Psychiatr. Pol. 2014; 48(5): 961–974
PL ISSN 0033-2674
www.psychiatriapolska.pl

Temporal perspective and other psychological factors making it difficult to adapt to requirements of treatment in chronic dialysis patients

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Summary

Aim. The study analyzed the relationship between temporal perspective, selected personal resources, and unhealthy behavior, manifesting in problems with adherence to fluid intake restrictions, in chronic hemodialyzis patients. The authors tried to answer the question whether there is temporal perspective and other psychological factors increasing the risk of non-adaptive behaviors.

Methods. Sixty-one patients, aged 23–81 years (M = 59; SD = 13,9) on chronic hemodialysis at the Department of Nephrology University Hospital were qualified to the study. The study group consisted of 30 patients with poorer fluid regimen adherence and 31 controls, who maintained fluid regimen. The patients were qualified on the bases of the average interdialysis weight gains measured nine times during three weeks. The following research tools were used: P. Zimbardo and J. Boyd ZTPI test; P.T. Costa and R.R. McCrae NEO-FFI Inventory; J. Strelau Temperament Inventory, R. Schwarzer GSES; M. F. Scheier; C. S. Carver and M. W. Bridges LOT-R; M. Watson and S. Greer CECS; BJ. Felton, TA. Revenson, GA. Hinrichsen AIS.

Results. Difficulties in adapting to the fluid intake restrictions are significantly associated with temporal orientation towards negative aspects of the present and the past. Non-adaptive health behaviors are typical for patients with temperamental lack of balance between agitation and inhibition processes and are characterized by high agreeableness and low conscientiousness. The association between excessive anger control and the risk of non-adherence medical recommendations.

Conclusions. Time perception and other personality factors form mechanisms regulating health behaviors in chronically treatment patients.

Key words: temporal perspective, temperamental-and-personality factors, nonadherence to fluid restrictions, dialysis

Introduction

Individual coping strategies with chronical disease are related to the character of the illness. In chronic renal failure one of the key determinants of the adaptation, described by many authors, is fluid regimen adherence [1-3]. The attempts have been made to identify predictors of the increased thirst and interdialysis weight gain [4-9]. The investigators also aimed at explaining the mechanisms of health behaviors in chronically ill patients. Sought the factors regulating individual human behavior in the process of adaptation, such as motivating factors [10, 11], engagement of personal resources [3, 12, 13, 14], and temporal perspective, being increasingly analyzed temperamental dimension [15-17].

Time has been long forgotten psychological category and treated rather as "stimulus". Today, temporal orientation is seen as a permanent existential dimension of human life. It influences psychological well-being and is ruled by the same system of perceiving reality by identifying time categories and is permanently assigning experiences to the specific time intervals. This process is basic for creating continuity of experiences, shaping identity, sense of reality, goals, etc. Thus, reality categorized in the past, present and future time zones are assessed subjectively. This subjective, often unconscious reference to time has been described as a dominant temporal perspective [18].

Temporal perspective is created on three levels: neurobiological, psychophysical and existential levels. Based on the levels of perceiving time an attempt can be made to explain the mechanisms of thirst controlling in the patients with renal failure.

The adjustment processes to hemodialysis in nephrological patients require adaptation on biochemical, vegetative, and psychological levels. Renal functions are replaced by dialysis, which regulates biochemical system, including fluid levels in the body, usually within 4 hours every second day. In the meantime human body has no way to get rid of the progressively growing amount of toxins produced during biochemical processes and of the increasing amounts of fluids. For chronic dialysis patients consuming small amounts of liquids is favorable (approximately 0,5 l daily), because the excess of water burden the vascular system and intensifies efforts to return to homeostasis [11, 19, 20]. The feeling of thirst in healthy people is triggered by cycles of biochemical processes taking place in human organism, the purpose of which is to maintain homeostasis. Paradoxically, a large increase in thirst in dialysis patients very often is evoked by wrongly read information from the body about fluid deficit and the compulsion to act in order to supplement it [21]. Patients' suffering is connected with excessive thirst and the need to adhere to the fluid intake regimen, as an important indication of adaptation to treatment [11].

