosocial characteristics, subjective assessment of adherence to therapy, as well as awareness of the main preventive methods (diet, drinking regime). The structured interview included 7 blocks of questions: level of education, marital status, work activity, awareness of the disease, attitude to therapy, characteristics of social relationships. A separate section contained questions related to the main recommendations for patients with urolithiasis, knowledge of the main medical recommendations and the patient's willingness to comply with them (Appendix 2).

2.3.2 Author's questionnaire for studying the assessment by doctors of the degree of adherence to the patient's therapy

To obtain an expert assessment of the degree of adherence to therapy, an author's questionnaire was developed for the attending physicians of the examined patients (Appendix 3). The questionnaire included 4 blocks of questions, each of which assessed the following indicators: the patient's awareness of the disease and the methods of therapy, the patient's compliance with the prescribed recommendations, the overall indicator of adherence to therapy.

This questionnaire was filled out by the attending physician for each patient, where the doctor evaluated each item from the above blocks. The degree of adherence to therapy was suggested to be assessed as low, medium or high.

The questionnaire was compiled in such a way that the questions in the doctor's questionnaire basically corresponded to the questions that were asked to

patients during a structured interview, which further allowed comparing the results of the patients' self-report with the doctor's expert assessment.

2.3.3 Psychodiagnostic Method

The psychodiagnostic method is represented by a battery of psychological tests that were selected based on the objectives of this study. The following is a brief description of the questionnaires were used, as well as methods of mathematical and statistical processing.

2.3.3.1 Questionnaire “Compliance level”

This test was developed by R.V. Kadyrov, O.B. Asriyan and S.A. Kovalchuk – a team of authors from the Pacific State Medical University (Kadyrov R.V. et al., 2014).

The test identifys the level of compliance, which includes the following components: social, emotional and behavioral. Each statement should be evaluated by the patient in relation to his behavior as “always” (2 points), “sometimes” (1 point), “never” (0 points). Then the sum is calculated for each of the parameters.

The total indicator for individual parameters has the following gradation:

0-15 points is not a determined indicator of compliance behavior

16-29 points — average severity of compliant behavior

30-40 points — significant (high) severity of compliance behavior.

The total compliance index is considered to be the sum of individual indicators (social, emotional, behavioral compliance):

0-40 points — low level of compliance behavior

41-80 points — average level of compliance behavior

81-120 points — high level of compliance behavior

Social compliance reflects the desire to follow and comply with the prescriptions given by the doctor with a focus on social encouragement. With a *high level* of social compliance, the desire to build trusting relationships with the

doctor is characteristic, to rely on his opinion, the figure of the doctor is perceived as an authoritative person. Such patients especially need the support of a doctor, because there is concern about the impression he makes on his doctor, as a result, patients tend to be particularly careful to carry out appointments. Patients often consult with a doctor about any concerns or doubts that arise during therapy. At the same time, the patient may be concerned that he is unnecessarily burdensome for the doctor. With an *average degree* of social compliance, there is an "uncertainty of the social position", such patients often act according to the situation, there is no consistency in their behavior, the patient, on the one hand, may be committed to therapy, but in the future may deny its necessity as such. With a *low degree* of social compliance, the patient does not seek to build constructive relationships with the doctor, he is rather focused on his own beliefs in matters of therapy, in some cases episodes of open confrontation with medical personnel are possible.

Emotional compliance is following the doctor's prescriptions due to the increased impressionability and sensitivity of the patient. With a *high level* of emotional compliance, patients are characterized by sensitivity, impressionability, and the belief that the need to see a doctor indicates the severity of the disease. In some cases, there may be excessive concern about the possible consequences of the disease, as a result of which the patient tends to discuss any changes in the condition with the doctor, the desire to unconditionally carry out medical appointments is formed. As a result of the disease, such patients become emotionally unstable, hyper-anxious. In contact with a doctor, a type of relationship is formed when most of the responsibility for the therapeutic process is assigned to the doctor, while the patient, in turn, takes the position of the performer. At the same time, despite the pronounced emotional fluctuations, the patient tends to adhere to the therapy plan, because the figure of the doctor becomes emotionally significant for the patient. With an *average degree* of emotional compliance, there is a great emotional stability of the patient. At the same time, in therapeutic relationships, the patient tends to focus more often on his own mood in matters of fulfilling appointments, to doubt the need for their

fulfillment. There may also be an underestimation of the severity of the disease and the importance of treatment, which in the long term leads to intermittent and incomplete implementation of the necessary therapeutic procedures. With a *low degree* of emotional compliance, the patient is inclined to question medical recommendations, finding them unjustified. Such patients can be characterized as reasonable and overconfident, as a result of which they often underestimate the severity of their own condition, neglect many aspects of therapy and doctor's recommendations.

Behavioral compliance means compliance with the doctor's prescriptions as a consequence of the desire to overcome the disease, which is perceived as an obstacle. With a *high degree* of behavioral compliance, patients are characterized by a desire to strictly follow the recommendations, because the disease is perceived as an obstacle that needs to be overcome. The behavior is purposeful and focused on achieving the goal of healing. The doctor is perceived as a colleague, in a team with whom the patient will be able to achieve therapeutic goals. With an *average degree* of behavioral compliance, an unstable behavioral position is noted. The patient is overly cautious and concerned, often looks pessimistically at the prospects of therapy, is not sure of the ability to overcome the disease, as a result of which the performance of appointments is irregular. With a *low degree* of behavioral compliance, patients are characterized by a tendency to inconstancy, they are subject to external factors, including accidental ones, which makes it difficult to target actions within the framework of therapy. They do not seek to make additional efforts to achieve results, difficulties arise in organizing their own actions to cope with the disease.

High scores on this test indicate a high level of compliant behavior, which is characterized by the desire to build trusting relationships with the attending physician, rely on his professional opinion, follow his recommendations. At the same time, there may be excessive concern about possible failures of therapy, however, the patient is focused on discussing possible difficulties with his doctor, because the figure of the doctor assumes emotional significance for the patient, he

is perceived as a partner with whom the patient is able to achieve the goals of therapy and cope with the disease.

Low scores indicate a low level of compliant behavior, which is characterized by a dismissive attitude to the therapy process, the patient does not seek to build a trusting relationship with the doctor, but rather focuses on his own judgments, decisions. Long-term disputes with a doctor are characteristic, the purpose of which is to prove one's own rightness. Patients with low compliance often neglect to perform appointments, refuse to attend water procedures, do not apply the necessary amount of effort to achieve the goals of therapy.

Despite the fact that the authors of the methodology use the concept of “compliance”, in this work, the groups of patients identified using the methodology will be designated as “committed to therapy”.

2.3.3.2 “Type of attitude toward disease” (TOBOL)

The method for diagnosing the types of attitudes toward disease was developed in the Laboratory of Clinical Psychology of the V.M. Bekhterev St. Petersburg Research Psychoneurological Institute (Wasserman et al., 2014). This technique is based on the concept of V.N. Myasishchev, as well as the typology of attitudes toward disease, which was formulated by A.E. Lichko and N.Ya. Ivanov. The technique allows to diagnose 12 types of attitudes to the disease: harmonious, ergopathic, anosognosic, anxious, hypochondriac, neurasthenic, melancholic, apathetic, sensitive, egocentric, paranoid, dysphoric.

These types are further combined into three blocks according to criteria: adaptability or maladaptivity, intrapsychic or interpsychic orientation. The last two stand out in the case of the maladaptive nature of the attitude toward disease.

The TOBOL questionnaire is presented in the form of a questionnaire, which includes 12 tables with statements about well-being, mood, sleep and awakening, etc., each set contains from 10 to 16 statements, the patient needs to choose a maximum of 2 statements that best describe his condition. Also, in each block

there is a statement “None of the statements are like me” in case none of the proposed ones is suitable for describing the patient's condition. Thus, the technique diagnoses one or another type of attitude to the disease, based on the patient's attitude to a number of situations that are associated with his illness and represent certain subsystems in the whole system of personality relationships.

According to the results of the technique, data can be obtained on the type of attitude to the disease: “pure”, “mixed” or “diffuse”, characteristic of a particular patient, as well as a quantitative assessment of all 12 types of attitudes to the disease.

Types of attitudes toward disease.

Harmonious type (G) (realistic or balanced) – with this type of response to the disease, the patient is not characterized by either exaggeration of the severity of his own condition or understatement. There is a desire to follow the prescribed procedures. On the part of social relations, there is a desire to maintain trusting relationships with loved ones, to ease their burdens of self-care that may arise as a result of the disease.

Ergopathic (E) (stenic) – this type of response to the disease is characterized by “going to work”. It is characterized by a change in behavior in the professional sphere in such a way that the patient becomes overly responsible, often much stronger than before the disease. In matters of therapy, patients with this type of response are selective about the prescribed examinations and appointments, which is mainly due to the desire to continue working, even despite the severity of the disease. With this type of response, the desire to maintain professional status and continue professional activity in the same volume as before the disease comes to the fore. There are no significant impairments in terms of social interaction with relatives and friends with this type of response.

Anosognosic (S) (euphoric) – with this type of reaction to the disease, there is an active desire to avoid thoughts about the disease and its possible consequences. In the case of recognition of the fact of the disease, avoidance of thoughts about the possible consequences of the disease is noted. For patients with

this type of reaction to the disease, it is characteristic to consider the symptoms of the disease as “insignificant”, or to explain the symptoms by a combination of circumstances, “ordinary” fluctuations in well-being. As a result, patients may refuse to undergo examinations or perform appointments. With the euphoric variant of this type of reaction, there is a dismissive and frivolous attitude towards the disease and therapy, unreasonable mood increases when the patient seeks to “get everything out of life”, despite the disease.

Anxious (An) (anxiety-depressive and obsessive-phobic) — with this type of response to the disease, constant concern about the possible adverse course of the disease, ineffectiveness or danger of the prescribed therapy is characteristic. In behavior, there may be an active search for information about new treatment options, a frequent change of the attending physician. In comparison with the hypochondriac type of reaction to the disease, with the current reaction, the main emphasis shifts to interest in objective data, for example, the results of tests, functional diagnostics, rather than subjective feelings, which is typical for the hypochondriac type of reaction. The affect is often anxious, and as a result of anxiety there is a depression of mental activity. In the case of an obsessive-phobic variant of the reaction, there is an alarming suspiciousness, which primarily extends to unlikely situations of complications of the disease, therapy failures, as well as changes in the social sphere: deterioration of relationships between relatives and professional due to the disease. Thus, imaginary dangers come to the fore, and signs and rituals become protection from disturbing experiences.

Hypochondriac (H) — with this type of reaction to the disease, excessive concentration on subjective painful experiences and sensations is characteristic. In behavior, there is a tendency to often and in detail talk about the symptoms of the disease, not only to medical personnel, but also to relatives, colleagues. There is an exaggeration of the severity of the condition, unpleasant sensations, side effects of drugs. The desire to be treated is combined with disbelief in the success of therapy, the demand for a more thorough examination, frequent changes of doctors due to the desire to be treated by more reputable specialists.

Neurasthenic (N) — with this type of reaction to the disease, the behavior is of the type of “irritable weakness”. When painful sensations or therapeutic failures occur, there are outbursts of irritability, which are often directed at people nearby, which later causes a strong sense of guilt. During therapy, there is impatience, unwillingness to wait for the onset of relief, but in the future, there is a critical reassessment of one's own behavior, requests for forgiveness and help.

Melancholic (M) (vital-melancholy) — with this type of response to the disease, there is an over-frustration with the disease, disbelief in therapy and recovery, even with favorable objective data and satisfactory well-being. Depressive statements reaching suicidal thoughts may also be noted. There is also a pessimistic view not only of the therapy process, but also of life as a whole.

Apathetic (Ap) — with this type of reaction toward disease, there is complete indifference to the outcome of the disease, the results of treatment and their fate as a whole. The patient is passively subordinated to therapeutic procedures, if there is an incentive from the outside. There is a loss of interest in life, and everything that previously aroused interest. Fatigue and lack of initiative are noted in behavior, including in interpersonal relationships.

Sensitive (Sen) — with a sensitive type of response, there is excessive sensitivity, vulnerability, concern about what impression information about the disease can make on people around the patient. The fear that others may change their attitude towards the patient, consider him inferior, feel pity, or vice versa, avoid communicating with him because of the disease. There is also a fear of becoming a burden for relatives and friends and their unfriendly attitude in this regard. Mood swings are characteristic, which is more often manifested in interpersonal relationships.

Egocentric (E) (hysteroid) — with this type of response to the disease, there is a search for benefits in connection with the disease. In behavior, there is a deliberate demonstration of the severity of painful manifestations, in order to obtain sympathy and benefits. Patients may demand exceptional care for themselves, even to the detriment of other matters, completely ignoring the

personal difficulties of loved ones. The desire to demonstrate to others their own exclusivity in relation to the course of the disease and its symptoms. In the emotional sphere, there is pronounced lability and unpredictability.

Paranoid (P) — with this type of reaction to the disease, the patient has full confidence that his disease is the result of external circumstances. Extreme suspicion of the therapy process and procedures is noted. If there are complications or difficulties during therapy, the patient is convinced of the negligence of the medical staff, which entails accusations and demands to punish the perpetrators.

Dysphoric (D) (aggressive) — with this type of response to the disease, there is a pronounced predominance of angry-gloomy mood, bitterness, envy of healthy people, even relatives. In behavior, there may be a requirement for a special attitude towards oneself, aggressiveness and a despotic attitude towards relatives.

The described types of reactions can be combined into the following blocks:

The first block includes the harmonious, ergopathic and anosognosic types. For this block of reactions, mental and social adaptation has no significant violations. Despite the fact that anosognosic and ergopathic types are characterized by a slight decrease in criticality to their own disease, there is no pronounced maladaptation of the patient.

The second block of reactions includes anxious, hypochondriac, neurasthenic, melancholic and apathetic types. The reactions of this block are characterized by an intrapsychic orientation of the individual's response to the disease, which causes a violation of the social adaptation of patients. The violation of the emotional-affective sphere of relations by the type of anxiety, depression, irritable weakness, “surrender” to the disease comes to the fore.

The third block includes sensitive, egocentric, dysphoric and paranoid types of reactions. The reactions of this block are characterized by an interpsychic orientation of the individual's response to the disease, which also violates the social adaptation of patients. In this case, the attitude toward disease largely depends on the premorbid personality traits, which in behavior manifests itself in

the form of heteroaggressive reactions, the use of the disease for one's own benefit, the construction of paranoid concepts regarding the causes of one's own disease.

2.3.3.3 “The level of social frustration”

This method was developed to assess social well-being by a team of authors consisting of L.I. Wasserman, B.V. Iovlev, M.A. Berebin and others at the Bekhterev NIPNI (Wasserman et al., 2004).

The test evaluates the level of “satisfaction-dissatisfaction” in twenty areas of personal relationships, of which 5 blocks are further allocated:

- Satisfaction with relationships with family
- Satisfaction with the immediate social environment (friends, colleagues)
- Satisfaction with social status (level of education, professional training and professional activity)
- Satisfaction with the socio-economic situation (financial situation, living conditions, leisure activities)
- Satisfaction with one's own health and working capacity (physical and mental health, working capacity)

The subject is asked to rate each question on a five–point scale, where 1 is “completely satisfied”, 5 is “completely dissatisfied”, thus, the highest score corresponds to greater dissatisfaction on the scale. The higher the score, the greater the level of dissatisfaction is noted both as a whole and separately on the scales.

The index of social frustration (Q_{SF}) is an integral assessment, the indicator of the level of social frustration is interpreted as follows:

$Q_{SF}<1,5$ – complete absence of social frustration or high level of satisfaction;

$1,5\leq Q_{SF}<2,5$ — social frustration is not clearly declared;

$3,5\leq Q_{SF}<4,5$ — moderate degree of social frustration;

$4,5\leq Q_{SF}$ — high degree of social frustration.

Thus, the technique allows to form a profile that shows the areas of the greatest or the least social frustration.

2.3.3.4 The “Motivational induction” test of J. Nuttin

The method of motivational induction was developed by J. Nuttin (Nuttin, 2004) and adapted in Russia by N.N. Tolstykh (Tolstykh, 2005). The methodology is aimed at exploring the time perspective of the future and is a set of thirty unfinished sentences that the subject needs to finish. Statements are divided into twenty positive and ten negative inductors.

According to the author of the methodology, the temporal perspective is represented by a configuration of temporally localized objects that virtually occupy the consciousness of the subject in any situation. The definition of a time perspective includes “material” and “objective components”, i.e., these are objects of the past and future, which constitute a time perspective. Thus, the temporal perspective is not a “predetermined” or “empty space”, while motivational objects, goals and ways to achieve them, memories do not exist outside the temporal perspective, because they have temporary signs that are integral to their content.

Based on this concept, a method has been proposed to identify the meaningful characteristics of motivation, as well as the temporal localization of motivational objects, which together allows to characterize and analyze the temporal perspective of the future.

The analysis of the results is carried out according to two codes: temporal (temporal) and the code for analyzing the content of motivation. The statements obtained give an idea of the “motivational objects” (motivational inductors) that characterize the motivational sphere of an individual.

In this study, the following categories of content analysis of **motivational objects** were used:

S (Self) – motivational objects related to the personality of the subject himself, where more specific motivational inductors are distinguished:

- *Spre (ph)* – striving for physical self-preservation, preservation of health (... *I would like to get better as soon as possible*)
- *Spre(ec*) – striving for economic self-preservation, stable economic situation (*... I would like to have a stable income*)
- *Spre (ps)* – striving for psychological self-preservation, stability, psychological well-being (*... I'd like to worry less*)

SR (Self-realization) – aspirations or actions of the subject aimed at development, self-actualization (*...I would like to get better*)

C (contact) – motivational objects, including social contacts, where:

- C_2 – expecting something from another *(...I would like the doctor to pay more attention to me*)
- C_3, *f (family)* – goals, wishes formulated for family members, immediate environment (*... I would like my children to be happy*)

Temporal categories. The main temporal units in this methodology are divided into two blocks: calendar periods and periods of social time.

Calendar time periods:

D – day

W – week

M – month

Y – year

Periods of social time:

$\underline{l}$ – the period of the "open present", when the motivational object is located not only at a given time, but also in the distant future, at the same time, the duration of the existence of this desire is emphasized (*... I would like to always stay healthy*)

L – the location of motivational objects throughout the entire period of life, when the reference to time is rather uncertain (*…I wouldn't want to offend anyone, even by accident*)

A_1 – location of motivational objects in the first half of adult life (about 25-45 years) (*... I would like to quarrel less with my wife*)

A_2 – location of motivational objects in the second half of adult life (about 45-65 years) (*...I would like to have time to complete many interesting projects before retirement*)

AO – location of motivational objects in adulthood and old age (*... I would like to be an example for my children and grandchildren*)

O – location of motivational objects in the period of old age (after retirement) *(... I would like to work even after retirement*)

x – this code is used when motivational objects cannot be located on an individual's timeline, because they are related to historical time (… *I would so much like there to be less suffering and injustice in the world*)

2.3.3.5 The method of prototypical analysis by P. Verges

The concept of "social representation" was introduced by S. Moskvini, and the content was close to the concept of collective representation, which was previously used by E. Durkheim. In S. Moskvini's interpretation, social representations were understood as special forms of collective knowledge, socially formed and serving for practical application in everyday life, which were shared by all individuals belonging to a certain community. There are a number of approaches to analyze both the concept of social representations and the phenomenon, in this work a structural approach to the study of social representations was used. The structural approach was proposed by the social psychologist J.-K. Abric, and allows us to bring the concept of social representations to the analyzed form (Abric, 1971). This theory is often called the "core and periphery" theory, according to which it is necessary to distinguish those representations that reflect the collective social memory of a certain group ("core"), and representations that reflect the diversity and heterogeneity of this group ("periphery"), which are tied to the actual social context and perform the functions of adaptation of the "core".

