

ORIGINAL PAPER

## INDIVIDUAL PSYCHOLOGICAL AND GENDER PECULIARITIES OF PATIENTS WITH LIVER CIRRHOSIS

Kristina A. CHYMPOI<sup>1✉</sup>, Alla S. BORYSIUK<sup>2</sup>, Maryna P. TYMOFIEVA<sup>2</sup>, Olesia I. PAVLIUK<sup>2</sup>, Svitlana P. MELNYCHUK<sup>3</sup>, Tamara H. KOPCHUK<sup>3</sup>

<sup>1</sup> Department of Internal Medicine and Infectious Diseases, Higher State Educational Establishment of Ukraine „Bukovinian State Medical University“, Chernivtsi, Ukraine

<sup>2</sup> Department of Psychology and Philosophy, Higher State Educational Establishment of Ukraine „Bukovina State Medical University“, Chernivtsi, Ukraine

<sup>3</sup> Department of Pharmacology, Higher State Educational Establishment of Ukraine „Bukovinian State Medical University“, Chernivtsi, Ukraine

Received 24 Sept 2018, Accepted 02 Nov 2018

<https://doi.org/10.31688/ABMU.2019.54.1.16>

### ABSTRACT

**Introduction.** Liver cirrhosis (LC) is a chronic disease characterized by destruction of liver cells, changes in its lobular structure and vascular system, enlargement of connective tissue and irreversible dysfunction of the organ, with severe mental and psychological complications. Not only the treatment and prevention of complications, but also the psychological support of the patients with liver cirrhosis and their families are important.

**The objectives of the study.** To explore empirically the individual psychological features of patients with LC, as well as to identify the gender peculiarities of the personality of the patient with LC.

**Material and methods.** The study was conducted in the gastroenterology department of Chernivtsi Regional Clinical Hospital, Ukraine, from September 2017 to April 2018. The research involved 24 patients (9 women and 15 men). The average age of patients was 64 years. Methods as observation, conversation, R. Cattell's Multi-Factor Questionnaire were used to diagnose individual psychological peculiarities.

### RÉSUMÉ

**Caractéristiques individuelles psychologiques et de genre des patients avec cirrhose hépatique**

**Introduction.** La cirrhose du foie (CF) est une maladie chronique caractérisée par la destruction des cellules hépatiques, la modification de la structure lobaire et du système vasculaire, l'élargissement du tissu conjonctif et la rupture irréversible de l'organe, en raison de graves complications mentales et psychologiques. Dans le traitement des patients atteints de cirrhose du foie (CF) sont importants non seulement le traitement et la prévention des complications, mais aussi le soutien psychologique des patients et de leurs proches.

**Les objectifs de l'étude.** Étudier empiriquement les particularités psychologiques individuelles des patients atteints de CF, et révéler les caractéristiques sexo-spécifiques de la personnalité du patient avec CF.

**Méthodes.** L'étude a été faite dans le service de gastro-entérologie de l'hôpital clinique régional de

✉ Address for correspondence:

Kristina A. CHYMPOI  
Department of Internal Medicine and Infectious Diseases, Bukovinian State Medical University, Chernivtsi, Ukraine  
Address: Heroiv Maidanu Str. 77 B, Flat 14, Chernivtsi, Ukraine, 58000  
e-mail: chimpoik@gmail.com

**Results.** As indicated by the results of the study of the communicative qualities of patients with LC, high levels were detected in such factors as Dominance (54%) and Vigilance (83%). As for the group of intellectual qualities, the average level prevails. Concerning the group of emotional qualities, the average level of internal stress, emotional sensitivity, anxiety, self-control, courage and organization in social contacts prevails among the patients with LC disease. According to the results of the study of the regulatory qualities of patients with LC, the vast majority of respondents demonstrated a high level of self-discipline (79%).

**Conclusions.** A comparative analysis of gender peculiarities has shown that women with LC tend to demonstrate sociability, internal stress; they are more self-disciplined than men, whereas men with LC are more open to the perception of new things. It is worth paying attention to the fact that both men and women of this sample were found to have a low level of emotional sensitivity.