Thirst control is stimulated on the neurobiological level of perceiving time, responsible for implementing more complex cognitive functions on the psychophysical and existential levels. In the self-regulation model of behavior, which may be, for example, to consume a drink or refrain from it, the time is represented indirectly. The rhythm of brain

work, determining the dynamics of consciousness, alertness, attention or persistence of memory [15, 16] creates the perception of stimuli, responsible for experiencing the thirst. It also affects the meaning of physiological signals and the intensity of suffering [11]. On the neurobiological level the time manifests itself through a chain of events which are relative to each other in the cause-and-effect relationships. It affects the dynamics of kidney excretion, fluctuation of the biochemical substance's concentration, slow rhythm integrating the brain work and other specific rhythms of neuronal networks [22-25]. They become integrated within the mechanisms determining the fluctuation of some physiological functions and also on the level of consciousness manifesting in the form of necessity [10, 11]. They determine the reception of information about fluid deficit.

On the next, psychophysical level of time estimation, automatic and instant assessment of the ability to cope with discomfort in a given moment is performed. It happens within a short time episodes of about 3 – 4 seconds, and is based on the selection of information, which assign stimuli to the figure-background relationships. It depends on the value of these stimuli, whether the information on fluid deficit /the thirst/ would force its way through the filter of consciousness.

The decision is made on the existential level of the temporality, which contributes to the hierarchy of values created during the motivational and volitional processes and helps to choose the alternative ways of action. At this stage, thirst either becomes the main motivating factor (figure) to act or is reduced, dismissed, rephrased (into the background) because of consequences in the future [22, 23, 25].

To accomplish the whole range of thirst control conditions in a process of adaptation to the hemodialysis treatment, the relationship between other components of personality and temperament should be analyzed besides the dimension of temporality. Personality in terms of Costa and McCrae can be understood as the core of identity integrity responsible for the relative consistency of individual response to changing situations at different times.

It derives out of the temperamental predispositions and biological basis on which environmental factors are superimposed. Personality traits shaped by personal experience, extraversion and neuroticism in particular, affect the way of perceiving the disease, adapting to changes in the treatment process, values and lifestyles [26-28]. Nervous system innate mechanisms affect the selection of specific behaviors under the influenced of personality. The specificity of the nervous system like stimulation intensity, neuronal inhibition, balance and mobility of nervous processes. It can be assumed that neurons resistance to very strong and long-term stimulation is created at the neurobiological level of time perception.

Nerve cells make the transition from the agitation state to defensive inhibition state, which, according to Pavlov, determines the temperamental type [29]. Based on the above, we may assume that individualized time perception, personality and temperamental characteristics of people determine the choice of certain behaviors and the way of functioning [17]. It can be also expected that these individualized features might play an important role in adherence to a therapeutic fluid intake regimen.

Research shows that factors more sensitive to situational changes, such as the acceptance of illness, optimism, self-efficacy and the expression of emotion influence

the choice of pro-or anti-health behavior. Their influence on the regulation of behavior was demonstrated by Juczynski, and the relationship with the process of adaptation to the requirements of dialysis treatment is investigated in this work [30].

The purpose of the study

The study analyzed the relationship between temporal perspective, selected personal resources, and unhealthy behavior, manifesting in problems with adherence to fluid intake restrictions in chronic hemodialysis patients. The authors concentrated on finding potential statistically significant differences between the selected groups in the temporal perspective, personality and temperamental factors, and other parameters of psychological functioning. They tried to answer the question whether there is a temporal perspective and other psychological indicators which increases the risk of non-adherence to non fluid regimen and upset adaptation to treatment.