Within the framework of this approach, P. Verges developed a method of prototypical analysis of social representations (Verges, 1994), which allows to identify a set of social representations of individuals about a particular phenomenon, which consist of a set of free associations to a selected word that define this phenomenon. The associations selected by the subjects are further divided into 4 groups or zones.

I area — is the core, which includes the main content elements that must meet the following two requirements: the frequency of occurrence in this group and their priority mention. If the indicator exceeds the median value for the group, and the mention rank is less than the average for the group, then the concept is defined in the nuclear domain.

Based on the ratio of the rank and frequency of indicators, three other structural areas of social representation are formed: II and III areas (buffer) and IV area — peripheral. Buffer area II includes elements that have low frequency and rank, while area III includes elements that have high frequency but have low rank. Elements that are rarely and last mentioned by the subjects are brought to the periphery.

2.4 Methods of Mathematical and Statistical Processing

Mathematical and statistical processing of the research data was carried out using statistical methods included in the statistical packages SPSS 28.0 and Microsoft Excel 2010.

To compare the results of a clinical and psychological study in groups of patients with a high and medium degree of adherence to therapy, the reliability of response frequencies was checked using the $\chi 2$-Pearson criterion, differences in average indicators were calculated using the U-Mann-Whitney criterion.

To analyze the socio-demographic parameters of the sample and the influence of these factors on the degree of adherence to therapy, a logistic regression method was used to check the influence of gender, age and level of

education on the degree of adherence to therapy. The comparison of samples by gender and level of education was carried out using the χ2-Pearson criterion.

To analyze the differences between groups of patients with different degrees of adherence to therapy according to psychodiagnostic indicators, the χ2-Pearson criterion was used to analyze reactions to the disease, the U-Mann-Whitney criterion was used to compare the average indicators of the degree of social frustration. To analyze the relationship between the time perspective and the motivational sphere with the degree of adherence to therapy, a general linear model with repeated measurements was constructed.

Logistic and linear regressions were used to study the relationship of the dependent variable (the degree of adherence to therapy) with the independent (psychological characteristics).

CHAPTER 3. Results of Clinical and Psychological Study of Patients with Urolithiasis

This chapter presents the results of a clinical and psychological study of patients with urolithiasis, as well as the results of comparative and regression analysis of psychometric research data.

The main objective of the study was a comparative study of socio-demographic, psychological and clinical characteristics of patients with different levels of adherence to therapy. Therefore, the first stage of the study was to study the adherence to therapy of patients with urolithiasis.

3.1 Studies of the Level of Adherence to Therapy in Patients with Urolithiasis

The level of adherence to therapy was studied using the “Compliance Level” test (Kadyrov et al., 2014). The test allows to determine the overall level of compliance and its components (social, emotional and behavioral compliance).

The results of the study of adherence to therapy allowed to form two experimental groups of patients – with a high and average degree of adherence to therapy. All further results are considered in the context of a comparative analysis of the data of these two groups. A regression model was built to test the influence of gender, age and level of education on the degree of adherence to therapy. There was no significant effect of these factors on the degree of adherence to therapy.

Table 3 and Figure 1 show the distribution of the examined patients into groups with a high and average degree of adherence to therapy. The group with a high degree of adherence to therapy included patients with values of this indicator from 81 and above, the group of patients with an average degree of adherence to therapy included patients with values of the indicator from 41 to 80. These ranges are given by the authors of the methodology (Ibid.).

Table 3. The midscore of the overall rate of adherence to therapy in groups of patients with high and medium degree of adherence to therapy

Groups of patients	n, %	M (σ)
Group of patients with high level of adherence	67 (59)	93,58 (7,62)
Group of patients with average level of adherence	47 (41)	69,12 (10,18)

The data presented in Table 3 are also presented in Fig. 1 for clarity.

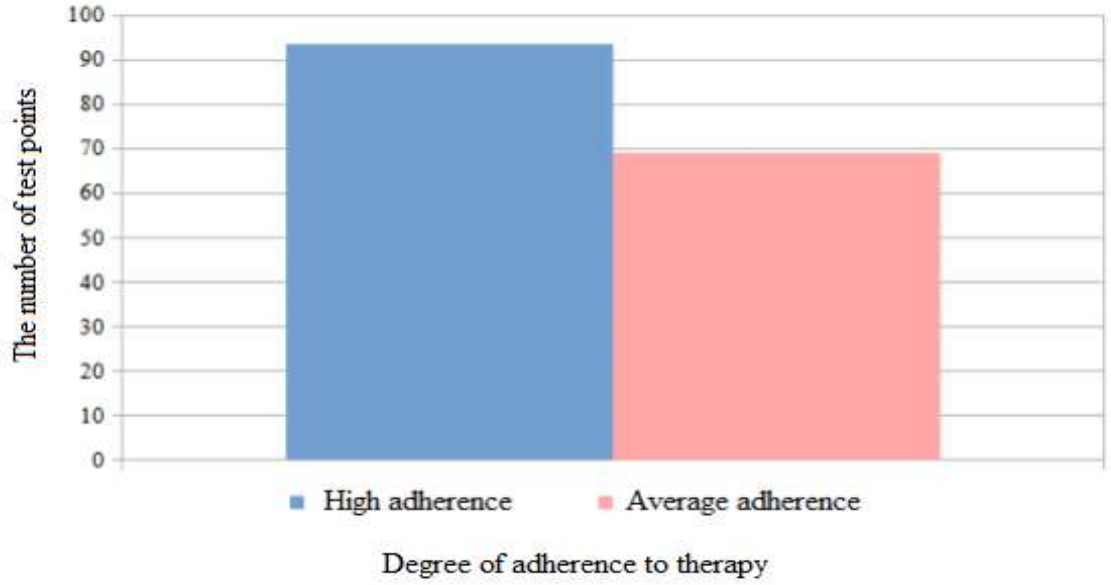

Figure.1 The midscore of the overall rate of adherence in groups of patients with high and average degree of therapy adherence

The data presented in Table 3 and Figure 1 indicate that a high degree of adherence to therapy was detected in 67 people, and an average — in 47 people. There were no patients with a low degree of adherence to therapy in this sample. To compare the data of 2 groups with different levels of adherence to therapy obtained using the “Compliance” technique, the Mann-Whitney U-test was used.

Table 4 shows the midscore rate of social, emotional and behavioral compliance in groups of patients with high and average score of the overall indicator of adherence to therapy.

Table 4. The midscore rate of social, emotional and behavioral compliance in groups with high and average degree of adherence to therapy

Scales of the "Compliance" questionnaire	Patient groups		U-Manna-Whitney	
	Patients with high level of adherence to therapy (n=67) M (σ)	Patients with average level of adherence to therapy (n=47) M (σ)	U	p
Social compliance	30,91 (3,18)	22,96 (4,34)	188	0,000
Emotional compliance	30,36 (3,13)	22,94 (3,95)	197	0,000
Behavioral compliance	30,70 (3,80)	22,06 (3,76)	119	0,000

The data presented in Table 4 demonstrate significant differences between the groups in terms of social, emotional and behavioral compliance. All three indicators in the group of patients with a high degree of adherence to therapy are significantly higher than in the group with average adherence (p=0.000).

Thus, the results of the study of adherence to therapy showed that in a sample of 114 patients with urolithiasis, 67% of patients are characterized by a high degree of adherence to therapy and 47% of patients – average. No patients with a low degree of adherence to therapy were identified. The index value of individual components of compliance (social, emotional and behavioral compliance) in the group of highly compliant patients are significantly higher than in patients with an average degree of adherence to treatment: "social compliance" — $p<0.000$, "emotional compliance" – $p<0.000$, "behavioral compliance" – $p<0.000$. Patients with a high degree of adherence to therapy are more focused on building trusting relationships with the attending physician, are characterized by a desire to strictly follow the recommendations, while patients with an average commitment to therapy are characterized by inconstancy of behavior within therapy, lack of consistency, in therapeutic relationships, tend to question the professional recommendations of the doctor, guided by their own conclusions.

The obtained unidirectional differences between the individual components of treatment adherence indicate their close relationship and allow to consider compliance as a single phenomenon, including social, emotional and behavioral components.

3.2. The Results of a Comparative Study of the Assessment of Adherence to Therapy by Doctors and Patients

The assessment of the degree of adherence to therapy based on the self-report of patients was presented in paragraph 3.2. It seems appropriate to compare the self-reports of patients with the expert assessment of the doctor. In connection with this task, a questionnaire was compiled for the doctor. A number of questions in the doctor's questionnaire coincided with the questions in the patient's questionnaire, which later allowed us to compare the results obtained. The blocks of questions that intersected in the questionnaires were aimed at assessing the patient's awareness of the disease, awareness of diet and drinking regime. The expert assessment was compared with the results obtained by the “Compliance” method. The obtained data were subjected to frequency analysis, namely: the frequency of coincidence of the responses of the attending physician and the patient was evaluated. The data is presented in Table 5.

Table 5. The results of the assessment of awareness of the disease and adherence to therapy by the doctor and the patient.

Parameters	Percentage of matches, %	The percentage of overestimation, %
Level of adherence to therapy	64,9	28,3
Awareness of the disease	57,9	20,1
Following the drinking regime	39,5	39,4
Compliance with a low-protein diet	41,2	46,4
Performing chemical analysis of the stone	77,2	19,2

The results presented in Table 5 indicate that the largest number of coincidences is noted for the item “Performing chemical analysis of the stone” — 77.2%, and the smallest – for items related to compliance with the drinking regime — 39.5% and a low-protein diet — 41.2%. It is noted that the expert assessment of the degree of adherence to the therapy of patients at the stage of inpatient treatment is close to the assessment obtained by the “Compliance” test, the percentage of coincidence is 65. The results of comparing the assessments of the degree of adherence to therapy given by patients and doctors show that in 30% of cases,

doctors overestimate the degree of adherence to therapy in their patients. To a greater extent, doctors overestimate adherence to therapy in terms of following a drinking regime and following a low-protein diet. So, in 46% of cases, doctors evaluate adherence to a low-protein diet higher than the patients themselves, and in 40% of cases they overestimate compliance with the drinking regime. Thus, the highest percentage of matches is noted for parameters that can actually be checked, for example, whether there is a result of a stone analysis, or to check the patient's awareness of the disease during a conversation. According to the parameters of diet and drinking regime, the lowest percentages of coincidences are noted, which may be due not only to the complexity of the actual verification of compliance, but also to the fact that the doctor and the patient can focus on different criteria for diet compliance, for example, the partial exclusion of fatty foods from the diet, the patient may regard as sufficient compliance with nutrition recommendations, while while for a doctor, this is considered insufficient compliance with the recommendations.

3.3 Comparative Analysis of Socio-demographic, Psychological and Clinical Characteristics of Patients with High and Average Degree of Adherence to Therapy Based on Data Obtained Through a Structured Interview

The data obtained using a structured interview specially developed in connection with the objectives of this study were analyzed in the context of comparing the results of two groups of patients–with high and average level of adherence to therapy.

Table 6 shows the distribution of the examined patients by gender in groups with high and average degree of adherence to therapy.

Table 6. Distribution of the examined patients by gender in groups with high and average degree of adherence to therapy (N, %).

Characteristic	Patients with high level of adherence to therapy (n=67)		Patients with average level of adherence to therapy (n=47)		Total (n=114)
	N	%	N	%	N
Sex: Men	26	39	24	51	50
Women	41	61	23	49	64
Average age (years)	52		51		54

The data presented in Table 6 indicate that 61% of women and 39% of men were in the group with high adherence to therapy. In the group with average adherence, the gender distribution is approximately the same: 51% of men and 49% of women. At the same time, there were no significant differences in gender (x^2=1.68, p>0.1), as well as in age (U=1521.50, p>0.5) between the groups. Therefore, we can only talk about the tendency to the predominance of women in the group with a high commitment to therapy.

Table 7 presents the socio-demographic characteristics of groups of patients with high and average degree of adherence to therapy.

Table 7. Socio-demographic characteristics of groups of patients with high and average degree of adherence to therapy

Socio-demographic characteristics	Patients with high level of adherence to therapy (n=67)		Patients with average level of adherence to therapy (n=47)		Total (n=114)	
	N	%	N	%	N	%
Education						
Secondary	6	9	8	17	14	12
Secondary special education	23	34	14	30	37	33
Unfinished higher education	4	6	1	2	5	4
Higher education	34	51	24	51	58	51
Marital status						
• Single	2	3	6	13	8	6
• Civil marriage	3	5	0	0	3	3
• Married	43	64	34	72	77	68
• Divorced	9	13	3	6	12	11
• Widow	10	15	4	9	14	12
Family						
• Lives in his own family	53	79	35	75	88	77
• Lives in the family of parents or other relatives	5	7	3	6	8	7
• Lives alone	9	14	9	19	18	16

Table 7 (continued)

Socio-demographic characteristics	Patients with high level of adherence to therapy (n=67)		Patients with average level of adherence to therapy (n=47)		Total (n=114)	
	N	%	N	%	N	%
Children						
• yes	13	20	16	34	29	25
• no	54	80	31	66	84	75
Relationships with close social environment						
• Friendly, trusting	60	90	32	68	92	80
• Neutral	7	10	15	32	22	20
• Alienated	0	0	0	0	0	0
• Conflicted	0	0	0	0	0	0
Degree of social activity						
• actively involved in the life of the family, society	36	54	17	36	53	46
• participates in the life of the family, society	28	41	25	53	53	46
• not involved in the life of the family, society	3	5	5	11	8	8
Place of living						
• City	63	94	40	85	103	90
• Suburb	3	4	4	9	7	6
• Rural area	1	2	3	6	4	4

The results of the study of the socio-demographic characteristics of the examined patients revealed that the predominant part of patients – 90% live in the city, 6% live in the suburbs, 4% of patients live in rural areas. On the point of "marital status", the following results were obtained: in the group of high level of adherence 64% of patients are officially married and 5% are in civil marriage, 13% of patients are divorced and 15% are widowers. In the group with average level of adherence to therapy, 72% of patients are officially married, no one is in a civil marriage, 6% of patients are divorced and 9% are widows. It should be noted that in the group of patients with average adherence to therapy, there is a slight increase in the percentage of patients who are officially married, and there are no patients who are in a civil marriage, while in the group with high adherence to therapy, such patients are 5%.

It was revealed that most of the patients of both groups live in their own family (spouse and children): 79% in the group of high level of adherence and 75% in the group of average level of adherence.

The analysis of the data on the level of education showed that in both examined groups 51% of patients have higher education. 33% of patients have secondary specialized education (34% in the group of high level of adherence and 30% in the group of average adherence to therapy). 12% of patients have secondary education (9% in the group of high level of adherence and 17% in the group of average adherence to therapy). The smallest number of patients in both groups have incomplete higher education: in the group of patients with high adherence – 6%, in the group with average adherence — 2%. Thus, in the studied sample of patients with urolithiasis, the largest number of patients have higher and secondary specialized education. There were no significant differences between the groups in terms of education level (x^2=2.57, p<0.4).

The data obtained indicate that the two groups of patients with varying degrees of adherence to therapy do not differ in their socio-demographic characteristics.

Table 8 presents the clinical characteristics of the patients of the studied sample.

Table 8. Clinical characteristics of groups of patients with high and average level of adherence to therapy

Clinical characteristics	Patients with high level of adherence to therapy (n=67)		Patients with average level of adherence to therapy (n=47)		Total (n=114)	
	N	%	N	%	N	%
Diagnosis according to ICD	N20.0					
Awareness of urolithiasis						
• a clear picture	23	34	13	28	36	32
• a general picture	41	61	31	66	72	63
• not informed	3	5	3	6	6	5
Awareness of the upcoming surgery, its possible consequences						
• a clear picture	21	31	14	30	35	31
• a general picture	44	66	30	64	74	65
• not informed	2	3	3	6	5	4

Table 8 (continued)

Clinical characteristics	Patients with high level of adherence to therapy (n=67)		Patients with average level of adherence to therapy (n=47)		Total (n=114)	
	N	%	N	%	N	%
Prognosis of the disease						
• clear					45	6
unclear					22	33
• I understand its necessity and do not feel anxiety	41	61	24	51	65	57
• I understand its necessity, but I feel quite strong anxiety	26	39	23	49	49	43
• I doubt the need	0	0	0	0	0	0
Attitude toward therapy						
• I completely agree with the doctor's recommendations	55	82	24	51	79	69
• I partly agree with the doctor's recommendations	12	18	22	47	34	30
• I disagree with the doctor's recommendations	0	0	1	2	1	1
Awareness of the closest social environment about the disease						
• a clear picture	22	33	11	24	33	29
• a general picture	43	64	34	72	77	68
• not informed	2	3	2	4	4	3
Availability of support from the immediate social environment						
• yes	61	91	39	83	100	88
• no	6	9	8	17	14	12
Relationship with the attending physician						
• Friendly, trusting	45	67	28	60	73	64
• Neutral	21	31	19	40	40	35
• Alienated	1	2	0	0	1	1
• Conflicted	0	0	0	0	0	0
Limitations related to the existing disease						
• a large number of restrictions (disability, strict diet, medication, restriction of physical and emotional stress, etc.)	6	9	4	8	10	9
• moderate (temporary disability, diet, medication, etc.)	37	55	20	43	57	50
• minimum number of restrictions	24	36	23	49	47	41
Duration of urolothiasis						
• < 1 year	12	18	4	8	16	14
• 1-3 years	12	18	9	19	21	18
• 3-6 years	9	13	12	26	21	18
• > 6 years	34	51	22	47	56	50

Table 8 (continued)

Clinical characteristics	Patients with high level of adherence to therapy (n=67)		Patients with average level of adherence to therapy (n=47)		Total (n=114)	
	N	%	N	%	N	%
Frequency of hospitalizations due to urolithiasis (in the last year)						
• no hospitalizations	13	19	14	30	27	24
• 1-2 hospitalizations	38	57	26	55	64	56
• 3-5 hospitalizations	15	22	5	11	20	17
• more than 5 hospitalizations	1	2	2	4	3	3

Table 8 presents a block of clinical characteristics, which included data: diagnosis according to ICD (N20.0), the frequency of hospitalizations due to urolithiasis, the duration of the disease, the degree of awareness of the disease and the planned surgery, the availability of support from the immediate environment, as well as relationships with the attending physician.