**Keywords:** individual psychological peculiarities, liver cirrhosis, psychological support, gender peculiarities.

**Abbreviations:** LC – liver cirrhosis, ALAT – alanine aminotransferase, ASAT – aspartate aminotransferase), GGT – gammaglutamyltransferase, APh– alkaline phosphatase.

## INTRODUCTION

Liver cirrhosis (LC) is a chronic disease characterized by destruction of liver cells, changes in its lobular structure and vascular system, enlargement of connective tissue and irreversible dysfunction of the organ, leading to severe mental and psychological complications. Not only the treatment and the prevention of complications, but also the psychological support of the patients with liver cirrhosis and their families is important.

Currently, liver diseases are widespread throughout the world and have a high medical and social significance, stipulated by the peculiarities of the contingent of affected individuals, the difficulties of diagnosis, treatment, as well as by psychic and psychological complications<sup>1,3</sup>. Functioning of the liver influences the somatic vital activity of the organism, psychological functioning and the sphere of individual and personal relationships<sup>3,4</sup>.

Tchernivtsi de septembre 2017 à avril 2018. L'échantillon comprenait 24 patients (9 femmes et 15 hommes). L'âge moyen des patients est de 64 ans. Pour le diagnostic des caractéristiques psychologiques individuelles, on a utilisé des méthodes telles que l'observation, la conversation, le questionnaire multi-facteurs R. Kettella.

**Résultats.** Comme indiquent les résultats de l'étude des qualités communicatives des patients atteints de CF, des niveaux élevés ont été détectés par des facteurs tels que la dominance (54%) et la suspicion (83%). En ce qui concerne le groupe des qualités intellectuelles, le niveau moyen prédomine parmi les personnes étudiées. En ce qui concerne le groupe des qualités émotionnelles, le niveau moyen de stress intérieur, la sensibilité émotionnelle, l'anxiété, la maîtrise de soi, le courage et l'organisation dans les contacts sociaux prédominent chez les patients atteints de la maladie de CF. Selon les résultats de l'étude des qualités réglementaires des patients atteints de CF, la grande majorité des répondants ont montré un degré élevé d'autodiscipline (79%).

**Conclusions.** Une analyse comparative des caractéristiques sexo-spécifiques a montré que chez les femmes atteintes de CF domine le stress communicatif ; elles sont plus enclines que les hommes à l'autodiscipline. Par contre, les hommes avec CF sont plus ouverts à la perception du nouveau. Il vaut noter que les hommes et les femmes de cet échantillon ont montré un faible niveau de sensibilité émotionnelle.

**Mots-clés:** caractéristiques psychologiques individuelles, cirrhose du foie, soutien psychologique, particularités de genre.

Understanding the problem of changing mental and psychological health in the early stages of liver damage allows to develop a new therapeutic approach of patients who require long-term therapy of the cognitive-perceptual sphere, emotional and regulatory etc<sup>1,2</sup>.

Cognitive impairments occur both as a result of direct action of hepatotropic viruses and metabolic impairment caused by the changes in the functioning of the affected liver<sup>3,4</sup>. Therefore, changes in cognitive functions appear, that lead to social and personal maladaptation<sup>5</sup>. The modern biopsychosocial approach postulates that the objective of treatment is not only the elimination of the clinical symptoms of the disease, but also the return of the patient to his social functions, in particular, family, professional, interpersonal<sup>6</sup>.

Early studies reported a violation of both physical and mental aspects of the quality of life in patients with liver cirrhosis<sup>7,8</sup>. However, there are very little

data on the psychological effects of the disease and its relation to the function of the liver. Investigating the psychological state of patients with liver cirrhosis in relation to the severity of liver dysfunction, Italian researchers concluded that patients with liver cirrhosis had signs of psychological stress and depression that are estimated by the Beck Depression Inventory and the Psychological General Well-Being Index for the severity of the liver disease<sup>9</sup>. Accordingly, a small number of patients requires treatment of their illness<sup>9</sup>.