Material and methods

Sixty-one patients, aged 23–81 years (M=59; SD=13,9) on chronic hemodialysis at the Department of Nephrology of the Jagiellonian University Medical College were qualified to the study. The patients were divided to the study and control groups based on the average interdialysis weight gains measured nine times in 3 weeks periods. Of these, thirty patients with poorer fluid regimen adherence were qualified to the study group, and the remaining thirty-one, who maintained fluid regimen were in the control group. Both groups of patients were adjusted for age and treatment duration.

The study was conducted by psychologist, who informed the patients about the aim of the study and helped with the interpretation of the instructions or explained any doubts. The following research tools were used:

1. F.G. Zimbardo and J. Boyd ZTPI test, adapt. M. Mażewski and B. Kozak, to investigate the subjective way of perceiving time. The test investigates the ways of choosing the alternative forms of behavior, allows predicting adaptation to changes, and investigates attitudes to oneself and to other people and tendency to using the gratifications. The respondent has to answer choosing the most appropriate of the five available options for level of agreement to score the orientation towards past-positive, past-negative, present-hedonistic, present-fatalistic and future perspectives. Psychometric test values meet the criteria of the investigations. Reliability was estimated by the Cronbach's alpha coefficient, and was 0.65 for past-positive perspectives, 0, and 81 for past-negative, 0, 78 for present-hedonistic, 0, 73 for present-fatalistic, and 0, 74 for future. Five factors have been found explaining over 35% variations [31].
2. P.T. Costa, R.R. McCrae NEO-FFI Inventory, adapted by: B. Zawadzki, J. Strelau, P. Szczepanik, M. Śliwińska, to diagnose personal characteristics acc. to the Big Five Questionnaire. The results allow comprehensive description of personality and cautious forecasting adaptation to the environment. Internal consistency and accuracy of the test was satisfying. The estimates based on the analysis of relation-

ship between inheritance of the measured features and their correlation with other dimensions of personality and temperament [32].

3. J. Strelau Temperament Inventory PTS used to measure temperament, recognized acc. to the Pavlovian theory, as being functional in the process of adaptation. Especially, it allows forecasting coping with challenging situations. Internal consistency, stability and accuracy were satisfying. The estimates based on the analysis of PTS scores, and the results of other temperamental and personality tests, studies of genetic conditioning of parameters measured by the PTS, and factor analyses [29].
4. M. F. Scheier; C. S. Carver and M. W. Bridges LOT-R, adapt.: R. Poprawa and Z. Juczyński. Test used to measure dispositional optimism. It contains generalized expectations of positive events, the tendency to experience positive or negative feelings, satisfaction or dissatisfaction with life, and ability to deal with daily stressors. Internal consistency, stability, and accuracy of obtained results were satisfying [30].
5. R. Schwarzer, M. Jerusalem, Z. Juczyński GSES. Scale to estimate self-efficiency that is the strength of the general beliefs about the effectiveness of dealing with difficult situations and obstacles. Internal consistency, stability, and accuracy of obtained results were satisfying [30].
6. M. Watson and S. Greer CECS, adapt.: Z. Juczyński used to evaluate the express emotions: anger, depression and fear. It reflects subjective belief as to the ability to control in the situation referred to the negative emotions experiencing. The higher a scale result is the greater suppression (inhibition) of negative emotions is achieved. Reliability of the scale was estimated by the internal consistency and absolute stability [30].
7. B. J. Felton, T. A. Revenson, G. A. Hinrichsen AIScale; adapt.: Z. Juczyński used to measure disease acceptance. It contains eight statements describing the negative consequences of undesirable health. Internal stability of the scale, stability, and accuracy were satisfying [30].

The statistical analysis was performed using the Statistica Stats Soft Version 10, Stats Direct, statistical software, Version 2,7.2 (2008.09.06), and the statistical significance level was established at $p < 0,05$. The authors used correlation analysis, parametric significance, t-Student's test and logistic regression.