The results of the study did not reveal significant differences between the groups. In the group of high adherence to therapy, 51% of patients have a disease duration of more than 6 years, 13% from 3 to 6 years, 18% from 1 to 3 years. In the group with an average adherence to therapy, 47% of patients have a disease duration of more than 6 years, 26% from 3 to 6 years, and 19% from 1 to 3 years. It can be noted that there is a tendency to a slightly larger number of patients with a disease duration of 3 to 6 years in the group of patients with an average degree of adherence to therapy.

Analysis of data on the frequency of hospitalizations over the past year has shown that the largest percentage in both groups accounts for one or two hospitalizations, in the group of patients with high adherence to therapy it is 57%, average committed — 55%. During the last year, 18% of patients in the group with a high degree of adherence to therapy and 8% of patients in the group with average adherence did not have hospitalizations. Only a small percentage of patients in both groups had more than 5 hospitalizations over the past year: 2% in the high adherence to therapy group and 4% in the group with average adherence to therapy.

The study of the attitude toward treatment revealed that patients in the group with high adherence note that they more often follow the doctor's recommendations – 82%, while in the group with average adherence this percentage is significantly lower – 51%. Similar results were obtained in relation to the planned surgery: in the group of highly committed patients, 61% of the surveyed noted that they understood the need for surgery and did not experience pronounced anxiety about it, and in the group of patients with average adherence, 51% of patients characterized this attitude. At the same time, 49% of patients in the group with average adherence to therapy noted that despite understanding the need for surgery, they experience pronounced anxiety associated with this procedure; in the group of highly committed, this percentage is lower — 39%.

The block of questions about awareness of the disease and subsequent treatment allowed to obtain the following results. Awareness of urolithiasis in the group with high self-reported adherence of patients is higher than in the group with average adherence (34% and 28%, respectively), however, no significant differences were found (x^2=0.67, p<0.5). Awareness of the upcoming surgery is the same in both groups (31% and 30%, respectively). Similar data were obtained on the prognosis of the disease as a whole. Thus, in both groups, more than half of the patients replied that they understood the prognosis of the disease (67% and 60%, respectively). It is interesting to note that 33% of patients in the group with a high commitment to therapy have a clear idea of the disease in the immediate environment of the patient, and in the group with an average commitment, this percentage is lower – 24%. In the group of patients with an average degree of adherence to therapy, 72% noted that they rather have a general idea of the disease, and in the group of patients with high adherence – 64%.

The study of social relationships revealed that 91% of patients from the group with high level of adherence note the presence of support of loved ones, and in the group of patients with average adherence of such patients 83%. Also, patients with high adherence are more actively involved in the social sphere of life:

active involvement in the social sphere is noted by 54% of high adherence and 36% of patients in the group with average adherence to therapy.

The results of the study of the relationship with the attending physician indicate that 67% of patients in the group with high adherence to therapy and 60% in the group with average adherence characterize their relationship with the doctor as trusting; 31% in the group with high adherence and 40% in the group with average adherence as neutral relationships.

3.4 The Results of a Comparative Study of the Degree of Awareness of Patients about the Disease and Therapy, the Degree of Formation of Attitudes to Perform Therapeutic Appointments, the Degree of Formation of behavioral Patterns

To analyze patients' awareness of urolithiasis, treatment attitudes, as well as the formation of behavioral patterns, a questionnaire was developed, the questions of which were divided into three blocks: knowledge, attitudes, behavior. The U-Mann-Whitney criterion was used to process the data obtained.

Table 9 shows the average indicators of the level of formation of attitudes to perform medical appointments in groups of patients with a high and medium degree of adherence to therapy.

Table 9. Average indicators of the level of attitudes to perform medical appointments in groups of patients with high and medium degree of adherence to therapy

Patient Questionnaire blocks	Patient groups		U-Mann-Whitney	
	Patients with high level of adherence to therapy (n=67) M (σ)	Patients with average level of adherence to therapy (n=47) M (σ)	U	p
Attitudes (the degree of formation of installations for performing medical appointments)	9,49 (2,20)	8,30 (1,78)	969	0,000

The data presented in Table 9 show that patients with high adherence to therapy are significantly more likely to note the formation of attitudes towards

fulfilling doctor's prescriptions than patients with average adherence ($p<0.000$). At the same time, there were no significant differences in the level of awareness of the disease ($p>0.05$) and the degree of formation of behavioral patterns ($p>0.05$) aimed at performing medical appointments between patients with high and medium adherence.

Analysis of the survey results showed that patients with high adherence level are more likely to follow the prescribed recommendations, and also less likely to experience anxiety related to the upcoming operation than patients with average adherence. In the field of social relationships, patients with high adherence level are more active, they are more likely to have support from relatives and friends than patients with average adherence. The results of the survey aimed at studying the degree of awareness, attitudes and behavioral patterns aimed at performing medical appointments showed that there are no significant differences in the degree of awareness and the degree of formation of behavioral patterns between the compared groups. At the same time, it was shown that in the group of patients with high adherence to therapy, there was a significantly greater degree of formation of attitudes to follow doctor's prescriptions and lifestyle changes in this regard ($p<0.000$). Thus, attitudes to follow medical prescriptions may be the target of short-term psychological intervention to increase adherence to therapy.

3.5 The Results of a Comparative Study of the Types of Attitudes toward Disease in Patients in Groups with High and Medium Degree of Adherence to Therapy

The study of the attitude toward disease was carried out using the TOBOL (Wasserman et al., 2014). The results of the study were subjected to frequency analysis using the x^2-Pearson criterion, for this purpose the data were grouped into three blocks: the first block – adaptive reactions, the second and third blocks – reflect the presence of mental maladaptation depending on the direction of the response to the disease (interpsychic and intrapsychic).

Table 10 and Figure 2 show blocks of types of attitudes to the disease in groups of patients with high and medium degree of adherence to therapy.

Table 10. Representation of blocks of types of attitudes toward disease in groups of patients with high and average level of adherence to therapy

Blocks of reactions to the disease according to the "TOBOL"	Patients with high level of adherence to therapy (n=67)	%	Patients with average level of adherence to therapy (n=47)	%
Adaptive	53	79,1	19	40,4
Interpsychic	11	16,4	18	38,3
Intrapsychic	3	4,5	10	21,3
x^2= 18,577, p<0,000				

The revealed differences are clearly shown in Fig. 2.

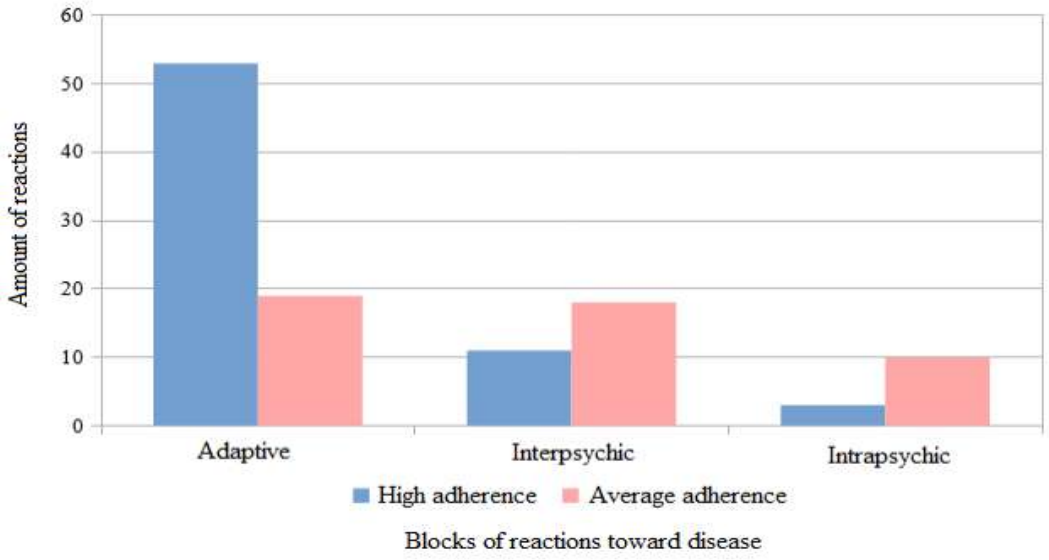

Figure. 2. Distribution of the number of high adherence and average adherence to therapy patients by "blocks" of types of attitudes toward disease

The distribution shown in Table 10 and Figure 2 demonstrates that in the group of patients with high adherence to therapy, the percentage of reactions to adaptive block disease is significantly higher than in patients in the group with average adherence (79% and 40%, respectively, at p<0.000). On the contrary, in the group of patients with an average degree of adherence to therapy, there is a significant predominance of maladaptive reactions to the disease: in the group of high adherence – 21%; in the group with an average degree of adherence – 60%. The analysis of maladaptive blocks shows that in the group of patients with average adherence to therapy, the percentage of interpsychic and intrapsychic reactions is significantly higher than in the group with a high degree of adherence

to therapy: intrapsychic reactions were observed in 21% of patients from the group of average adherence and in 5% of patients of the group of high adherence; interpsychic reactions — in 16% of high adherence patients and 38% in patients with average adherence to therapy.

Table 11 and Figure 3 show the distribution of high adherence and average adherence therapy patients by types of response to the disease.

Table 11. Distribution of high adherence and average adherence to therapy patients (N, %) by types of response to the disease

Types of reactions toward disease	Patients with high level of adherence to therapy (n=67)	%	Patients with average level of adherence to therapy (n=47)	%
Harmonious	16	24	1	2
Ergopathic	11	16	5	11
Anosognosic	8	12	5	11
Anxious	4	6	2	4
Hypochiondrial	1	1,5	3	6
Neurotic	0	0	5	11
Apathetic	0	0	1	2
Sensitive	1	1,5	2	4
Egocentric	0	0	1	2
Dysphoric	1	1,5	2	4
Paranoid	1	1,5	1	2
Mixed	22	33	14	30
Diffuse	2	3	5	11
$x^2 = 25{,}862$, $p<0{,}01$				

The differences obtained are more clearly shown in Fig. 3.

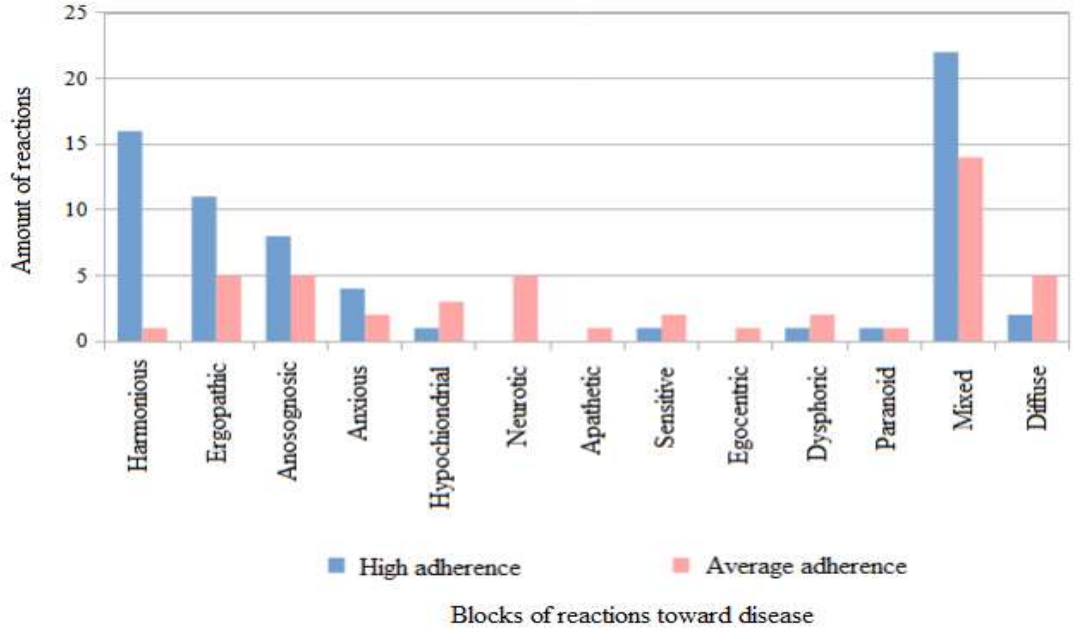

Figure 3. Distribution of types of response to the disease in groups of patients with high and average degree of adherence to therapy

The data obtained were analyzed based on the leading response to the disease (Table 11, Figure 3). It was revealed that in the group of patients with a high degree of adherence to therapy, a harmonious type of response to the disease is significantly more common (the proportion of subjects is 24%) than in the group with an average degree of adherence (the proportion of subjects is 2%) ($p<0.01$). On the contrary, in the group with an average degree of adherence to therapy, the neurasthenic type of response to the disease is significantly more common (the proportion of subjects — 11%) than in the group with high adherence (the proportion of subjects — 0%) ($p<0.01$). Mixed and diffuse reactions to the disease were also analyzed, which reflect a combination of two or more reactions, no significant differences in these types of response between the two groups of patients were revealed ($p>0.05$).

Also, the results of the study indicate that the most represented reactions to diseases in the group of highly susceptible patients are harmonious, ergopathic and anosognosic types, which belong to the block of adaptive diseases. In the group of average adherence patients, the most represented types of reactions are ergopathic, anosognosic and neurasthenic, and reactions of the harmonious type account for only 2%.

Thus, in the group of patients with a high degree of adherence to therapy, there is a significant predominance of reactions to the disease related to the "adaptive block" ($p<0.000$), and in the group of patients with an average adherence, the reactions of the "maladaptive block" significantly predominate ($p<0.000$). Analysis of individual types of reactions showed that in the group of patients with a high degree of adherence to therapy, the harmonious type of response is significantly more common ($p<0.01$) than in the group of patients with average adherence, while in the group with average adherence, the neurasthenic type of response is significantly more common ($p<0.01$) in comparison with the group of high adherence patients.

3.6 The Results of the Study of the Time Perspective and Motivational Sphere in Groups of Patients with High and Average Level of Adherence to Therapy

To study motivation, the "Method of motivational induction" by J. Nuttin (Nuttin, 2004) was used in the adaptation of N.N. Tolstykh (Tolstykh, 2005), which allows to identify the content characteristics of motivation, as well as the temporal localization of motivational objects, which together allows to characterize and analyze the time perspective of the future.

To determine the significance of the differences between individual categories of time perspective (intragroup factor) and groups of subjects (intergroup factor) for the indicators of each motivational inducer, a two-factor analysis of variance ANOVA was performed. The following categories of motivational inductors were analyzed:

- motivational objects related to the personality of the subject himself, where more specific motivational inductors are distinguished:
  striving for physical self-preservation — spre (ph),
  striving for psychological self-preservation — spre (ps),
  striving for economic self-preservation — spre (ec),

- motivational objects that include social contacts: C_2 and $C_{3,f}$,
- aspirations or actions of the subject aimed at self-actualization — SR

Analysis of Motivational Inducers spre (ph) (Physical Self-preservation)

A statistical analysis of the indicators of the number of motivational inducers spre (ph) (physical self-preservation) was carried out the subjects have two groups (high and average degrees of adherence) for calendar periods of time (day (D), week (W), month (M), year (Y)).

Two-factor analysis of ANOVA variance with one intergroup factor *Group* (degree of adherence to therapy) and one intragroup factor *Type of calendar periods of time* (day D, week W, month M, year Y) showed statistically significant influence of intragroup factor ($p<0.001$), intergroup factor ($p<0.001$) and interaction of factors Group*The type of calendar units of time ($p<0.01$) for the number of motivational inducers spre (ph) (physical self-preservation) (Fig. 4).

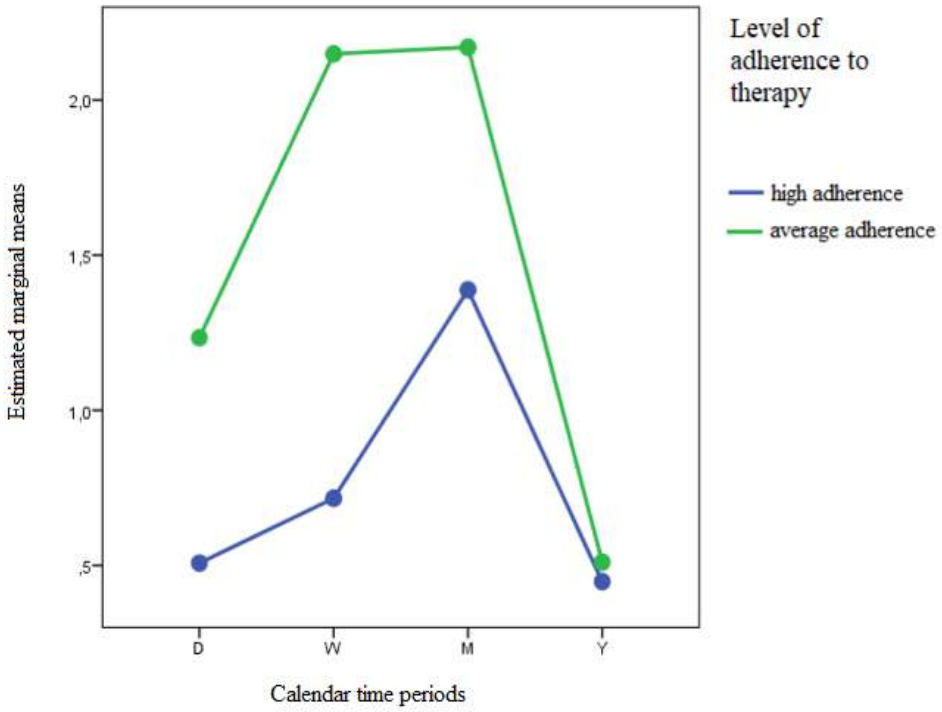

Figure. 4. The number of motivational inducers of spre (ph) (physical self-preservation) in different periods of calendar time (D – day, W – week, M – month, Y - year) in groups of patients with high and medium degree of adherence to therapy

A statistical analysis of the indicators of the number of motivational inducers spre (ph) (physical self-preservation) was also carried out the subjects of two groups (high and average degrees of adherence) for social time periods (the period

of the “open present” (*l*), the period of the whole life (L), the period of the first half of adulthood, about 25-45 years (A_1), the period of the second half of adulthood, about 45-65 years (A_2), the period of adulthood life and old age (AO), the period of old age, after retirement (O)).

Two-factor analysis of ANOVA variance with one intergroup factor *Group* (degree of adherence to therapy) and one intragroup factor *Periods of social time* (“open present” *l*, the first half of adult life A_1, the second half of adult life A_2, the period of adult life and old age AO, and the period of old age O) showed a statistically significant influence of the intragroup factor ($p<0.001$), the intergroup factor ($p<0.001$) and the interaction of factors Group*The type of social units of time ($p<0.01$) for the number of motivational inducers spre (ph) (physical self-preservation) (Fig. 5).