Liver disease is a serious and growing problem of modern society, requiring urgent attention from the psychological science<sup>10,11</sup>. English scientists came to conclusion that psychology of health has a huge potential role in prevention, understanding of etiology, evaluation of treatment outcomes, improvement in immunosuppressants use and assessment of psychological assistance for patients with liver disease<sup>12</sup>.

Cirrhosis of the liver significantly influences the individuals' quality of life. Health-related quality of life (HRQOL) is the perception of the individual about their physical, cognitive, emotional and social functioning<sup>13</sup>.

Studies reveal that physical and psychological factors influence the quality of life of patients with liver cirrhosis, which may be problematic and exhaustive for their well-being<sup>14-16</sup>.

In a number of studies, scientists have tried to correlate the causes of liver pathologies with psychological problems in patients. In early studies, mood and anxiety disorder intensity rates were higher in patients with alcohol cirrhosis compared to cirrhosis due to other causes. In particular, Ewusi-Mensah et al found that two thirds of patients with alcoholic liver disease were diagnosed with mental disorders, compared with one third of the control group of patients with non-alcoholic liver disease<sup>14</sup>.

The most common problems encountered in patients with LC were affective disorders, neuroses and signs of antisocial personality, the latter being common among alcoholic men than non-alcoholics<sup>15</sup>.

Another study has revealed that three quarters of patients with liver cirrhosis suffer from psychiatric disorders, compared with only a quarter of patients with non-alcoholic liver diseases<sup>16</sup>.

### THE OBJECTIVES OF THE STUDY

The study aimed at empirical research and assessment of individual psychological peculiarities of patients with LC and comparative analysis of gender peculiarities of intellectual, emotional-volitional and communicative processes in patients with LC.

### MATERIAL AND METHODS

The study was conducted in the gastroenterology department of Chernivtsi Regional Clinical Hospital, Ukraine, from September 2017 to April 2018. The sample involved 24 patients. The average age of patients was 64 years.

Diagnosis of liver cirrhosis was verified on the basis of complaints, anamnestic data, objective examination, laboratory tests (analysis of blood and urine, biochemical blood tests – total bilirubin and its fractions, thymol tests, ionogram, proteinogram, coagulogram). The activity of blood enzymes was studied: alanine aminotransferase (ALAT), aspartate aminotransferase (ASAT), gammaglutamyltransferase (GGT), alkaline phosphatase (APh). Blood urea levels, creatinine, serum markers of hepatitis B and C viruses, and autoimmune hepatitis markers were determined. Imaging studies were performed (ultrasound of the abdominal cavity, elastography, esophagogastroduodenofibroscoy).

The degree of activity of LC was identified on the basis of clinical manifestations and biochemical indices– activity of ALAT, ASAT, thymol test, level of bilirubin in the blood.

The sample did not include patients with cirrhosis of viral etiology, Wilson-Konovalov disease, congenital  $\alpha$ 1-antitrypsin deficiency ( $\alpha$ 1-proteinase inhibitor), idiopathic (genetic) hemochromatosis, autoimmune hepatitis, primary biliary cirrhosis.

At admission to the department, the psychological state of the patients was described and experimental psychological methods of research were applied. Such methods as observation, conversation, R. Cattell's Multi-Factor Questionnaire were used to diagnose individual psychological peculiarities. This method is most frequently used in experimental studies of personality and it received a fairly high evaluation of diagnosis from practicing psychologists, since it allows to investigate the relatively independent 16 factors (scales, primary features) of a personality. Each factor forms several superficial traits, which are united around one main feature. R. Cattell's questionnaire contains both the assessment and the decision of the test, and the attitude to a certain phenomenon. In total, the questionnaire consists of 105 questions.