Results

Comparison of two study groups in terms of temporal perspective showed that temporal orientation of the patients with poorer adherence to fluid intake restrictions are focused on the past-negative (p=0,024) and present-fatalistic (p=0,001) perspectives.

Table 1. **Statistical characteristic of temporal perspective in groups of chronically dialyzed patients: research group (gr1) and control group (gr2)**

Research	Group	n	average	SD	min	ME	max	p
Past Negative	1	30	3,1	0,67	1,9	3,2	4,3	p=0,024
	2	31	2,7	0,5	1,6	2,8	4,2	
	total	61	2,9	0,62	1,6	2,8	4,3	

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Past Positive	1	30	3,7	0,5	2,2	3,8	4,6	NS
	2	31	3,7	0,7	2,4	3,7	5,0	
	total	61	3,7	0,6	2,2	3,8	5,0	
Present Fatalistic	1	30	3,3	0,5	2,3	3,4	4,1	p=0,001
	2	31	2,8	0,6	1,7	2,8	4,2	
	total	61	3,0	0,6	1,7	3,0	4,2	
Present Hedonism	1	30	3,0	0,52	2,0	2,9	3,9	NS
	2	31	2,9	0,39	1,9	3,0	3,9	
	total	61	2,9	0,46	1,9	2,9	3,9	
Future	1	30	3,7	0,35	2,8	3,8	4,7	NS
	2	31	3,8	0,42	2,5	3,9	4,5	
	total	61	3,8	0,39	2,5	3,8	4,7	

The differences between groups were statistically significant.

The logistic regression model used to establish the significance of the above orientation for the incidence of non-adaptive health behavior. Model 1 (general model's matching p = 0,009, chi-square = 15,31) demonstrated almost 5-fold increased risk of failing to adhere to fluid intake restrictions among the patients focused on the present fatalism (OR=4,9).

The risk remains at the same level with 95% confidence interval, if analyzed for other groups in the population. Nearly 3-fold increased risk (OR=2,8) was observed in the patients strongly focused on the past negative perspective, and this result cannot be referred to other groups in the population. The results of the comparative analysis of both study groups for temperamental and personal factors are summarized in table 2.

Table 2. **Basic statistics: Characteristic of 2 groups: research group (gr1) and control group (gr2) in range of temperamental and personal features.**

	Research	Group	n	average	SD	min	ME	max	p
TEMPERAMENT	Excitation	1	30	43	8,11	30	42	60	NS
		2	31	46	5,54	37	45	60	
	Inhibition	1	30	54	5,67	40	53	66	NS
		2	31	51	6,28	42	49	70	
	Mobility	1	30	40	6,24	25	40	53	NS
		2	31	42	5,93	28	43	56	
	Balance	1	30	19	8,15	-34	-9	4	p=0,042
		2	31	20	7,05	-22	-6	11	

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PERSONALITY	Agreeableness Conscientiousness	1	30	33,5	4,7	23	33,5	42	p=0,050
		2	31	31,2	4,2	21	31	39	
	Openness Extraversion	1	30	21,9	7,7	0	24	34	p=0,041
		2	31	25,7	6,6	8	26	36	
	Neuroticism Agreeableness	1	30	21,3	6,6	8	22	37	NS
		2	31	22,1	5,1	12	22	34	
	Conscientiousness Openness	1	30	22,0	6,3	5	23	32	p=0,016
		2	31	25,9	6,2	13	28	35	
	Extraversion	1	30	20,4	7,4	9	21	38	NS
		2	31	19,0	8,0	2	19	40	

Table 3. **Basic statistics: Characteristic of 2 groups: research group (gr1) and control group (gr2) in range of disease acceptation, discretionary optimism, sense of personal effectiveness and emotional expression (anger, depression, and fear).**