The obtained results indicate that high adherence patients are characterized by the predominance of motivational objects in a more distant time perspective, and for average adherence patients — in a closer one.

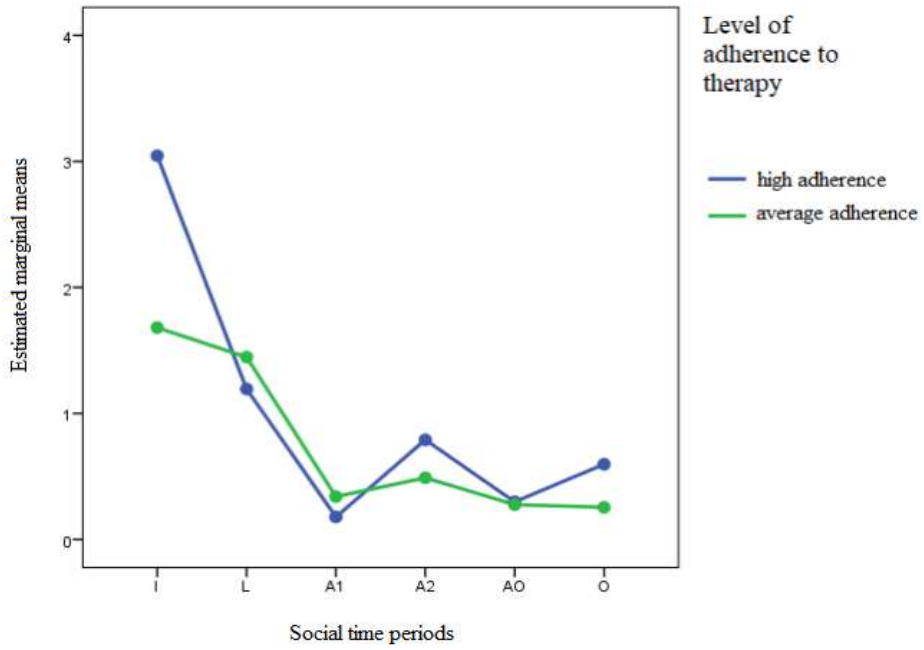

Figure 5. The number of motivational inducers of spre (ph) (physical self-preservation) in different periods of social time (l - “open present”, L - the period of the whole life, A_1 - the period of the first half of adulthood, A_2 - the period of the second half of adulthood, AO - the period of adulthood life and old age, O - the period of old age, after retirement) in groups of patients with high and average degree of adherence to therapy

The method of pairwise comparisons was used to analyze the indicators of the number of motivational inducers spre (ph) using the nonparametric U-Mann-Whitney criterion in two groups of subjects. It was found that patients with a high degree of adherence to therapy, in comparison with patients with an average degree of adherence to therapy, detect a significantly greater number of motivational inducers spre (ph) in the periods of social time: "open present" $\underline{l}$ ($p<0.001$), while patients with an average degree of adherence to therapy detect a significantly greater number of motivational inducers in the short term time perspective: Day D ($p=0.001$), week W ($p<0.001$), month M ($p<0.05$).

Thus, the obtained results indicate that patients with high adherence to therapy are characterized by motivation for physical self-preservation not only at a specific time (day, week, month), but it remains relevant for a long period of time ($\underline{l}$), in the more distant future. For a group of patients with an average adherence to therapy, this motivation is relevant mainly in the near future, limited to specific time frames such as day (D), week (W) and month (M).

Analysis of Motivational Inducers spre (ps) (Psychological Self-preservation)

For indicators of the number of motivational inducers spre (ps) (psychological self-preservation), a statistical analysis of the results of two groups (high and medium degrees of commitment) for calendar time units (day (D), week (W), month (M), year (Y)) and social time units (period "open present" ($\underline{l}$), the period of the whole life (L), the period of the first half of adulthood, conditionally 25-45 years (A_1), the period of the second half of adulthood, conditionally 45-65 years (A_2), the period of adulthood and old age (AO), the period of old age after retirement (O)).

Two-factor analysis of ANOVA variance with one intergroup factor *Group* (level of adherence to therapy) and one intragroup factor *Periods of social time* showed a statistically significant effect of intragroup factor ($p<0.001$) on the number of motivational inducers spre (ps) (psychological self-preservation) (Fig. 6).

Thus, it is revealed that patients with high adherence to therapy are characterized by a greater location of motivational inducers of psychological self-preservation in more distant periods of time.

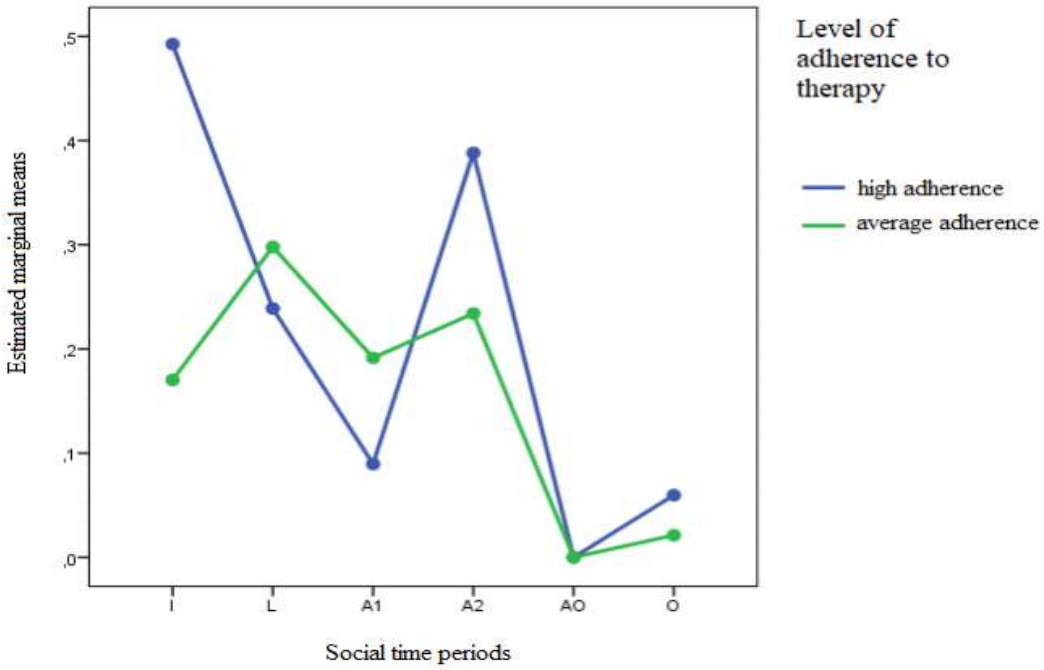

Figure. 6. The number of motivational inducers of spre (ps) (psychological self-preservation) in different periods of social time (l - "open present", L - the period of the whole life, A_1 - the period of the first half of adulthood, A_2 - the period of the second half of adulthood, AO - the period of adulthood life and old age, O - the period of old age, after retirement) in groups of patients with high and average degree of adherence to therapy

The method of pairwise comparisons was used to analyze the indicators of the number of motivational inductors spre (ps) using the nonparametric U-Mann-Whitney criterion in two groups of subjects. It was found that patients with a high level of adherence, in comparison with patients with an average degree of adherence, found a significantly higher number of motivational inducers of spre (ps) in the period of social time *l* ("open present") ($p<0.05$).

There were no significant differences in the number of motivational inducers in terms of calendar periods between groups ($p<0.9$) and within groups ($p<0.5$).

The results obtained indicate that the motivational objects of psychological self-preservation in both groups studied are located in the time continuum of calendar periods (day, week, month), however, the desire to achieve these objects in a more distant time perspective is characteristic for high adherence patients (*l*).

Analysis of Motivational Inductors of SR (Aspirations of the Subject Aimed at Development, Self-actualization)

A statistical analysis of the indicators of the number of motivational inducers SR (aspirations of the subject aimed at development, self-actualization) was carried out in the subjects of two groups (high and average degrees of adherence) for calendar units of time (day (D), week (W), month (M), year (Y)).

Two-factor analysis of ANOVA variance with one intergroup factor *Group* (degree of adherence to therapy) and one intragroup factor *Type of calendar units of time* (day D, week W, month M, year Y) showed a statistically significant influence of intragroup factor ($p<0.01$) on the number of motivational inducers SR (aspirations of the subject, aimed at development, self-actualization) (Fig. 7).

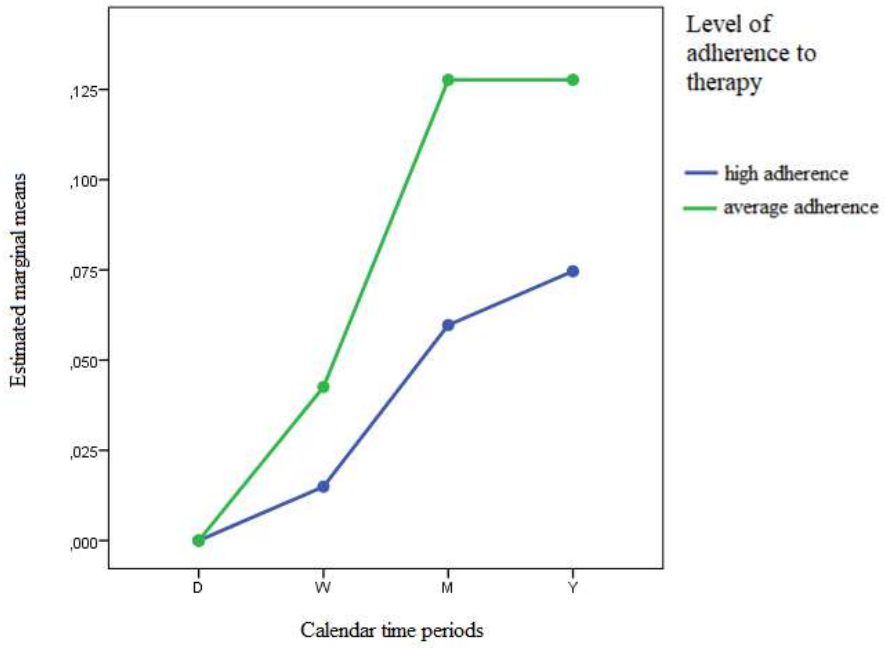

Figure. 7. The number of motivational inducers of SR (aspirations of the subject aimed at development, self-actualization) in different periods of calendar periods (D – day, W – week, M – month, Y - year) in groups of patients with high and average degree of adherence to therapy

Also, a statistical analysis of the indicators of the number of motivational inducers SR (aspirations of the subject aimed at development, self-actualization) was carried out in the subjects of two groups (high and average degrees of adherence) for social periods of time (the period of the "open present" (*l*), the period of the whole life (L), the period of the first half of adulthood, about 25-45

years (A_1), the period of the second half of adulthood, about 45-65 years (A_2), the period of adulthood and old age (AO), the period of old age, after retirement (O)).

Two-factor analysis of ANOVA variance with one intergroup factor *Group* (degree of adherence to therapy) and one intragroup factor *Periods of social time* ("open present" *l*, the first half of adult life A_1, the second half of adult life A_2, the period of adult life and old age AO, and the period of old age O) showed a statistically significant influence of the intragroup factor ($p<0.001$) on the number of motivational inducers SR (aspirations of the subject aimed at development, self-actualization). (Fig. 8)

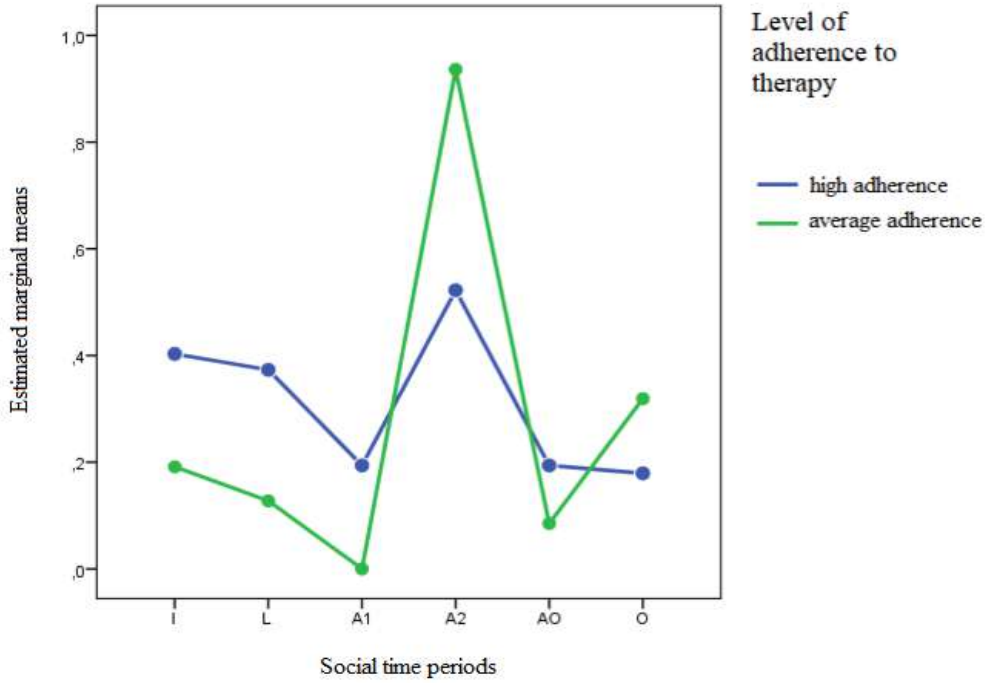

Figure. 8. The number of motivational inducers of SR (aspirations of the subject aimed at development, self-actualization) in different periods of social time (l - "open present", L - the period of the whole life, A_1 - the period of the first half of adulthood, A_2 - the period of the second half of adulthood, AO - the period of adulthood life and old age, O - the period of old age, after retirement) in groups of patients with high and average degree of adherence to therapy

The method of pairwise comparisons was used to analyze the indicators of the number of motivational inductors SR using the nonparametric U-Mann-Whitney criterion in two groups of subjects. It was found that patients with a high degree of adherence, in comparison with patients with an average degree of adherence, found a significantly greater number of motivational inducers of SR in the periods of social time: *l* ("open present") ($p<0.01$) and A_1 (the second half of adult life) ($p<0.01$).

The results of the analysis indicate that for patients with an average adherence to therapy, the desire for self-realization is characteristic mainly for a specific period of time, not in the very distant future, while for patients with a high commitment to therapy, this desire is characteristic for a fairly long period of time ($\underline{l}$ and A_1).

Analysis of Motivational Inducers C_2 (Social Contacts with Expectations from Others)

For indicators of the number of motivational inducers C_2 (social contacts with expectations from others) statistical analysis was carried out in two groups of subjects (high and average degrees of adherence) for calendar time periods (day (D), week (W), month (M), year (Y)) and social time periods (the period of the "open present" ($\underline{l}$), the period of the whole life (L), the period of the first half of adulthood, about 25-45 years (A_1), the period of the second half of adulthood, about 45-65 years (A_2), the period of adulthood and old age (AO), the period of life after retirement (O)).

Two-factor analysis of ANOVA variance with one intergroup factor *Group* (degree of adherence to therapy) and one intragroup factor *Type of calendar periods of time* (day D, week W, month M, year Y) showed a statistically significant influence of the intragroup factor ($p<0.001$) and the interaction of factors Group*The type of calendar periods of time ($p<0.001$) for the number of motivational inductors C_2 (Fig. 9).

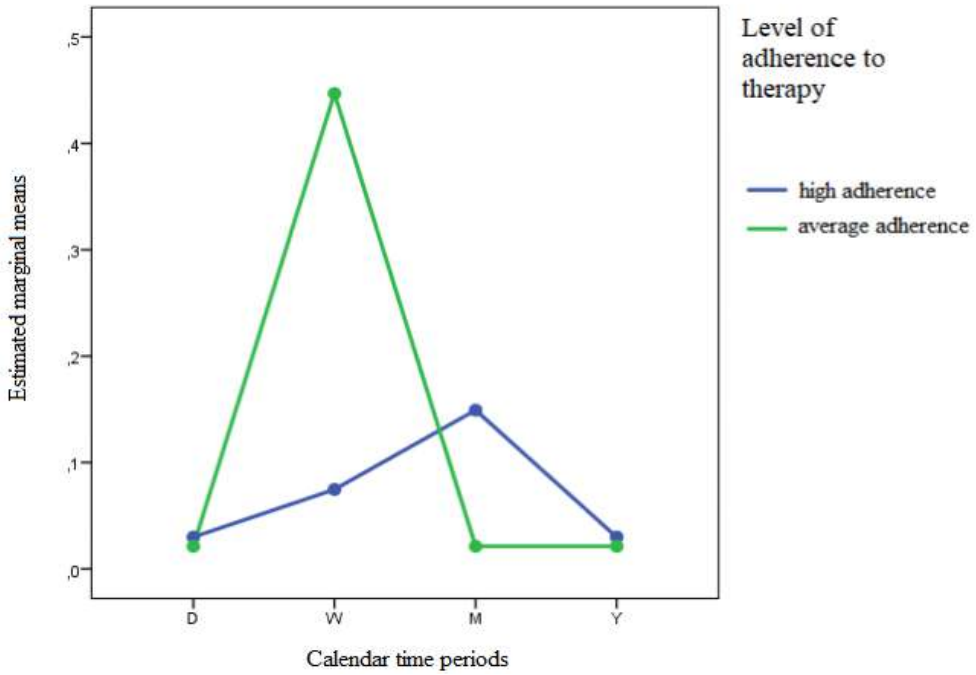

Figure 9. The number of motivational inducers of C_2 (social contacts with expectations from others) in different periods of calendar time (D – day, W – week, M – month, Y - year) in groups of patients with high and average degree of adherence to therapy

The method of pairwise comparisons was used to analyze the indicators of the number of motivational inductors C_2 using the nonparametric U-Mann-Whitney criterion in two groups of subjects. It was found that patients with an average degree of adherence, in comparison with patients with a high degree of adherence, detect a significantly greater number of motivational inducers C_2 in the short term — week W ($p=0.001$), while patients with high adherence detect a significantly greater number of motivational inducers C_2 in periods of social time L (the whole life period) ($p<0.01$) and AO (the period of adulthood and old age) ($p<0.05$).

Thus, the motivation to enter into social contact with the expectations of something from another participant in the group of average adherence patients also prevails mainly in the near term, which may be due to the peculiarities of the therapeutic process at the time of testing, while for the group of high adherence patients, this motivation covers a more distant time (L), which may indicate a desire to maintain contacts not only in the short term, but also in the longer term.