### RESULTS AND DISCUSSION

The factor that characterizes the communication skills of the person is sociability. According to the results, as shown in Fig. 1, the average level of sociability (54%) prevails among the respondents, while there

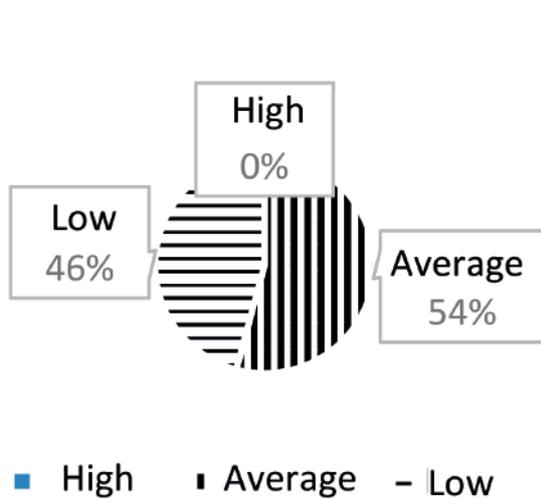


Fig. 1. Factor „A“ Sociability

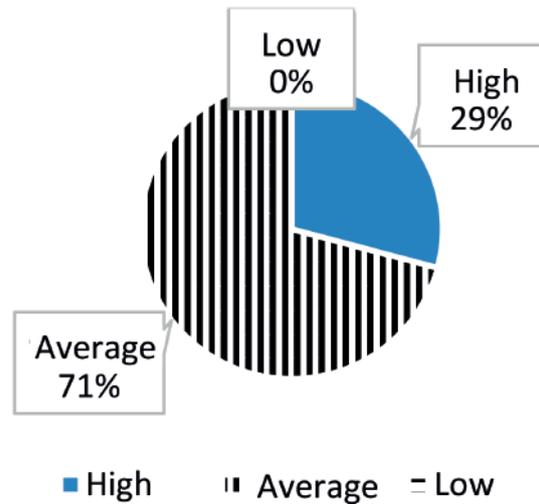


Fig. 2. Factor „H“ Courage

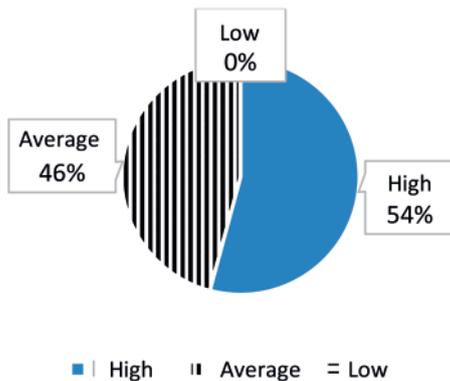


Fig. 3. Factor „E“ Dominance

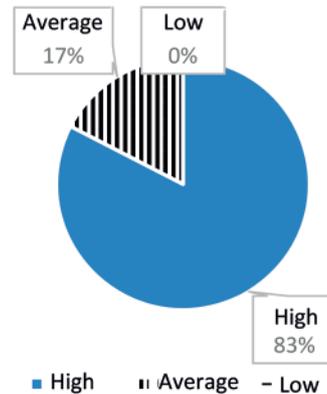


Fig. 4. Factor „L“ Vigilance

were no respondents with high level found, and 46% of the respondents demonstrated a low level.

The group of communication skills is also characterized by Factor „H“ Courage. High indices of the mentioned factor, indicating stress resistance, courage, determination, lack of attention to detail, propensity for active communication, leadership, were found in 29% of the subjects, the average indices prevail in 71%, and low rates were not found in the patients (Fig. 2).

Factor „E“ Dominance belongs to the above group. The desire for dominance, independence, self-reliance, ignoring social conventions and authorities, defending the rights to independence, demanding independence from others, the tendency to blame others in conflicts and other peculiar characteristics of the high level of this factor were found in 54% of respondents. The average level is characteristic for 46% of subjects, as indicated in Fig. 3, the low level was not detected.

Concerning Factor „L“ Vigilance, the following results were obtained: high range prevails (83%), low range was not found, and 17% of the diseased demonstrated average range (Fig. 4).

The vast majority of patients with LC who had high factor „L“ indices were inclined to trust nobody, to reveal suspicion, persistence, irritation, jealousy to the success of others, excessive caution, did not worry about others.