Research	Group	n	average	SD	min	ME	max	p
Disease Acceptance	1	30	23,6	7,8	8	23,5	38	NS
	2	31	24,6	7,7	12	24	40	
Discretionary optimism	1	30	13,0	4,6	4	13	21	p=0,024
	2	31	15,3	3,0	10	15	21	
Sense of personal effectiveness	1	30	27,5	4,3	20	28	40	NS
	2	31	28,4	4,4	19	28	37	
Emotional control	1	30	57,2	11,4	37	57	84	NS
	2	31	54,4	6,6	38	56	65	
Anger control	1	30	18,8	4,3	11	19	28	p=0,042
	2	31	16,6	3,8	8	17	25	
Depression control	1	30	19,5	4,3	12	19,5	28	NS
	2	31	17,8	2,9	10	18	23	
Fear control	1	30	18,9	4,8	11	19	28	NS
	2	31	20,0	2,9	15	20	26	

Model 1. **Assessment of probability of non-compliance with the fluid intake regimen among the patients with specific temporal orientation (statistical regression). General model's matching p = 0,009, chi-square = 15,307**

Dimension	Regression ratio β	Significance level α	OR Confidence level	Confidence interval
Past Negative	1,024	α < 0,086	2,783	0,864 – 8,969

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Past Positive	0,363	α < 0,533	1,438	0,459 – 4,506
Present Fatalistic	1,585	α < 0,007	4,879	1,527 – 15,585
Present Hedonistic	-0,358	α < 0,622	0,699	0,169 – 2,903
Future	0,079	α < 0,928	1,082	0,196 – 5,964

Model 2. **Assessment of probability of non-compliance with the fluid intake regimen among the patients with specific temperamental features (statistical regression). General model's matching p = 0,021, chi-square = 9,672**

Dimension		Regression ratio β	Significance level α	OR Confidence level	Confidence interval
Temperament	Excitation	-0,009	α < 0,767	0,991	0,933 – 1,052
	Inhibition	0,061	α < 0,083	1,063	0,992 – 1,139
	Mobility	-0,074	α < 0,176	0,928	0,833 – 1,034
	Balance	-0,070	α < 0,014	0,932	0,881 – 0,986

Model 3. **Assessment of probability of non-compliance with the fluid intake regimen among the patients with specific personality traits (statistical regression). General model's matching p = 0,013, chi-square =14,489**

Dimension		Regression ratio β	Significance level α	OR Confidence level	Confidence interval
Personality	Agreeableness	0,201	α < 0,021	1,22	1,031 – 1,45
	Conscientiousness	-0,111	α < 0,064	0,89	0,796 – 1,006
	Openness	0,074	α < 0,231	1,08	0,954 – 1,214
	Extraversion	-0,068	α < 0,230	0,93	0,836 – 1,044
	Neuroticism	-0,002	< 0,958	0,99	0,91 – 1,094

Model 4. **Assessment of probability of non-compliance with the fluid intake regimen among the patients characterized by other specific parameters of psychological functioning. General model's matching p = 0,006, chi-square = 18,215**

Dimension		Regression ratio β	Significance level α	OR Confidence level	Confidence interval
Life Orientation		-0,068	α < 0,442	0,934	0,786 – 1,11
Self-Efficacy		-0,036	α < 0,657	0,964	0,822 – 1,132
Emotional Control	Total	0,033	α < 0,260	1,033	0,976 – 1,093
	Anger	0,194	< 0,026	1,214	1,023 – 1,44
	Depression	0,22	α < 0,071	1,246	0,981 – 1,581
	Fear	-0,381	α < 0,004	0,683	0,525 – 0,888
Acceptation Illness		-0,003	α < 0,957	0,997	0,905 – 1,098

Statistically significant differences were found in the range of temperamental feature reflecting nervous processes balance. It was observed that the patients, who failed to adhere to the fluid intake restrictions, are characterized by the predominance of instability processes. Also in the range of personal traits statistically significant differences were found. Patients from the study group are more agreeable, less extrovert and conscientious.