Analysis of Motivational Inductors $C_{3,f}$ (Goals, Wishes Formulated for Family Members, Immediate Environment)

A statistical analysis of the indicators of the number of motivational inducers $C_{3,f}$ (goals, wishes formulated for family members, immediate environment) was carried out in the subjects of two groups (high and average level of adherence) for calendar periods of time (day (D), week (W), month (M), year (Y)) and social time periods (the period of the "open present" (*l*), the period of the whole life (L), the period of the first half of adulthood, about 25-45 years (A_1), the period of the second half of adulthood, about 45-65 years (A_2), the period of adulthood and old age (AO), the period of old age, after retirement (O)).Two-factor analysis of ANOVA variance with one intergroup factor *Group* (degree of adherence to therapy) and one intragroup factor *Type of calendar periods of time* (day D, week W, month M, year Y) showed a statistically significant effect of intragroup factor ($p<0.01$) on the number of motivational inducers $C_{3,f}$ (Fig. 10).

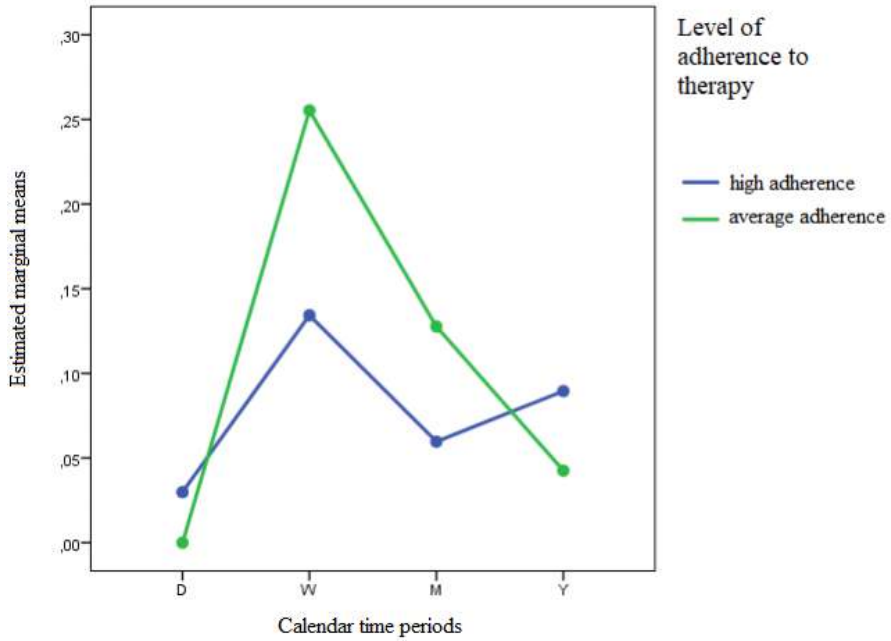

Figure. 10. The number of motivational inducers $C_{3,f}$ (goals, wishes formulated for family members, immediate environment) in different periods of calendar periods (D – day, W – week, M – month, Y - year) in groups of patients with high and average degree of adherence to therapy

Two-factor analysis of ANOVA variance with one intergroup factor *Group* (degree of adherence to therapy) and one intragroup factor *Periods of social time*

showed a statistically significant influence of intragroup factor ($p<0.001$) on the number of motivational inducers $C_{3,f}$ (Fig. 11).

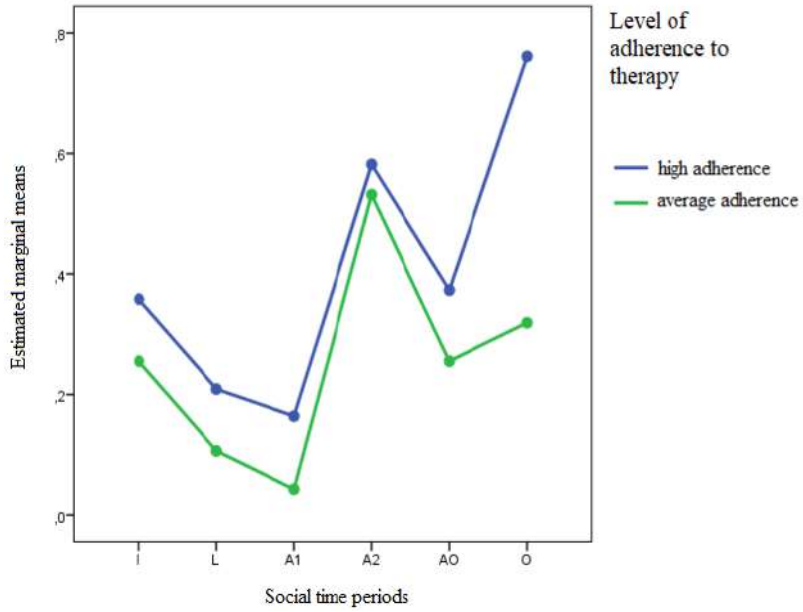

Figure. 11. The number of motivational inducers $C_{3,f}$ (goals, wishes formulated for family members, immediate environment) in different periods of social time (l - "open present", L - the period of the whole life, A_1 - the period of the first half of adulthood, A_2 - the period of the second half of adulthood, AO - the period of adulthood life and old age, O - the period of old age, after retirement) in groups of patients with high and medium degree of adherence to therapy

The method of pairwise comparisons was used to analyze the indicators of the number of motivational inductors $C_{3,f}$ using the nonparametric U-Mann-Whitney criterion in two groups of subjects. It was found that patients with a high degree of adherence, in comparison with patients with an average degree of adherence, found a significantly greater number of motivational inducers $C_{3,f}$ in the period of social time — O (the period of old age) ($p<0.02$).

The results of the analysis indicate that for patients with a high adherence to therapy, motivation to enter into social contact within the framework of relationships with loved ones is characteristic mainly in the period of social time related to old age, which may be related to the age characteristics of the group. However, the prevalence of these inductors in calendar time periods, reflecting a shorter time perspective, is characteristic of the average adherence patients. It can be assumed that patients with average adherence to therapy are characterized by the presence of various motivational objects in a shorter time perspective.

Thus, the results of the study of the motivational sphere and time perspective indicate that high adherence patients are characterized by a desire for various motivational objects mainly in the long term, while average adherence patients are focused mainly on specific time intervals, represented mainly by calendar periods.

3.7 The Results of the Study of the Level of Social Frustration in Groups of Patients with High and Medium Degree of Adherence to Therapy

The level of social frustration was studied by test "The level of social frustration" by L.I. Wasserman (Wasserman et al., 2004).

The Mann-Whitney U-test was used to compare the data of 2 groups with different degrees of adherence to therapy obtained using the "Level of social frustration" method. The data is presented in Table 12.

Table 12. Average indicators of the level of social frustration in groups of patients with high and average degree of adherence to therapy

Scales of the questionnaire "Level of social frustration"	Patient groups		U-Mann-Whitney	
	Patients with high level of adherence to therapy (n=67) M (σ)	Patients with average level of adherence to therapy (n=47) M (σ)	U	p
General frustration	1,27 (0,62)	1,62 (0,64)	1091,00	0,005
Frustration with the socio-economic situation	1,33 (0,91)	1,83 (0,83)	1089,50	0,005
Frustration with the state of health	1,86 (0,86)	2,38 (0,97)	952,50	0,000
Frustration in close relationships	0,90 (0,78)	1,20 (0,68)	1173,00	0,020

The data presented in Table 12 demonstrate significant differences between the groups in terms of social frustration, namely in terms of general social frustration, frustration with socio-economic status, frustration with health status, as well as frustration in close relationships. In the group with an average degree of adherence to therapy, greater social frustration is revealed in all of the above indicators compared to the group with a high degree of adherence to therapy.

Thus, it can be concluded that high adherence patients are characterized by greater satisfaction with their socio-economic situation, the state of their own health and close relationships in comparison with patients with average adherence to therapy.

3.7 The Results of the Study of Social Perceptions of the Disease and Therapy in Groups of Patients with High and Average Degree of Adherence to Therapy

Social ideas about the disease and treatment were studied using a prototypical analysis of P. Verges. For the study, such concepts as illness, diet, doctor, health, treatment and doctor's recommendations were selected. The basis for the choice of these concepts is their connection with the process of therapy in general, adherence to treatment, as well as the relationship with the doctor in the context of therapy.

To analyze these representations in groups of patients with high and average degree of adherence to therapy, the frequency of association mention, median and rank by group were calculated.

Table 13. The structure of social perceptions of the disease in groups with high and average degree of adherence to therapy

Zones of the structure of social representations	Patients with high level of adherence to therapy (n=67)	Patients with average level of adherence to therapy (n=47)
Core I	pain recovery hardships physical discomfort	pain urolithiasis fear of hardship physical discomfort
Buffer zone II	fighting doctor urolithiasis suffering	hopelessness loneliness heaviness
Buffer zone III	treatment fear anxiety	helplessness treatment disability anxiety

Table 13 (continued)

Zones of the structure of social representations	Patients with high level of adherence to therapy (n=67)	Patients with average level of adherence to therapy (n=47)
Periphery IV	helplessness hospital	struggle help heart sleep loss
Average rank, σ	1,93 (0,60)	1,85 (0,64)
Median frequency	3	2

The data presented in Table 13 demonstrate that in the group of patients with a high degree of adherence to therapy in the Core and Buffer zones, there are associations reflecting the desire to cope with the disease (for example, struggle, recovery), while in the group of patients with an average degree of adherence to therapy, there are associations demonstrating a passive reaction on illness (for example, helplessness, hopelessness, loneliness).

Table 14. The structure of patients' social perceptions of diet in groups with a high and average degree of adherence to therapy about diet

Zones of the structure of social representations	Patients with high level of adherence to therapy (n=67)	Patients with average level of adherence to therapy (n=47)
Core I	hunger discipline health restrictions benefit vs follow	useless hunger discipline restrictions difficult
Buffer zone II	necessity negation	irritation horror physical discomfort
Buffer zone III	inconveniences weight loss hardships	health is a necessity
Periphery IV	mood irritation anxiety physical discomfort	dissatisfaction
Average rank, σ	1,93 (0,66)	1,73 (0,65)
Median frequency	2	2

The data presented in Table 14 demonstrate that in the group of patients with a high degree of adherence to therapy in the Core and Buffer zones, there are associations reflecting views related to health and benefits, while in the group of patients with an average degree of adherence to therapy, there are views demonstrating uncertainty about the benefits of diet, hardships and a sense of hopelessness.

Table 15. The structure of patients' social perceptions of the doctor in groups with a high and average degree of adherence to therapy

Zones of the structure of social representations	Patients with high level of adherence to therapy (n=67)	Patients with average level of adherence to therapy (n=47)
Core I	white coat illness kind trust health support help professional fear	treatment distrust help professional discreet
Buffer zone II	pain mindfulness surgery empathy	white coat attention
Buffer zone III	attentive recovery treatment hope distrust	hope support
Periphery IV	caring burdens	trust operation fear
Average rank, σ	2,01 (0,70)	1,68 (0,66)
Median frequency	2	2

The data presented in Table 15 demonstrate that in the group of patients with a high degree of adherence to therapy in the Nucleus, there are representations that indicate a trusting relationship with the doctor (kind, trust, respect), while in the group of patients with an average degree of adherence to therapy, there are representations that demonstrate distrust of the doctor.

Table 16. The structure of patients' social perceptions of health in groups with high and average degree of adherence to therapy

Zones of the structure of social representations	Patients with high level of adherence to therapy (n=67)	Patients with average level of adherence to therapy (n=47)
Core I	strong to possess joy freedom happiness	activity is bad maintain physical discomfort feel good value
Buffer zone II	lightness strength physical discomfort	children longevity distrust trips to the doctor strength
Buffer zone III	activity value	struggle ease to possess joy freedom
Periphery IV	struggle recovery treatment concern optimism calm	beauty the right way of life efficiency
Average rank, σ	1,91 (0,60)	1,77 (0,66)
Median frequency	4	2

The data presented in Table 16 demonstrate that in the group of patients with a high degree of adherence to therapy in the Core and Buffer zones, there are associations reflecting representations associated with joy, freedom, happiness, while in the group of patients with an average degree of adherence to therapy, there are representations demonstrating more negative aspects of the concept, such as as “bad” (health), “physical discomfort”.

Table 17. The structure of patients' social perceptions of treatment in groups with high and average degree of adherence to therapy

Zones of the structure of social representations	Patients with high level of adherence to therapy (n=67)	Patients with average level of adherence to therapy (n=47)
Core I	long hope appointment distrust need professional follow anxiety	recovery it is long appointment
Buffer zone II	pain struggle addiction proper patience hardships	proper hardships
Buffer zone III	recovery discipline health operation	benefit fear
Periphery IV	diet dissatisfaction complications benefits joy	time limits professional doubts
Average rank, σ	1,92 (0,66)	1,92 (0,67)
Median frequency	2	2

The data presented in Table 17 demonstrate that in the group of patients with a high degree of adherence to therapy in the Core and Buffer Zones, despite the presence of associations reflecting perceptions associated with negative aspects of treatment – distrust, anxiety, a large number of concepts characterizing both positive aspects, as well as the intention to follow treatment, while in the group of patients with an average degree of adherence to therapy, there are no concepts that would indicate intentions to perform prescriptions.

Table 18. The structure of patients' social perceptions of doctor's recommendations in groups with high and average degree of adherence to therapy

Zones of the structure of social representations	Patients with high level of adherence to therapy (n=67)	Patients with average level of adherence to therapy (n=47)
Core I	authoritative opinion understandable to follow difficult doubts	the need detailed to follow difficult
Buffer zone II	lifestyle change appointment complete peace of mind	recovery trust consent anxiety
Buffer zone III	faith recovery discipline benefit	discipline hope understandable
Periphery IV	important diet trust health hope distrust prevention agree	a lot distrust irregular feedback doubts
Average rank, σ	1,81 (0,51)	1,89 (0,52)
Median frequency	3	3

The data presented in Table 18 demonstrate that in the groups of patients with a high and average degree of adherence to therapy in the Core and Buffer zones, there are associations reflecting the idea of the need to follow prescriptions (“follow”, “necessity”), at the same time, in the group of patients with high adherence to therapy, there are concepts, which reflect the positively colored emotional experiences of “calmness”, in the group of patients with an average adherence to therapy, concepts are noted that reflect rather the negative coloring of experiences, for example, “alarm”.

3.7 The Results of the Study of Psychological Factors of the Formation of Adherence to Therapy

According to the results of statistical processing of the obtained data, it was found that groups of patients with high and average degree of adherence to therapy significantly differ in a number of indicators. In order to study the most significant factors determining the differences between the groups (the attribution to the group of high or average adherence patients), a logistic regression model was constructed.

The independent variables were the psychological characteristics of patients, as well as the degree of awareness of the disease, the degree of formation of attitudes to perform medical appointments and behavioral patterns. The dependent variable was the indicator of the degree of adherence to therapy. Thus, the following were used as predictors: the type of attitude to the disease (adaptive or maladaptive type of reaction), the degree of social frustration, motivational inducers aimed at physical self-preservation, motivational inducers including social contacts and inducers reflecting the aspirations of the subject for self-realization, also included indicators of patient awareness of the disease, the degree of formation of attitudes to perform assignments and the degree of formation of behavioral patterns.

The main objective of the logistic regression was to identify the factors that most affect the adherence to therapy, therefore, the indicator of the level of adherence to therapy was chosen as a dependent variable. The prediction quality indicator that determines the probability of a correct forecast is 72%. The part of the variance explained by the variables included in the model explains 34% of the total variance of the phenomenon under study (R^2- Nagelkerka = 0.341). Data on the reliability of the regression model are presented in Table 19.

Table 19. Model of regression dependence of therapy adherence on the parameters “Type of attitude toward disease” and “Level of social frustration”

Component	B	SE	Exp (B)	p	95% confidence interval for EXP(B)	
					Low limit	Upper limit
Type of attitude toward disease (adaptive/maladaptive)	1,58	0,49	4,89	0,001	1,85	12,86
Social frustration degree	0,87	0,38	2,40	0,021	1,14	5,07

The data presented in Table 19 show that the presence of reactions to the disease from the maladaptive block significantly ($p=0.001$) increases the probability of lower adherence to therapy by almost 5 times ($Exp(B) = 4.89$), and an increase in the final frustration coefficient significantly ($p<0.01$) reduces the degree of adherence to therapy by almost 3 times ($Exp(B) = 2.40$) (i.e., the higher the frustration index, the more dissatisfaction with various aspects of an individual's life is expressed).

Thus, it can be concluded that patients with a high level of adherence to therapy, in comparison with patients with an average level of adherence, have more reactions toward disease related to the block of adaptive reactions, and also have greater satisfaction with various spheres of social life.

Based on the presented analysis, it can be concluded that the factors that have a positive impact on the degree of adherence to therapy are an adaptive response to the disease and a low degree of frustration of the patient with the social aspects of his own life. An increase in the level of social frustration leads to a decrease in the degree of adherence to therapy, similarly, an increase in the number of maladaptive reactions reduces the degree of adherence to therapy.

A regression model was also constructed, where specific types of attitudes toward disease were used as predictors (sensitive, anxious, hypochondriac, neurasthenic, anosognosic, dysphoric, ergopathic and harmonious), the degree of social frustration, motivational inducers aimed at physical self-preservation, motivational inducers including social contacts and inducers reflecting the aspirations of the subject for self-realization, patient awareness indicators of the

disease were also included, the degree of formation of attitudes to the fulfillment of assignments and the degree of formation of behavioral patterns. The dependent variable was the indicator of the degree of adherence to therapy.

The prediction quality indicator that determines the probability of a correct forecast is 72%. The part of the variance explained by the variables included in the model explains almost 40% of the total variance of the phenomenon under study (R^2-Nagelkerka = 0.389). Data on the reliability of the regression model are presented in Table 20.

Table 20. Model of regression dependence of therapy adherence on the parameters "Type of response to the disease" and "Level of social frustration"

Component	B	SE	Exp (B)	p	95% confidence interval for EXP(B)	
					Low limit	Upper limit
Degree of social frustration	0,92	0,40	2,46	0,02	1,13	5,39
A harmonious type of attitude towadr disease	-2,12	1,24	0,12	0,08	0,11	1,34

The data presented in Table 20 show that an increase in the overall frustration coefficient significantly ($p<0.01$) reduces the degree of adherence to therapy by almost 3 times (Exp(B) = 2.46). There was no significant effect of individual types of response to the disease on the degree of adherence to therapy, however, at the trend level, the influence of a harmonious type of response to the disease on the degree of adherence to therapy ($p=0.08$) is noted.

Thus, it can be concluded that the degree of social frustration affects the degree of adherence to therapy.

Results of Regression Analysis by Types of Therapy Adherence

The next stage of processing the obtained data during the study was the construction of a regression model to identify the most significant factors affecting a particular type of adherence to therapy (social, emotional and behavioral). The independent variables were the psychological characteristics of patients, the degree of awareness of the disease, the degree of formation of attitudes to perform medical appointments and behavioral patterns. The dependent variable was an indicator of the degree of adherence to a particular type of therapy. Thus, the following were used as predictors: the type of attitude to the disease (adaptive or

maladaptive type of reaction), the degree of social frustration, motivational inducers aimed at physical self-preservation, motivational inducers including social contacts and inducers reflecting the aspirations of the subject for self-realization, also included indicators of patient awareness of the disease, the degree of formation of attitudes to perform assignments and the degree of formation of behavioral patterns.