Only 13% of the patients showed a low level of „Q2“ factor Self-reliance, characterized by dependence, group-oriented behavior, orientation on the group opinion, need of support, affiliation and approval of the surrounding. A high level, characterized by independence, self-sufficiency, responsibility, the ability to make decisions on their own, and achieve their fulfillment, was found in 26% of respondents. The overwhelming majority of subjects, as indicated in Fig. 5, demonstrated the average level of this factor (61%).

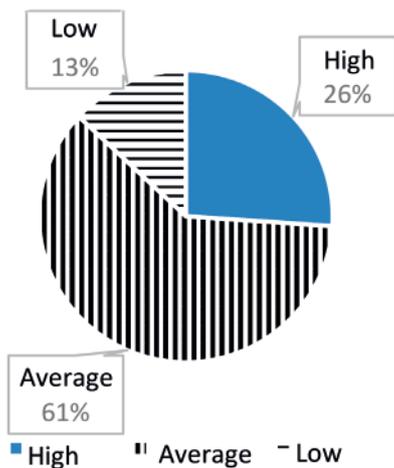


Fig. 5. Factor „Q2“ Self-reliance

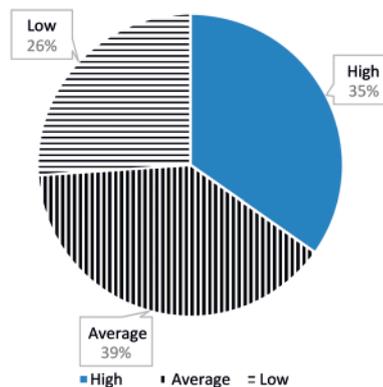


Fig. 6. Factor „B“ Intelligence

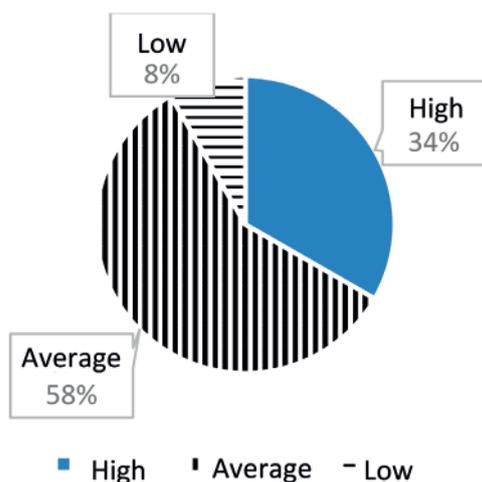


Fig.7. Factor „M“ Abstractedness

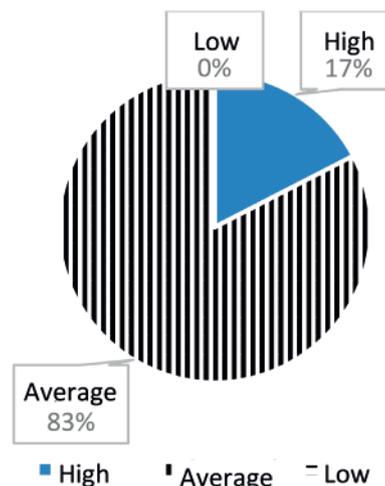


Fig. 8. Factor „N“ Privateness

Consequently, as indicated by the results of the study of the communication peculiarities of patients with LC, high levels were detected in factors such as Dominance and Vigilance. The groups of intellectual qualities are characterized by factors such as intelligence, abstractedness, diplomacy, and susceptibility to change.

According to the results of the study, as shown in Fig. 6, the subjects demonstrated the following levels of intelligence: 35% - high level, 39% - average and 26% - low one.

As to the factor of Abstractedness (Fig. 7), the subjects demonstrated an average level (58%). A high level was found in 34% of respondents, low - in 8% of patients. High ranges are characteristic for those with a rich imagination, dreamers, and introvert personalities. They are characterized by autism, eccentric, specific, oriented to their own desires. Because of self-directed interests, such people are often not perceived

by others. While low assessments are peculiar for mature, balanced individuals, sober-valuing circumstances and people. They meet the requirements of objective reality and generally accepted norms of conduct. However, in unexpected situations, they sometimes lack imagination and ingenuity.