To establish the significance of the above temperamental and personal traits for the incidence of non-adaptive health behavior we used logistic regression Model 2 (general model's matching p = 0,02, chi-square = 9,672)

The results showed increased risk of failing to adhere to the fluid intake restrictions in the patients, whose temperament is characterized by increased suppression (OR=1,06; p=0,08). On the other hand the probability of failing to adhere to fluid intake restrictions is lower in the patients with more balanced temperament (OR=0,93, p=0,01).

Personality test NEO-FII used in Model 3 (general model's matching p = 0,013, chi-square =14,489) confirmed above findings.

The results of the logistic regression analysis indicate the increased risk of failing to adhere to the fluid intake restrictions in the patients who are more agreeable (OR=1,22; p=0,02) and less conscientious (OR=0,89, p=0,06). Other personality factors differentiating study groups do not increase the probability of anti-health behaviors.

Table 3 is summarizing the comparison of both group for disease acceptation, discretionary optimism, sense of personal effectiveness and emotional expression (anger, depression, and fear).

Statistically significant differences were found for two examined parameters of psychological functioning. The group of patients failing to adhere to the fluid intake restrictions is far less optimistic about the world (p=0,02) and their control of the emotion of anger is stronger. No statistical differences were found for other parameters.

Logistic regression analysis of the incidence of non-adaptive behaviors in Model 4 (general model's matching p = 0,006, chi-square = 18,215) revealed increased risk of failing to adhere to the fluid intake restrictions among patients, having problems with controlling emotions.

Lower expression of anger (OR=1,2; p=0,02), symptoms of depression (OR=1,24, p=007), and lack of control of fear symptoms (OR=0,68, p=0,004) increase the probability of the non-adaptative behaviors. Other psychological functioning parameters do not increase the probability of avoiding prescribed medical regimens.

Discussion

Personal temporal horizon is one of the constant factors of human mental functioning, through which we perform mental organization of our life: flashback of the past and designing for the future [22, 23,25]. Co-creating value hierarchies based on motivational and volitional processes help with selecting alternative ways of action.

Not always our action is determined by only one, dominant temporal perspective. Łukaszewski believes that there can be more preferred time dimensions in human life

[23]. There are also, except for the people focused on a single area, those who consider the importance of two or three dimensions of time. This could be called mixed orientation or even orientation towards whole temporal horizon. The latter one allows keeping one's existence in equilibrium by moving harmoniously through various levels of functioning in the changing world: adaptation, innovation and status quo [34].

Based on the results of the studies conducted so far we may assume that temporal perspective plays a significant role in undertaking prohealth behaviors as an important resource or deficit. [35]. Our results confirmed this observation, and we found that temporal orientation in a group of analyzed nephrologic patients with poorer adherence to fluid intake restrictions is different from the group adapted to dialysis. Temporal orientation in the analyzed groups of patients is towards past-negative and present-fatalistic perspectives. The patients with poorer adherence to the restrictions are more concentrated on unpleasant and unavoidable aspects of present and negative memories. Such temporal orientation is certainly most difficult, when it is necessary to undertake prohealth behaviors. As it results from the conducted psychotherapeutic programs it is possible to cope with thirst and its consequences [20]. There are reports on measurable reduced interdialytic weight gains, however, similar analysis conducted in other study demonstrated that adherence to fluid intake restrictions is not permanent and without control the habit of drinking more than a safe standard comes back. In an attempt to explain this phenomenon, C. Nosal C. and B. Bajcar found that fatalistic focusing on present may be connected with the lack of persistence, it's devaluation in action or lack of reflection on the consequences [23].

Causes of unhealthy behaviors in nephrologic patients could be also found in the problems with evaluating, psychological alienation as a result of strong sense of missed appreciated values [36]. The studies conducted by Zimbardo and Boyd demonstrated the tendency to risky health behavior and social conflicts in people with the orientation towards present-negative and past-negative perspectives [15]. To sum up, temporal orientation in the analyzed group of dialyzed patients plays a significant negative role in a difficult process of adaptation to stringent medical regimen. The results of the analysis using logistic regression model showed the relationship between, negative orientation towards present and past perspectives and the probability of non-adaptative behaviors. Should it be emphasized, the risk of non-adaptive behaviors is 5-fold higher in the patients with fatalistic orientation towards present perspective. Moreover, this result can be transferred to other population groups - with 95% confidence interval, the risk remains at the same level.