It was found that the types of response to the disease (adaptive, maladaptive) significantly predict the indicators of the social type of adherence to therapy ($F=2,295$; $p<0.01$). In total, this model allows to explain about 15% of the variance ($R^2=0.149$). The model of regression dependence of social adherence to therapy on the type of response to the disease is presented in Table 21.

Table 21. Model of regression dependence of social commitment to therapy on the type of attitude toward disease

Model		B	SE	Beta	p
1	Constant	25,56	3,28		0,00
	Type of attitude toward disease	-2,31	1,10	-0,20	0,04

The data presented in Table 21 demonstrate that according to the parameter "Type of attitude toward disease" there is a negative relationship with the social type of adherence to therapy, i.e., with an increase in the number of maladaptive reactions to the disease, there is a decrease in the degree of adherence to therapy according to the indicator "social compliance".

A regression model was also constructed, where the indicator of emotional adherence to therapy was chosen as a dependent variable. The following were used as predictors: the type of attitude toward disease (adaptive or maladaptive type of reaction), the degree of social frustration, motivational inducers aimed at physical self-preservation, motivational inducers including social contacts and inducers reflecting the aspirations of the subject for self-realization, also included indicators of patient awareness of the disease, the degree of formation of attitudes to perform assignments and the degree of formation of behavioral patterns.

It was found that the types of response to the disease (adaptive, maladaptive), as well as the degree of social frustration significantly predict the

indicators of the emotional type of adherence to therapy (F=4,201; p<0.001). In total, this model allows us to explain about 25% of the variance (R^2=0.242). A model of regression dependence of emotional commitment to therapy on the degree of social frustration and the type of response to the disease is presented in Table 22.

Table 22. Model of regression dependence of emotional commitment to therapy on the type of attitude to the disease and the degree of social frustration

Model		B	SE	Beta	p
1	Constant	26,98	2,90		0,00
	Type of attitude toward disease	-2,67	0,97	-0,25	0,01
	Degree of social frustration	-1,79	0,69	-0,23	0,01

The data presented in Table 22 demonstrate that according to the parameter "Type of attitude to the disease" there is a negative relationship with the social type of adherence to therapy, i.e., with an increase in the number of maladaptive reactions to the disease, there is a decrease in the degree of adherence to therapy according to the indicator "emotional compliance", there is also a negative relationship with the indicator of social frustration, i.e.A., with an increase in the level of social frustration, there is a decrease in the indicator of "emotional compliance".

Also, a regression model was constructed, where the indicator of behavioral adherence to therapy was chosen as a dependent variable. The following were used as predictors: the type of attitude toward disease (adaptive or maladaptive type of reaction), the degree of social frustration, motivational inducers aimed at physical self-preservation, motivational inducers including social contacts and inducers reflecting the aspirations of the subject for self-realization, also included indicators of patient awareness of the disease, the degree of formation of attitudes to perform assignments and the degree of formation of behavioral patterns.

It was found that the degree of formation of attitudes to perform medical appointments significantly predicts the indicators of the behavioral type of adherence to therapy (F=3,245; p<0.002). It was also revealed that at the trend level, the degree of formation of behavioral factors affects the degree of adherence

to therapy (p=0.06). In total, this model allows us to explain about 20% of the variance (R^2=0.207). The model of regression dependence of behavioral adherence to therapy on the degree of formation of attitudes to perform medical appointments is presented in Table 23.

Table 23. A model of regression dependence of behavioral adherence to therapy on the degree of formation of attitudes to perform medical appointments

Model		B	SE	Beta	p
1	Constant	18,65	3,34		0,00
	The degree of formation of attitudes	0,72	0,28	0,26	0,01
	The degree of formation of behavioral patterns	0,67	0,35	0,20	0,06

The data presented in Table 23 demonstrate that according to the parameter "The degree of formation of attitudes to perform medical appointments" there is a positive relationship with the behavioral type of adherence to therapy, i.e., with an increase in the degree of formation of attitudes, there is an increase in the degree of adherence to therapy according to the indicator "behavioral compliance". The influence of the degree of formation of behavioral patterns on the degree of behavioral adherence to therapy at the trend level is also noted.

Thus, it was revealed that the social type of adherence to therapy is significantly influenced by the type of attitude to the disease, namely, with an increase in the number of maladaptive reactions, the degree of adherence to therapy decreases. The emotional type of adherence to therapy is significantly influenced by the type of attitude to the disease and the degree of social frustration, so, with an increase in the number of maladaptive reactions to the disease and the level of social frustration, the degree of adherence to therapy decreases. The behavioral type of adherence to therapy is significantly affected by the degree of formation of attitudes to the performance of medical appointments, so, with an increase in the level of formation of attitudes, the degree of adherence to therapy increases, it was also revealed at the level of tendency that the formation of behavioral patterns affects the degree of adherence to therapy, with an increase in the degree of their formation, an increase in the degree of adherence to therapy is noted.

CHAPTER 4. Discussion of Results

The problem of adherence to therapy currently continues to be relevant. Despite the fact that numerous studies in recent years have been devoted to the study of various factors contributing to influence adherence to therapy, no unambiguous reasons for compliance or non-compliance with therapeutic prescriptions by the patient have been identified. The main difficulty lies in the huge number of selected factors, as well as their classification options. Some authors conditionally divide them into factors related to the patient, to the healthcare system, socio-economic factors, factors related to the specifics of therapy, and factors related to the disease (Lertmaharit et al., 2005; Mathes et al., 2014). However, psychological factors of adherence to therapy are not always allocated to a separate group of factors, or included in a group of factors related to the patient, in some studies the influence of psychological factors is denied altogether (Hevey et al., 2007; Fuster, 2012). However, recent studies have increasingly demonstrated the importance of psychological factors in the context of adherence to therapy, regardless of the disease (Gonzalez et al., 2016; Mehrtash et al., 2019; Marrero et al., 2020; Bąk-Sosnowska et al., 2021, 2022; Georges et al., 2022).

The problem of adherence to therapy in the urolithiasis clinic has not been sufficiently studied to date, including psychological factors, however, increasing the degree of adherence to therapy would significantly reduce the risk of relapse of the disease — in some cases, delay relapse up to five or more years, and in some – reduce it to almost zero. According to statistics, cases of relapse remain at a fairly high level, and in some regions this figure increases annually. The results of studies, both domestic and foreign, show that cases of stone formation and subsequent surgical interventions to remove concretions have a significant impact on the quality of life of patients (Arafa et al., 2010; Ryazantsev et al., 2013; New et al., 2016; Patel et al., 2017; Penniston et al. al., 2017; Protoshchak et al., 2018, 2020; Basulto-Martínez et al., 2020). Thus, a more detailed study of the

psychological factors of adherence to therapy seems promising, because it will not only identify the psychological factors of adherence to therapy, but also create adapted intervention methods for patients of this nosological group.

The results of the study indicate that in the sample of examined patients with urolithiasis, high and average levels of adherence to therapy are revealed, patients with a low degree of adherence to therapy in the sample of 114 patients were not identified. The absence of patients with a low degree of adherence to therapy in the sample can be explained by the fact that patients were examined at the stage of inpatient treatment, many of whom experienced renal colic, or underwent the second stage of removal of massive stones. According to existing studies, the pain factor stands out as one of the most significant factors that increases the degree of adherence to therapy. It was also noted that daily contact with the attending physician and other medical personnel, which is inevitable within the framework of inpatient treatment, also acts as a factor increasing adherence to therapy.

Thus, it was revealed that in the group of patients with a high degree of adherence to therapy, all types of compliance significantly prevail: social, emotional and behavioral. Social compliance shows the patient's desire to build a trusting relationship with the attending physician, to rely on the doctor's opinion in matters of therapy, to discuss with him emerging worries and anxious experiences. The patient's desire to present himself in the best light when interacting with a doctor also refers to social compliance, as a result, patients strive to follow therapeutic prescriptions as accurately as possible and take preventive measures. High emotional compliance is characterized by some impressionability and sensitivity of patients, but it is this factor that encourages patients to build trusting relationships with their attending physician and rely on his decisions, while the patient, in turn, takes the position of the performer. High behavioral compliance reflects the patient's desire to accurately follow the prescribed therapy and the doctor's recommendations due to the fact that the disease is seen as an obstacle to be overcome, and the doctor in the therapeutic relationship is perceived by a colleague, collaboration with whom will bring positive results. It is interesting to

note that in the group of patients with an average degree of adherence to therapy, this indicator is the lowest, which reflects a tendency to inconstancy, exposure to external circumstances, lack of sufficient effort to perform medical appointments, disorganization, which obviously negatively affects the therapy process as a whole and subsequent rehabilitation.

The analysis of socio-demographic characteristics showed similar data in both groups: the majority of patients are married, live in their own family in the city, so there were no significant differences in these parameters, which allows us to state that gender, age and level of education are not affect to the degree of adherence to therapy, this is consistent with the data of other studies (Theofilou et al., 2012; Mehrtash et al., 2019).

In the sphere of social relationships, high adherence patients are more active, they often have support from relatives and friends. It is noteworthy that patients in the group with high adherence, according to their self-report, are more socially active not only within their own family, but in the life of society as a whole. Average adherence patients are more likely to characterize relationships with a close social environment as “neutral”, while high adherence patients are more likely to describe them as close and trusting, which can also play an important role in a situation of illness, patients with trusting relationships can more often receive support from relatives and friends, which acts as an additional resource for maintaining a psychological state. The importance of social relationships in the context of adherence to therapy has also been shown in studies of patients with other somatic chronic diseases (Theofilou et al., 2012; Mehrtash et al., 2019).

The results of the questionnaire aimed at identifying the level of awareness about the disease, the degree of formation of attitudes to perform medical appointments and behavioral patterns show that patients in the group with a high degree of adherence to therapy reliably have more formed attitudes to follow the doctor's recommendations than patients in the group with an average degree of adherence. The results obtained are consistent with the data of patients' self-report on their attitude to treatment, as well as with the results of a methodology aimed at

investigating the level of compliance, according to which behavioral and social adherence prevail in patients with high adherence. So, in the section on attitude to treatment, 82% of patients in the group with high adherence reported that they regularly perform doctor's appointments, while in the group with average adherence – 51%. In this context, it is important to note that awareness of the disease is one of the significant factors affecting adherence to therapy, since in the future it contributes to the formation of attitudes aimed at fulfilling prescriptions. However, the strategy of informing patients is not always actively used in medical institutions. So, the authors (Mehrtash et al., 2019; Hevener et al., 2016; Schwab et al., 2013), who studied the factors of adherence to therapy in patients with sleep apnea, found that insufficient awareness of patients in the first days of therapy naturally leads to a decrease in adherence to therapy, but even despite this, there is a lack of awareness of patients in various medical institutions.

The analysis of the types of attitudes toward disease showed that in the group of high adherence patients, reactions related to the block of adaptive reactions, such as harmonious, ergopathic and anosognosic types, predominate. Harmonic and ergopathic types of response to the disease belong to the first (adaptive) block, which is not characterized by a significant violation, neither mental nor social adaptation in the situation of the disease. Patients with these types of attitudes to the disease are actively involved in the treatment process, follow the doctor's instructions, but in some cases, there are could be rejections of the role of the patient. Thus, the ergopathic type is characterized by violations of criticism in matters of one's own condition, the desire to maintain one's professional status, despite the possible severity of the disease. The anosognosic type is characterized by the fact that the patient tends to discard thoughts about the disease, about possible consequences, and the symptoms of the disease are interpreted by him as “insignificant” fluctuations in well-being. The patient first of all strives to live the same life, to keep the same hobbies and pace of life, without taking into account the disease. Nevertheless, there is no pronounced maladaptation in any of these variants. Patients with these types of attitudes to the disease may be more

adherence to therapy due to fear of losing their job or fear of being unable to perform their work at the same level at which it was performed before the onset of the disease. Maintaining one's own status in the work team environment can become a significant incentive for this category of patients to comply with the doctor's prescriptions. Patients with an anosognosic type of attitude to the disease have a similar picture – the desire to preserve their hobbies, acquaintances, activity, etc., which were before the disease, will encourage patients with this type of attitude to the disease to follow the doctor's prescriptions, but most likely, with this type of attitude to the disease, adherence to therapy will not be permanent and there may be missed visits to the doctor, or partial fulfillment of appointments, because for the patient this will be too serious an approach, which from his point of view is exaggerated by doctors.

In the group of patients with an average degree of adherence to therapy, such types of attitudes to the disease as ergopathic, anosognosic and neurasthenic predominate, hypochondriac type, sensitive and dysphoric are less pronounced. Hypochondriac and neurasthenic reactions to the disease belong to the second block, in which intrapsychic orientation is characteristic, i.e. affective fluctuations act primarily as factors influencing maladaptation: increased anxiety and depression, reactions by the type of irritable weakness, the patient “capitulates” in the face of the disease. The behavior of patients with such types of response to the disease is characterized by excessive concentration on the disease, they tell in detail about the symptoms and course of the disease not only to doctors, but also to relatives and friends. In the presence of painful sensations, patients often become irritable, impatient in treatment and examinations. Despite the fact that patients with these types of attitudes toward disease are able to follow the doctor's prescriptions, at the same time, they do not have confidence that therapy or prevention methods are really able to overcome the disease, and it may also be difficult for them to consistently and patiently follow medical prescriptions. Due to doubts about the correctness of the diagnosis or prescribed therapy, patients tend to go to different clinics, change therapy methods, without completing any. The

inability to achieve positive results of therapy in a short time can increase outbursts of irritability, which in turn negatively affects social relationships, loss of trust and support. Thus, patients with an intrapsychic reaction to the disease, despite concern about the disease, may often not follow the doctor's prescriptions, because they are convinced that the prescribed therapy is not able to alleviate the severity of the disease, or those prevention methods that were prescribed are not effective enough, which leads to decreasing the level of adherence to therapy.

The sensitive and dysphoric types of reactions to the disease belong to the third block, which are characterized by the interpsychic orientation of the individual's response to the disease. The sensitive type of response to the disease is characterized by excessive vulnerability of the patient, vulnerability, fears that others will change their attitude towards him as a “sick person”, fear of becoming a burden to their relatives because of the disease. With the dysphoric type of reaction to the disease, the predominance of angry-gloomy affect, bitterness, envy towards people who do not have the disease, even if we are talking about people from the immediate environment, is characteristic. The behavior of such patients can be characterized as excessively aggressive towards relatives and medical personnel, the disease is the subject of manipulation, the basis for the fulfillment of the slightest whims. Thus, the behavior of patients with interpsychic reactions to the disease is characterized by the presence of angry affect, suspicion and excessive demands on others, which often leads to the fact that already at the stage of inpatient treatment, it is difficult for such patients to build trusting relationships with a doctor, and frequent conflicts with relatives deprive patients of support.

The results obtained during the study of the types of attitudes toward disease show that with an adaptive type of response, there is no significant maladaptation of the patient during therapy and rehabilitation. Similar results were obtained in the study of the effectiveness of therapy in the postoperative period in patients requiring surgical intervention (Gaurilus, 2016). Thus, it has been shown that patients with adaptive block reactions are more likely to have a more successful recovery period.

The data obtained using the test “Level of social frustration” showed that average adherence patients are characterized by significantly greater dissatisfaction with their health, their own socio-economic situation (financial situation, living conditions, leisure and recreation, position in society), as well as close relationships. Based on the data obtained by the methodology for the study of types of attitudes toward disease, it can be assumed that maladaptive reactions to the disease can negatively affect various aspects of the patient's life, for example, reduce his productivity in the professional sphere, excessively concentrate on the disease (for example, with a hypochondriac type of reaction to the disease), thus, the disease becomes a key event in the life of a person, which in the future can lead to a violation of other areas of the patient's life. An analysis of the literature showed that similar results were obtained in the study of factors of adherence to therapy for other diseases. Thus, studies (Theofilou et al., 2012; Forkan et al., 2013; Essery et al., 2016) have shown that the degree of patient satisfaction not only with the financial aspects of their own life, but also the degree of satisfaction with their health status also act as predictors of the degree of adherence to therapy. It has been shown that patients with a greater degree of health satisfaction are more committed to therapy. The relationship between satisfaction with the financial situation and the degree of adherence to therapy is explained, first of all, by the patient's ability to purchase expensive drugs or undergo the necessary procedures. Patients with low satisfaction with their financial situation are often unable to follow the prescribed recommendations due to existing financial constraints (Essery et al., 2017).

The analysis of factors influencing the degree of adherence to therapy showed a reliable relationship with the type of attitude toward disease and the general level of social frustration. Thus, this makes it possible to assume that when forming the level of adherence to therapy, the degree of satisfaction with the patient's own financial situation, living conditions and position in society can have a significant impact on adherence to therapy. This relationship seems logical due to the large number of publications indicating the importance of the economic

component (Kovalenko, 2017; Vermeire et al., 2001; WHO, 2003; Lertmaharit et al., 2005; Mathes et al., 2014; Maffoni et al., 2020; Bea et al., 2021). Many medical procedures and medications for a number of patients may be excessively expensive, for example, in the group of patients with an average degree of adherence, 17% indicated that it was impossible to perform a chemical analysis of the stone due to the cost of this procedure, even though the identification of a chemical analysis of the stone is a key aspect when building a further therapy plan. A similar trend is observed in matters related to diet for patients with urolithiasis: 17% of patients in the group with an average degree of adherence to therapy noted that such nutrition is too expensive for them, and in the group of patients with high adherence only 3%. As mentioned earlier, the data obtained are consistent with studies of factors of adherence to therapy and in other diseases.

The analysis of factors influencing specific types of compliance showed that the type of attitude toward disease has the greatest influence on social adherence, so, with an increase in the number of maladaptive reactions, there is a decrease in the indicator of social adherence. The results obtained seem logical, since high social compliance is characterized by the patient's desire to build constructive relationships with the attending physician due to the fact that the doctor appears to be an authoritative figure whose opinion is important to the patient. As mentioned above, with maladaptive reactions, especially with interpsychic ones, it is primarily the social aspect of patients' lives that is disrupted due to their anger, distrust, and outbursts of irritability. The greatest influence on emotional compliance is not only the type of attitude toward disease, but also the degree of social frustration of the patient. Thus, an increase in the number of maladaptive reactions to the disease and an increase in dissatisfaction with various areas of the patient's life reduce emotional compliance. The most significant factor influencing behavioral compliance is the degree of formation of attitudes to perform medical appointments, i.e., the higher the degree of formation of attitudes, the higher the behavioral compliance. These results clearly demonstrate that the presence of formed attitudes contributes to the purposeful and sustainable behavior of the

patient within the framework of therapy. At the level of trends, it was revealed that the degree of formation of behavioral patterns has a positive effect on behavioral compliance. Previously, it was shown that high adherence patients have a greater formation of prescribing attitudes in comparison with average adherence patients, however, no significant differences in the degree of awareness were revealed. Based on this, it would be legitimate to assume that patients of both groups have sufficient awareness of the disease and methods of therapy, however, high adherence patients have the most stable attitudes in matters of following therapy and fulfilling prescriptions.