High indices of the factor Privateness were revealed only in 17% of the subjects. Such personalities are characterized by artificiality, elegance; not subjected to emotional calls, keep politely, detached, somewhat ambitious; are skeptical of slogans and appeals. In 83% of the subjects, the average level of the aforementioned factor was found. Low level, as shown in Fig. 8, was not detected.

With regard to the factor „Q1“ Openness to Change, 50% of patients with LC are characterized by rigidity, conservatism, a tendency to exaggerate, moralization. All problems, in their opinion, are initiated by people who violate traditions and principles.

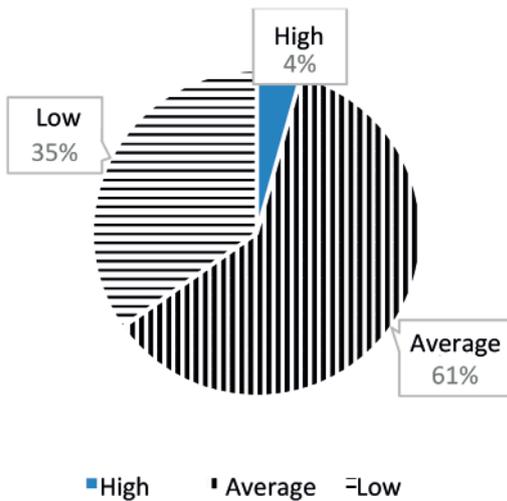


Fig. 9. Factor „Q1“ Openness to Change

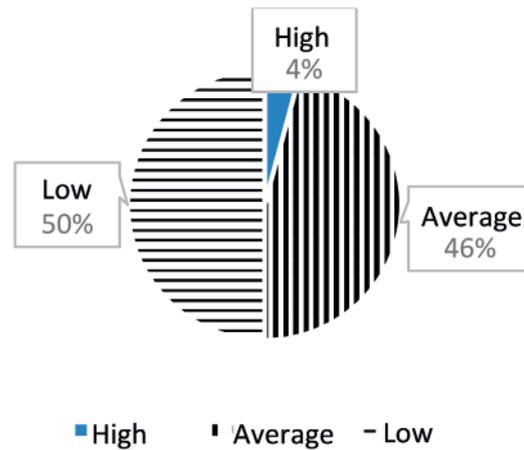


Fig. 10. Factor „C“ Emotional Stability

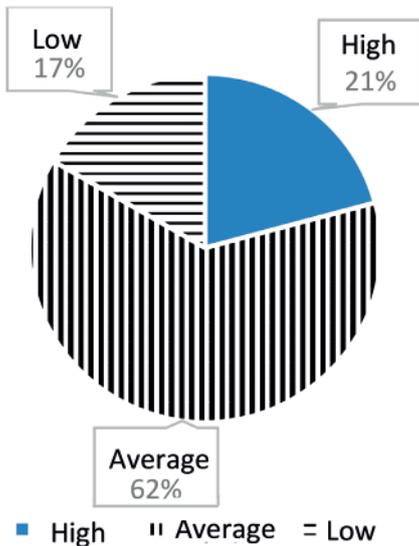


Fig. 11. Factor „F“ Liveliness

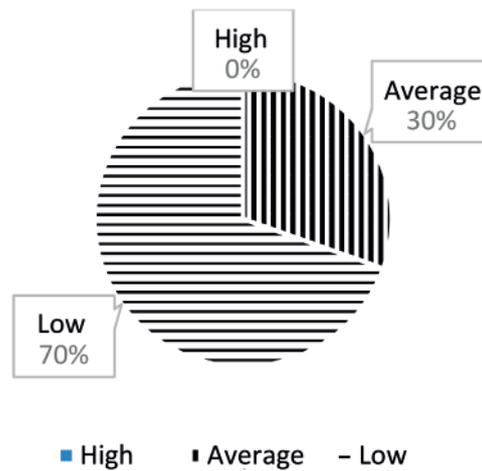


Fig. 12. Factor „I“ Sensitivity

Only 4% of the subjects are characterized by a variety of intellectual interests, radicalism, skepticism, critical thinking, the desire to be informed about scientific political problems, although they do not perceive any information to believe. The average level is characteristic for 46% of the subjects (Fig. 9).