Another deficit in personal resources is one of temperamental dimensions– balance of nervous system, definitely weaker in non-adapted patients. It manifests in superiority of inhibitory to excitatory processes. It means, that the capacity of nervous system in the patients having problems with adapting to medical regimens is small. It is the so called type „with limited life range". According to I. Pavlovian theory and J. Strelau, people with small capacity of nervous system poorly tolerate stimuli of even average strength and quickly get into state of protective inhibition [29]. Situations demanding to refrain from performing specific actions and conflict situations requiring choice have disorganizing influence on the behavior. Pavlov emphasized that small capacity

of nervous system causes the value of remaining features lose their importance [37]. Model-based conceptualization of the problem in these studies indicates an increased risk of non-compliance to the fluid intake regimen in people, whose temperament is characterized by increased inhibition.

Measurement of personal features showed significant differences between examined groups. The group of patients with adaptive problems is characterized by greater agreeableness, lower conscientiousness and weaker extraversion. This corresponds with the characteristics of the group temporal orientation and temperamental conditioning. According to this, patients show a reserve in social relations and an abstaining in terms of positive emotions. They are less critical than patients from control group, good-hearted; they are characterized by some social naiveté and tendency to „forgive and forget", conviction that the others have honest intensions. Their degree of organization, perseverance and motivation in target-oriented actions are average. In terms of conscientious trait results correspond with the studies of Christensen, conducted in a group of 72 dialysis patients [13]. He searched for associations between personality traits measured by NEO-FFI test and a treatment regimen adherence. The factor measuring perseverance and motivation in action is significantly associated with adherence to pro-health behaviors. In her investigations, Kozlowska et al. [13] has also underlined the role of compromise and conscientiousness in the adaptation to the disease.

Among other examined dimensions of psychological functioning the differences were found in life orientation and ways of expressing emotions. However, only anger control is important for the adaptation to dialysis. Anger appears in situations when it is necessary to cope with unpredictable circumstances, limiting the ability to act. It is connected with the violation of the self-esteem and the threat to the important values. In case of incurable disease, the need for adjustment of the whole life because of renal replacement therapy requirements, patients are experiencing anger. The way of expressing emotions stabilizes in the process of adapting. Weak emotional expression is considered as relatively constant feature observed in people who rigidly adhere to social norms, as they have been taught, that expressing negative emotions is improper. Watson, however, connects the tendency to excessive anger control with an attitude of helplessness and fatalistic vision of the future, and our findings confirm this observation [30].

Conclusions

The study has shown the associations between psychological factors and unhealthy behaviors in the chronic dialysis patients manifested in problems with adherence to fluid intake regimens.

Comparison between groups of people controlling the thirst and people, who are dangerously gaining weight in time between dialysis showed, that a group non-adaptive to the fluid intake regimen is characterized by:

- temporal perspective based on a domination of negative perception of experience from the past and fatalistic treatment of present reality. In patients it manifests

in problems with evaluating, perseverance, lack of reflection on the consequences of their actions.
- constitutional poor nervous system performance connected with low reflectiveness, orderliness degree and average motivation in target orientation.
- tendency to excessive anger control, which is connected with attitude of helplessness and fatalistic vision of future.

Logistic regression model analysis revealed, that temporal perspective based on domination of fatalistic vision of present is a factor strongly increasing the risk of non-adaptive behaviors

The deficits of constant personal factors prognoses poorly for traditional therapeutic techniques directed at coping with problems resulting from dialysis. They indicate the necessity of permanent using psychological forces, intensive care and different protective acts from medical staff and patient's family.

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