The data of the time perspective analysis showed that for patients with an average degree of adherence to therapy, the dominant temporal characteristics are indicators of the current time type (calendar time), and for highly adherence patients there is a large length of time perspective (social time). Similar results were obtained in foreign and domestic studies, which showed that a longer time perspective is a factor that has a positive effect on adherence to therapy (Zhao et al., 2012; Sansbury et al., 2014; Chew et al., 2019; Gurova, 2019). Thus, a study conducted on a sample of patients with hypertension and diabetes mellitus (Sansbury et al., 2013) showed that the features of the time perspective act as a predictor for the fulfillment of medical appointments, and therefore the authors propose to take these factors into account when compiling psychocorrective programs aimed at helping in setting goals (in the context of therapy). Another study (Chew et al., 2019) conducted on a sample of patients with heart failure showed that patients with a time perspective directed to the future are significantly more adherence to therapy. There are also studies (Baird, 2019) showing that a more balanced time perspective is important, i.e., without a clear predominance of orientation towards the past, present or future. Thus, it has been shown that patients with type I diabetes mellitus who have a balanced time perspective are more likely to control the amount of sugar in the blood, and therefore have better glycemic control. It is also important to mention studies demonstrating the effect of the disease on the time perspective of patients, which naturally affects the

degree of adherence to therapy. In the study of Gurova O.S. (Gurova, 2019) it was shown that patients with chronic diseases tend to have a hopeless attitude to the present, characterized by the lack of a focused time perspective, which reflects the conviction that their future is predetermined, the lack of the ability to influence it. It becomes obvious that the influence of the time perspective on the degree of adherence to therapy is a little-studied phenomenon that requires more detailed study. Within the framework of this study, it was shown that patients with a high degree of adherence to therapy have a long time perspective, which probably demonstrates their conviction and confidence in the possible impact on the course and outcome of the disease.

The study of the motivational sphere in this study is presented in relation to the time perspective, thus, motivational inductors reflecting motivation for self-preservation (physical and psychological) were of particular interest. There were no significant differences in the number of these inductors between the two groups, however, it was found that motivation aimed at self-preservation in high adherence patients occurs not only in the short term, but also in the long term, for example, in the period of the open present or the period of old age, thus, the desire to possess this motivational object is expressed (self-preservation) not only at the moment, but also in the more distant future. For average adherence patients, there is a predominance of this motivation in specific time periods (from a week to a year), which may reflect insufficient stability of aspirations to possess this motivational object. Thus, in the context of adherence to therapy, it can be assumed that patients with an average degree of adherence are characterized by activity aimed at preserving and maintaining their own health, but this activity occurs mainly during the inpatient period of treatment, in the future, patients tend to be less active in maintaining their own health, compared with highly committed patients. Analysis of the time perspective and motivational inductors in a group of patients with high adherence to therapy showed that these patients are also characterized by the predominance of inductors aimed at preserving and maintaining their own health along with other motivational inductors, however, it is interesting to note that for

this group in the context of a time perspective, the distribution of inductors in the longer term is characteristic, if these are calendar periods, then the month prevails, and within social time periods — this is a period that affects not only adulthood, but also old age. These results suggest that patients with high adherence are characterized by the distribution of motivational inducers aimed at maintaining their own health, not only in the short term, but throughout all periods of life.

Also, inductors were included in the analysis of the motivational sphere, which reflect the aspirations of the subject in self-realization, according to the concept of J. Nuttin, this category is not considered in connection with self-preservation, despite the fact that it relates directly to the personality of the subject. However, this inductor was included in the analysis to obtain a more complete picture in the study of the motivational sphere. For this motivational object, similar results were obtained regarding its distribution in the time perspective, so, for high adherence patients, the predominance of self-realization motivation is characteristic for the period of the first half of adulthood (about 24-45 years) and the period of the open present, i.e. the uncertain future. Speaking about the group of average adherence patients, there is a desire for this motivational object in the periods of the near future — a month and a year.

The study also analyzed the motivation to engage in social contacts (C_2 and $C_{3,f}$) in groups of high and average adherence patients. These motivational objects were included in the study because of their importance for adherence to therapy, so numerous studies highlight the features of social relationships as a separate factor of adherence to therapy. Thus, the results of the analysis show that for high adherence patients, the motivation to enter into social contacts also has a large extent in the time continuum. Thus, motivational objects reflecting social contacts with expectations from others in patients with high adherence predominate in a lifetime-long time period (L), while in patients with average adherence, these motivational objects are located mainly in a specific time period — a week. Qualitative analysis of these objects suggests that these motivational objects primarily characterize the relationship with the attending physician, as indicated by

the responses of the subjects. For clarity, let's look at some examples of responses from average patients on this inductor “I would really like the doctor to let me check out today”, or “I would so like the doctor to pay more attention to me”. In these examples, the time perspective was assessed as short-term due to the fact that at the time of the examination the patient was on inpatient treatment and the mention referred to the attending physician in the current hospitalization. The responses of highly committed patients on this motivational object were mainly related to a more distant time perspective in such a way that it was not possible to establish a specific time frame, while their length in time (*l*) was noted. It is also important to note that according to this inducer, the patients' responses were mainly related to family members, friends, for example, “I would really like my family to be always there”, which can be interpreted as the fact that for high adherence patients it is important to have the support of the social environment not only in the situation of illness, but also in the longer term perspective. Thus, in high adherence patients, there is a desire to possess this motivational object not only in a specific period, but also in a more separated time, therefore, to have stable social contacts, to maintain their quality.

A similar trend is observed in the analysis of motivation to enter into social contacts in the context of interaction with the immediate social environment, in particular with family members ($C_{3,f}$). The results obtained show that in high adherence patients, this motivation extends over a longer period of time, namely, the period of old age (O), and for a group of average adherence patients, the predominance of this motivation is noted in a specific time frame (up to a year). On the basis of which it can be assumed that when building interpersonal relationships, high adherence patients tend to build more trusting and emotionally close relationships, while focusing on the long-term perspective. In the context of adherence to therapy, this phenomenon is important, as mentioned earlier, trusting relationships with the immediate environment are a factor that increases adherence to therapy.

Thus, the results of the study of the motivational sphere and time perspective in groups of patients with high and average adherence to therapy show that for high adherence patients, a large length of time perspective is characteristic not only in areas related directly to the personality of the subject, but also in the sphere of social relationships. In the course of the study, it was shown that high adherence patients have a more uniform distribution of motivational objects in the time continuum, for example, motivational objects aimed at self-preservation of personality are found mainly in the period of the open present, and objects related to the motivation of self-realization predominate in the period of the second half of adult life, speaking of social relationships, there is a predominance of the corresponding motivation in the period of old age. In turn, patients with average adherence have a shorter time perspective, as it has been shown, various motivational objects (motivational objects of self-preservation, self-realization and motivation to enter into social contacts) are concentrated in different time periods, while limited to calendar time, from a few days to a year.

The analysis of the structure of social ideas about the disease and treatment in groups of patients with varying degrees of adherence to therapy showed that in the structure of concepts related to the disease, in both the studied groups in the nuclear zone and the first buffer zone, concepts indicating discomfort and hardship prevail, while in the group of high adherence patients, the presence of positive concepts, such as “recovery”, “struggle”. These concepts are not observed in the group of average adherence patients. A similar trend is also observed when analyzing social ideas about diet in two groups of patients, i.e., in the nuclear zone of the group of average adherence patients, only negative ideas (useless, hunger, restrictions, etc.) are noted, while the nuclear zone of the group of high adherence patients, along with negative concepts, includes positive ideas related to health and the benefits are also marked by representations indicating the desire to follow a diet. Of particular interest is the structure of social perceptions of health in the groups represented. Thus, in the group of high adherence patients, the core of health ideas is seen to be more homogeneous, i.e., the ideas have an exclusively

positive orientation (joy, freedom, happiness, etc.), while in the group of average adherence patients, along with positive ideas, negative ones are noted (bad, physical discomfort), which indicates the heterogeneity of social ideas in this group of patients. Analysis of the structure of social perceptions of treatment demonstrates similar results, for example, in a group of high adherence patients, social perceptions include the desire to follow prescriptions (follow, necessity), while in a group of average adherence patients, such aspirations are not observed. The analysis of the structure of social ideas about the doctor's recommendations in the presented groups has similar results, so, in both groups there is a desire to follow them, despite their complexity. Also of interest is the analysis of social ideas about the figure of a doctor in the presented groups. Thus, in the nuclear zone of a group of high adherence patients, a number of concepts are noted that indicate not only the trusting attitude of patients (trust, kindness, respect, support), but also that the figure of a doctor is directly related to the patient's recovery (health, help), while in a group of patients with an average adherence to therapy these concepts are not noted in the nuclear zone, as well as in the first buffer zone. The obtained data on social perceptions are consistent with the data obtained by other methods of this study, in particular with the data on the TOBOL method and the test “Compliance Level”, which indicate that high adherence patients are focused on establishing trusting relationships with the attending physician.

Thus, the results of the analysis of social ideas about the disease and therapy in the presented groups showed that the nuclear zone of the group of high adherence patients more often includes not only more positive ideas about therapy, prescriptions and the figure of the doctor, but also indicates a conviction to act according to prescriptions, which is consistent with the results obtained from the patient's questionnaire, the data of which demonstrate reliably a greater formation of attitudes to the performance of medical appointments.

Summing up, we can conclude that adherence to therapy is a complex and multicomponent phenomenon, the study of which has to be carried out from different sides. It has been shown that patients with a high level of adherence to

therapy are characterized by a lower degree of social frustration, a predominance of adaptive reactions to the disease, the presence of motivation to maintain their own health in the longer term, as well as the presence of social support and more trusting relationships. The structure of social representations of high adherence patients is characterized by the presence of positive ideas about therapy and the outcome of the disease, and also demonstrates the presence of aspirations to fulfill appointments and establish trusting relationships with the attending physician. In the group of patients with an average degree of adherence, there is a predominance of maladaptive reactions to the disease (intrapsychic or interpsychic), which outwardly manifest themselves in the form of lability of affect, irritability, anger, distrust, such reactions negatively affect the establishment of trusting relationships with medical personnel, and are also capable of depriving the patient of support from the immediate environment. The time perspective of these patients is characterized by a shorter length. In the motivational sphere, there is also a desire to maintain one's own health, but in a shorter term. The structure of social representations of average adherence patients is characterized by the presence of more negative ideas about therapy, in addition, there are practically no convictions to follow the prescriptions.

The results of the study show that the type of response to the disease, the degree of social frustration, the features of the motivational sphere and time perspective, as well as social representations can act as reference points for working with patients. The importance of the patient's social environment is noted by many researchers in the treatment of various diseases, because it is family, friends or buddies who act as the main source of resource for the patient not only during therapy, but also during the rehabilitation process. It is also significant how the patient himself perceives his disease, as evidenced by numerous domestic and foreign studies, when it comes to denying the disease, or vice versa, exaggerating its significance, it is possible to disrupt various processes in the patient's life (family, work, friendship, etc.), which will certainly be reflected in the future on the success of the prescribed therapy and on the degree of adherence to therapy.

CONCLUSIONS

1. It was found that in a sample consisting of 114 patients with urolithiasis, 59% have a high level of adherence to therapy and 41% – average level of adherence to therapy; patients with a low level of adherence to therapy in this sample were not identified. The assessment of the level of adherence to therapy by doctors in 65% of cases coincides with the patients' self-report. In 30% of cases, there was a tendency for doctors to overestimate the level of patient adherence.
2. Patients with high level of adherence to therapy show significantly higher values both for the overall coefficient of adherence to therapy and for its individual components (social, emotional and behavioral compliance), which reflects the desire of patients with high level of adherence to therapy to establish trusting relationships with the attending physician, the stability of behavioral patterns to follow therapeutic prescriptions and emotional sensitivity to deterioration own state.
3. It was found that patients of both groups are characterized by sufficient awareness of the disease and methods of therapy. Patients with high level of adherence to therapy show significantly higher formation of attitudes to follow doctor's prescriptions, lifestyle changes in comparison with patients with an average level of adherence to therapy. In the group of patients with high level of adherence to therapy, there was a tendency to less anxiety in connection with the upcoming surgery, patients are more active in social life, have more emotional support from relatives and greater awareness of relatives about the treatment and prognosis of the disease.
4. It was found that adherence to therapy in patients with urolithiasis is interrelated with the features of the "internal picture of the disease": patients with high degree of adherence to therapy with characterized by the prevalence of adaptive reactions to the disease (harmonious, ergopathic, anosognosic types of attitude to the disease) and almost complete absence of maladaptive reactions, and for patients with an average level of adherence to therapy, the presence of both

adaptive and maladaptive reactions (neurasthenic, hypochondriac, anosognosic, ergopathic types of attitude to the disease).

5. Differences in the content and temporal orientation of the motivational sphere in patients with a high and average levels of adherence to therapy were revealed: in patients with a high level of adherence to therapy, motivation aimed at preserving physical health and psychological well-being is characterized by a deeper (long-term) time perspective, while in patients with an average level of adherence to therapy, the time perspective is narrowed and featured by the near future and the current periods (day, week, mouth), which may indicate a positive impact of a more developed time perspective on the formation of adherence to therapy.
6. It was revealed that the level of social frustration (the overall coefficient and coefficients of frustration with the socio-economic situation and health status) in patients with high adherence to therapy is significantly lower than in patients with an average level of adherence to therapy, which may indicate the influence of the socio-economic aspect of the patient's life and his current clinical condition on adherence to therapy.
7. Patients with high and average levels of adherence to therapy have a different structure of social representations regarding therapy: the structure of representations of patients with high level of adherence to therapy is characterized by the presence of more positive beliefs regarding therapy and the outcome of the disease(using concepts such as "recovery," "flighting", "benefits", "trust", etc.) while the structure of representations of patients with average level of adherence to therapy is characterized by the presence of more negative beliefs about therapy and the outcome of the disease (using concepts such as "useless", "poor health", "physical discomfort", etc.).
8. It has been established that the factors having the greatest predictive value in relation to the level of adherence to therapy are the following types of attitudes toward disease and the level of social frustration: the higher the number of adaptive types of reactions toward disease and lower the coefficient of social

frustration, the higher the probability of assigning the patient to a group with a high level of adherence to therapy. For social compliance, the type of attitude toward disease is prognostically significant, for emotional compliance – the type of attitude toward disease and the level of social frustration, for behavioral compliance – coefficients of the degree of formation of attitudes to the fulfillment of doctor's prescriptions and a coefficient of the degree of formation of appropriate behavioral patterns.

9. The psychological features identified in patients with an insufficient level of adherence to therapy (the predominance of a maladaptive type of response to the disease, a high level of social frustration, lack of elaboration of a long-time perspective, negative social ideas about the disease and treatment) form a certain personal pattern that reduces the level of adherence to treatment, which can be considered as a target of long-term clinical-psychological intervention. Short-term clinical-psychological intervention in an urological clinic can be aimed at additional information, the development of attitudes to follow the doctor's prescriptions, the formation of appropriate patterns of behavior and can be carried out in the form of a motivating interview.

RESUME

The problem of adherence to therapy is a topical question not only for medicine, but also for clinical psychology, which includes both taking medications and lifestyle modification, the formation of new habits and new behavior patterns. This problem becomes especially relevant in the framework of chronic diseases, when the further disease state and its outcome depend on the patient's performance of the prescribed therapy. In this context, urolithiasis is not an exception. The reappearance of stones depends on how regularly and consistently the patient follows the prescribed procedures, keeps a low-protein diet and drinking regime, monitors the amount of urine excreted. In case of patients with only one kidney functioning, this problem becomes even more acute. The patient's understanding of the importance of following the prescriptions depends not only on the recurrence of the disease, but also on how successful the rehabilitation will be after the operation for the removal the kidney stone. In turn, adherence to therapy can be determined not only by the individual and personal characteristics of the patient, but also by socio-psychological characteristics of relationships with healthcare professionals, in particular, with the attending physician. To date, the number of studies aimed at studying the factors of adherence to therapy continues to increase and covers all new nosological units.

The review of the scientific literature made it possible to conclude that psychological factors of adherence to therapy can have a significant impact on the degree of adherence to therapy, regardless of nosology. In this connection, the main purpose of this paper was to study the psychological factors of adherence to therapy for urolithiasis.

The study sample consisted of 114 male and female patients, who were further divided into two groups based on the degree of adherence to therapy: 67 people in the group of high adherence patients and 47 people in the group of average adherence patients. The design of the study assumed the following criteria for inclusion of patients in the sample: localization of calculus in the kidney

(diagnosis according to ICD N20.0), age from 35 years and the presence of repeated hospitalizations, as criteria for exclusion were: severe physical asthenia due to severe course of the disease and significant cognitive decline, preventing the understanding and implementation of psychodiagnostics techniques. A clinical conversation was conducted with all participants and it was proposed to fill out specially designed questionnaires to obtain socio-demographic, psychosocial and biomedical characteristics of the patient, and a questionnaire aimed at obtaining data on the degree of awareness of the disease, the degree of formation of attitudes and behavioral patterns for the implementation of therapeutic and preventive measures, and a package of psychodiagnostics techniques.

The results of the study of patient awareness of the disease show that participants in both groups have sufficient awareness of the disease, methods of therapy and prevention of the disease. However, it has been shown that patients from the group with high adherence have significantly more formed attitudes towards performing therapeutic prescriptions and following preventive procedures.

The results of regression analysis revealed the main predictors of therapy adherence: the type of attitude toward disease, the degree of social frustration, as well as the degree of formation of attitudes and behavioral patterns for performing medical appointments. The distinctive features of the time perspective and motivational sphere of the patients of the two compared groups were also shown. The results obtained are consistent with data from other studies and indicate that the degree of elaboration of the time perspective can also act as a predictor of an increase or decrease in the degree of adherence to therapy. The analysis of the structure of social representations of patients of the presented groups is also indicative, which indicates a more positive attitude of highly committed patients not only to therapeutic and rehabilitation measures, but also to the figure of the doctor, which probably contributes to building more trusting relationships and a stronger therapeutic alliance.

An important aspect in the framework of the study of adherence to therapy is the analysis of the expert assessment of the degree of adherence to therapy by the

attending physician. The importance of this parameter cannot be overestimated due to the fact that the feedback received by the doctor from the patient about the appointments he performs directly affects the course of therapy. Thus, in this study, it was shown that in 30% of cases, doctors tend to overestimate the degree of adherence to their patients' therapy, which may be due to the doctor's conviction that the information provided about therapy methods and preventive measures was fully assimilated by the patient. The highest percentage of overestimation of adherence is noted in cases of patients following a low-protein diet (40%) and a drinking regime (46%), it is worth noting that following these preventive measures is one of the main ones in the prevention of repeated stone formation (Zaitseva, 2022). The data obtained may indicate both insufficient feedback from patients and difficulties in building a clinical conversation at the patient's appointment. To solve this problem, the first block of short-term intervention developed during this study can be used, which allows to identify not only the degree of awareness of the patient about the disease, but also to get more detailed feedback on the implementation of therapeutic and preventive prescriptions.

Practical recommendations.

The data obtained in the course of the study indicate that patients with insufficient adherence to therapy are characterized by certain psychological characteristics: the predominance of a maladaptive type of response to the disease, a high degree of social frustration, lack of elaboration of a time perspective in the long term, social ideas about the disease and treatment with a negative connotation, unformed attitudes to follow the doctor's recommendations and lead a healthy lifestyle life, as well as the lack of formation of appropriate patterns of behavior. The identified block of characteristics, in fact, indicates psychological distress and a decrease in the level of adaptation. Studies of the motivational sphere (Tolstykh, 1988; Tolstykh, Kulakov, 1989; Obidin, 2007) have shown that the lack of elaboration of the time perspective of the motivational sphere is characteristic of younger adolescents (in comparison with older ones), adolescents with personality disorders (in comparison with healthy ones), patients with neurotic disorders (in

comparison with healthy). The authors interpret these results as signs of infantile or insufficient personal maturity. In this context, it can be assumed that the features identified in our study characterize patients with an insufficient degree of adherence to therapy as insufficiently mature, not fully accepting responsibility for their lives, not fully assessing the life perspective, not ready for change. However, these features require targeted, deep and prolonged psychotherapy, which should be carried out by a specialist psychotherapist. However, there is no such specialist in the staff of urological clinics, therefore, a patient who needs longer work can only be given a recommendation to consult a specialist in the future. In the conditions of urological clinic, clinical and psychological interventions can be short-term and aim to increase the degree of adherence to therapy. Based on the conducted research, it can be assumed that the main targets of such an intervention should be such adherence-related characteristics as awareness of the disease and preventive measures, attitudes to follow doctor's recommendations and modify lifestyle, patterns of behavior for a longer term (for example, regular water consumption of up to two liters), as well as attitude toward disease.

It seems that in this context, the most constructive would be the development of a short-term intervention in the form of motivational interviewing. The availability of information materials presented in different versions (brochures, smartphone applications, educational videos, lectures at the patient's school), as well as informing the patient by the doctor during a normal conversation, as the results of the study show, do not lead to the desired result in all patients. Thus, during the psychodiagnostics examination at the stage of clinical conversation, cases were identified when the patient was not familiar with the norm protein diet, despite the fact that at the time of the examination, the patient's hospitalization was not primary. Thus, the patient can take all the medications prescribed by the doctor, but not follow the diet, which in the clinic of urolithiasis is one of the most important methods of preventing repeated stone formation. The reasons for ignorance may lie in the insufficiency of the explanations of the attending physician or in the absence of such an explanatory conversation at all, despite the

fact that at discharge the patient receives nutritional recommendations. At the same time, some patients admitted that they had never read them, but mostly focused on what the doctor said. This example confirms that in addition to informing, additional motivation of the patient to the appropriate behavior is necessary.

Motivational interviewing has a number of obvious advantages, for example, it has been shown that this method acts as an effective tool for behavior modification in the clinic of dependent behavior and somatic diseases (Csillik et al., 2021), it is also important to note that motivational interviewing does not involve a long period of meetings, which is certainly a plus within the framework of non- not only inpatient treatment, but also outpatient, because the regularity of meetings with a specialist may not always be available to the patient. Another advantage of motivational interviewing is the sufficient stability of the results, since the approach is aimed at working with the patient's internal motivation to change their own state, which has also been noted by many researchers (Zomahoun, 2017; Soderlund, 2017; Papus et al., 2022). It is also important to mention that motivational interviewing can be successfully combined with other therapeutic approaches that are aimed at working with deeper processes that require a long period of work.; so, today the method of motivational interviewing is actively used within the framework of the cognitive-behavioral approach. Based on this, it can be assumed that motivational interviewing can act not only as a method to increase adherence to therapy, but also as an additional stage of informing the patient, even if the attending physician has already conducted an explanatory conversation. The work of a clinical psychologist will help to identify the existing incomprehensible moments for the patient in therapy and subsequent prevention of the disease. In the scheme of motivational interviewing, there are separate stages and techniques aimed at checking the patient's awareness with the subsequent introduction of the information received for lifestyle modification, following the prescribed diet, and compliance with the drinking regime.

The first step is to have a conversation with the patient to assess the degree of awareness of the disease, the necessary preventive measures and to assess the

patient's readiness to perform the necessary appointments. It should also be clarified whether the patient already follows any therapeutic and preventive procedures. If, according to the results of the first block, it is revealed that the patient is sufficiently informed about the disease and prevention methods, and also follows the main recommendations, the patient's success should be encouraged, correct behavior should be supported, it should be clarified whether he has difficulties in performing appointments, offer help if necessary (if the patient is sufficiently informed, already performs appointments, should proceed to block 3).

If, according to the results of the first block of interviews, it was revealed that the patient is insufficiently informed on any issues (disease, therapy, prevention methods), it is necessary to provide him with additional information based on the missing knowledge. To improve the quality of feedback from the patient after informing him, it is necessary to ask the patient to retell in his own words how he understood the information received (for example: “Now I will tell you a little more about the diet and drinking regime, and then I will ask you in your own words to tell what you understood and what raised questions”). It is important to warn the patient about the issue in advance, this will help him better concentrate on the information he receives.

After further informing the patient and receiving feedback from him, it is necessary to ask him again about his readiness to follow the necessary prescriptions and assess the degree of readiness (transition to block 3). If, after additional information, the patient is still not ready to change behavior, it is important not to insist on it. The lack of readiness to change habits and lifestyle indicate the patient's doubts and thoughts about the need for change. In the case of external pressure from a specialist, the patient often begins to defend the opposite position. However, in the absence of external pressure, the patient considers both options: modifying habits and refusing to change. At this stage, the patient should be asked how new habits and old ones could affect his life, what effect a relapse of the disease could have on his life, or what his life would look like in five or ten years with a change in habits and in case of refusal of lifestyle modifications. If the

patient is ready for a change in behavior, lifestyle modification, you should help the patient formulate a goal and move on to block 4.

At the fourth stage, it is necessary to discuss with the patient how to achieve the chosen goal. At the same time, it is important that the goal chosen by the patient is realistic and achievable, otherwise, having failed at the first stages, it will be more difficult for the patient to return to a new behavior again. To concretize the goal, it is important to proceed from the patient's lifestyle, his schedule, daily routine, etc., this will help formulate small but achievable goals. For example, if a patient consumes about 500 ml of water daily, then the goal of increasing the volume of water to 2.5 liters per day will be unrealistic and difficult to achieve, but a gradual increase in the amount of water per day will be a more acceptable goal for this patient.

Discussing ways to achieve the goal is also important to proceed from the patient's living conditions, his capabilities and limitations. For example, when drawing up a nutrition modification plan, it is important to take into account the financial aspect, because some patients are not always able to change their diet due to the high cost of a number of products. In this case, if possible, it is recommended to refer the patient to a nutritionist, this will allow the patient to choose for himself alternatives to the necessary products at an acceptable cost for him. To modify the drinking regime, you should also discuss specific options with the patient, encourage the patient if he offers realistic options on his own, if the patient voices complex and little realistic options, you should gently and correctly ask how realistic this option is, suggest considering alternatives. For example, a patient says that he plans to carry a two-liter bottle of water with him, while mentioning that in addition he needs to carry several containers of food for lunch, and the patient gets to work by subway. Check with the patient whether this plan will be physically convenient for him, or it is worth having several small bottles of water in different places (at home, at work, in a bag), in a prominent place with the ability to fill them with water at any time.

Also, at this stage it is important to discuss with the patient possible obstacles to the implementation of the goals. So, in our study, 48% of patients noted that when switching to a low-protein diet after a while, they return to their usual diet. Thus, it is important to clarify with patients what difficulties, from their point of view, they may face when forming a new diet. This will allow you to prepare an action plan in advance, in case of a trigger situation that provokes the patient to break the diet.

After conducting all four stages of the interview, a repeat appointment should be scheduled for the patient to assess the behavior change, the possible need for correction, as well as to encourage the patient's success.

Below is a scheme (or steps) of short-term intervention. It can be used by a doctor or psychologist to control the sequence of their own actions.

In developing this scheme, the experience of the St. Petersburg State University research group was used, which developed a short-term intervention within the framework of the project “Prevention of Fetal alcohol syndrome and neurodevelopmental disorders in children in Russia” (Balashova et al., 2012; Burina, 2016).

Short-term intervention plan

1. Ask

- Assess the patient's awareness of the disease and prescriptions

a). a patient has a clear understanding
b). a patient has a general understanding
c). a patient only specific aspects are understandable
d). a patient has no information about disease and therapy methods

- Assess the degree of readiness to perform assignments, lifestyle changes

a). a patient expresses willingness to follow the prescriptions
b). a patient expresses partial willingness to follow the prescriptions (for example, to change the drinking regime only, but not the diet)
c). a patient is not ready to modify the lifestyle and follow the prescriptions

- Evaluate adherence to the prescribed diet and drinking regime

a). a patient keeps regularly a drinking regime and follows a low-protein diet, performed the necessary tests
b). a patient keeps only a part of the prescriptions
c). a patient does not follow the prescriptions

2. Inform

- If in Question 1, type **a** answers were received for all points, pass to the point 3.
- If a patient is not sufficiently informed, provide additional information (for example, about the effection of high-protein foods and salt on the re-formation of stones), warn the patient that at the end of the conversation you will ask for his feedback (for example: “Now I will tell you a little more about the diet and drinking regime, and then I will ask you to tell in your own words what you understood and what you didn't”)
- After additional information ask the patient to retell the information provided in his own words (for example, “Could you, please, repeat in your own words what you understood from our conversation?”)

3. Direct steps

a). If a patient follows the prescriptions, support the correct behavior, focusing on the patient's success
b). If a patient follows the appointments irregularly, support the correct behavior and discuss the need for regular appointments (for example, the need for daily water consumption of more than 2 liters)
Evaluate the willingness to change behavior after paragraph **b**.
0 – completely not ready
1 – partially ready
2 – completely ready
Help set a goal
If a patient is ready to change behavior, identify the goals together with the patient and proceed to point 4.
If a patient is not ready to change behavior, do not insist on setting a goal.
Ask: “What would change in your life if there was a relapse of stone formation?”
Support the steps in the right direction and repeat your advice, offering to help when needed (**do not go** to point 4 yet).

4. Help

Discuss ways to achieve chosen goal and help to make an action plan for a patient

for example, if it is difficult for a patient to form a diet, discuss how he set up a menu or how he can organize a large consumption of water daily (to carry a bottle of water, put it in a prominent place, set reminders on a smartphone, etc.)

Ask about possible obstacles, and express your willingness to help (if necessary, schedule an appointment, give a referral to another specialist, for example, a nutritionist, etc.).

5. Monitor

Evaluate the changes of behavior at the next appointment

Encourage patient’s success and/or offer help in case of failure

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Appendix 1

Information card

№ _____
Date of survey _____
Name_____

1. Sex
   a). M
   b). F
2. Age _____, date of birth _____
3. Education:
   a). lower-secondary education
   b). secondary education
   c). secondary special education
   d). unfinished higher education
   e). higher degree
4. Marital status:
   a). single
   b). civil marriage
   c). married
   d). divorced
   e). widow
5. Family:
   a). lives alone
   b). lives in the family of parents or other relatives
   c). lives in his own family
6. Children
   a). yes
   b). no
7. Degree of social activity:
   a). actively involved in the life of the family, society
   b). participates in the life of the family, society
   c). not involved in the life of the family, society
8. Attitude toward surgery:
   a). I understand its necessity and do not feel anxiety
   b). I understand its necessity, but I feel quite strong anxiety
   c). I doubt the need
9. Awareness of urolithiasis:
   a). a clear picture
   b). a general picture
   c). not informed
10. Awareness of the upcoming surgery, its possible consequences:
    a). a clear picture
    b). a general picture
    c). not informed
11. Attitude toward therapy:
    a). I completely agree with the doctor's recommendations
    b). I partly agree with the doctor's recommendations
    c). I disagree with the doctor's recommendations
12. Prognosis of the disease:
    a). clear

b). unclear

13. Limitations related to the existing disease:
    a). a large number of restrictions (disability, strict diet, medication, restriction of physical and emotional stress, etc.)
    b). moderate (temporary disability, diet, medication, etc.)
    c). minimum number of restrictions
14. Relationship with the attending physician:
    a). friendly, trusting
    b). neutral
    c). alienated
    d). conflicted
15. Relationships with close social environment:
    a). friendly, trusting
    b). neutral
    c). alienated
    d). conflicted
16. Awareness of the closest social environment about the disease:
    a). a clear picture
    b). a general picture
    c). not informed
17. Availability of support from the immediate social environment:
    a). yes
    b). no
18. Place of living:
    a). city
    b). suburb
    c). rural area
19. Duration of urolithiasis
    a). < 1 year
    b). 1-3 years
    c). 3-6 years
    d). > 6 years
20. Frequency of hospitalizations due to urolithiasis (in the last year)
    a). no hospitalizations
    b). 1-2 hospitalizations
    c). 3-5 hospitalizations
    d). more than 5 hospitalizations
21. Height (m), weight (kg) _____
22. Coexisting disease_____
23. Comments _____

Appendix 2

Author's questionnaire for studying the assessment by doctors of the degree of adherence to the therapy of patients

1. Do you know the composition of your stone?
   a). yes
   b). no
   c). it was destroyed, it is impossible to conduct an analysis
2. How much protein should patients with urolithiasis consume?
   a). 20-50 g
   b). 60-80 g
   c). 90-120 g
3. How much salt should patients with urolithiasis consume?
   a). 3-5 g
   b). 5-7 g
   c). 7-9 g
4. How much urine should be excreted per day in patients with urolithiasis?
   a). <1000 ml
   b). 1000-1500 ml
   c). 1500-2000 ml
5. What risks of non-compliance with the diet are you aware of?
   a). repeated stone formation
   b). worsening of general well-being
   c). occurrence of renal colic
   d). your own version_____
6. Do you consider it mandatory to conduct a stone analysis for patients with urolithiasis?
   a). I completely agree
   b). I rather agree
   c). I rather disagree
   d). disagree
7. Do you consider it mandatory to follow a low-protein diet for patients with urolithiasis?
   a). I completely agree
   b). I rather agree
   c). I rather disagree
   d). I disagree
8. Do you consider it mandatory to drink more than two liters of water for patients with urolithiasis?
   a). I completely agree
   b). I rather agree
   c). I rather disagree
   d). I disagree
9. Do you consider it mandatory to monitor the amount of urine excreted for patients with urolithiasis?
   a). I completely agree
   b). I rather agree
   c). I rather disagree
   d). I disagree
10. Have you performed the analysis of the stone?
    a). yes
    b). no
    c). It is impossible to execute, because it was destroyed

11. If you did not perform the analysis of the stone, then what prevented it?
    a). I forgot
    b). This is an expensive analysis for me
    c). I didn't know I needed to do this
    d). I couldn't find the time for this
    e). I think this is not necessary
12. Do you follow a low-protein diet?
    a). yes, completely
    b). yes, but partially
    c). I try to comply, but I don't always succeed
    d). No
    e). your own version_____
13. If you don't follow a low-protein diet, then what prevents it?
    a). the diet plan is too complicated, I don't understand it.
    b). it is financially expensive for me
    c). with my lifestyle, it is difficult to change the diet
    d). I start to comply, but later switch to my regular diet
    e). your own version_____
14. How many liters of water do you drink per day?
    a). about 3 liters
    b). about 2 liters
    c). about 1 liter
    d). I drink a lot of fluids, but I don't keep count
    e). I don't pay attention to how much liquid I drink
15. If you do not control the amount of fluid consumed, then what prevents it?
    a). I forget
    b). I don't know how to organize this
    c). my working day is structured so that I can't drink water often
    d). your own version_____
16. Do you control the amount of urine released per day?
    a). yes, I always control it
    b). I do, but not always
    c). rather not control
    d). I don't control it at all
17. If you do not control it, then what prevents it?
    a). it is inconvenient to do this every day
    b). I don't understand how this can be implemented
    c). it confuses me
    d). your own version_____
18. What would help you follow the doctor's recommendations regarding diet, drinking regime, etc.?
    a). clear instructions from the doctor
    b). availability of a brochure, scientifically based
    c). the app in the smartphone
    d). Patient's School
    e). control by relatives
    f). Advice from other patients
    g). your own version_____
19. Do you receive the necessary information about the disease from the doctor at discharge?
    a). yes
    b). no

20. Is the information you receive about the disease sufficient for you at discharge?
    a). yes
    b). no
21. Is the information you receive about the disease enough for you to change your diet, drinking regime?
    a). yes
    b). yes, but I have extra questions
    c). no
22. What sources do you use to get information about the disease? (Several options can be selected)
    a). doctor's consultation
    b). Patient's School
    c). various Internet sites (forums, articles, etc.)
    d). your own version _____
23. On what issues do you need additional expert advice?
    a). the nature of the disease
    b). Carrying out the operation
    c). prognosis
    d). diet
    e). drinking regime
    f). yes, for questions_____
    g). I have no questions
24. In what form would it be most convenient for you to receive information about the disease?
    a). conversation with a doctor
    b). visiting a Patient's school
    c). receive an information brochure at discharge
    d). your own version_____

Appendix 3

Author's questionnaire for studying the assessment by doctors of the degree of adherence to the patient's therapy

1. The patient keeps the low-protein diet
   a). yes
   b). partially
   c). no
2. The patient keeps the drinking regime
   a). yes
   b). partially
   c). no
3. The patient completed a full course of prescribed antibiotics after surgery
   a). yes
   b). no
   c). not required
4. The patient controls the amount of salt intake
   a). yes
   b). partially
   c). no
5. The patient performed a chemical analysis of the stone
   a). yes
   b). no
   c). a stone was destroyed
6. The dynamics of the condition during the current hospitalization
   a). Significant improvement
   b). Average improvement
   c). Has not changed
   d). Some deterioration
   e). Significant deterioration
7. How much is the patient aware of the symptoms, state of the disease, prognosis:
   a). Not informed
   b). Has a general idea
   c). Has a clear idea
8. Psychological reaction toward disease:
   a). Ignoring, underestimation (nosophobic tendencies)
   b). Adequate response
   c). Fixation on diseases (nosophilic tendencies)
9. Understanding the mechanisms of the real disease:
   a). Absent
   b). Partial
   c). Full
10. From your point of view, to what extent has the patient assimilated the information provided to him about the methods of therapy?
    a). Fully assimilated
    b). Mostly assimilated
    c). Partially assimilated
    d). Did not assimilated
11. The patient's attitude to the treatment
    a). Positive
    b). Neutral
    c). Negative

12. Expert medical assessment of treatment adherence
    a). High level of adherence to therapy
    b). Average level of adherence to therapy
    c). Low level of adherence to therapy