Thus, with respect to the group of intellectual qualities, the average level prevails among the subjects.

A group of emotional qualities is characterized by such factor as Emotional Stability. Among the patients with LC, only 4%, as shown in Fig. 10, have such characteristics as self-confidence, consistency in their plans and attachments, high level of adaptability, emotional stability, realism, and criticality that

corresponds to a high level. The low level, characterized by the inability to control emotions, impulsiveness of hobbies, reduced emotional control, lack of sense of responsibility, tendency to neurotic symptoms, is characteristic for 35%. The average level of emotional stability was found in 61% of patients.

Factor „F“ Liveliness is the one also characterizing emotional qualities. In the vast majority of recipients (62%), as shown in Fig. 11, the average level was found. High rates for this factor, peculiar for the cheerful, active, lively, somewhat inattentive, cheerful, sociable, expressive individuals, were detected in 21% of the studied patients. Low rates indicating caution, restraint, silence, pessimistic excessive severity and caution, are characteristic for 17% of recipients.

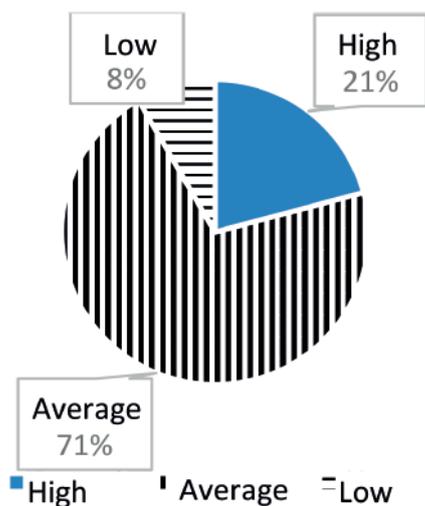


Fig. 13. Factor „O“ Apprehension

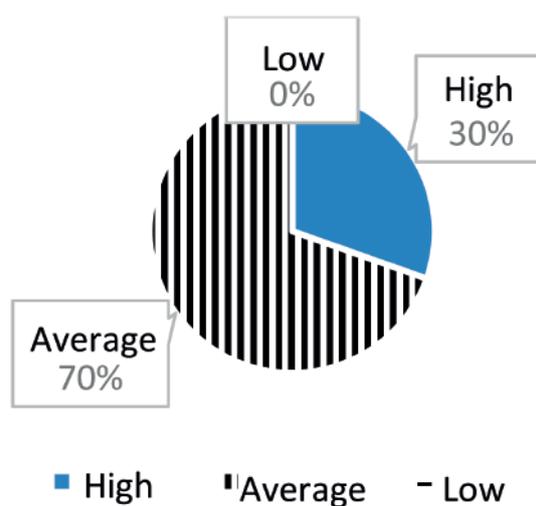


Fig. 14. Factor „Q4“ Tension

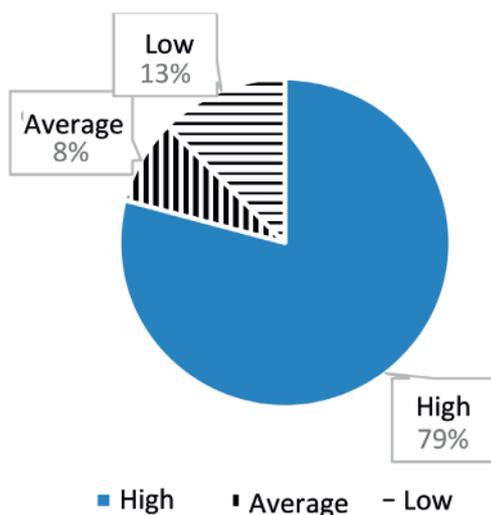


Fig. 15. Factor „Q3“ Self-discipline

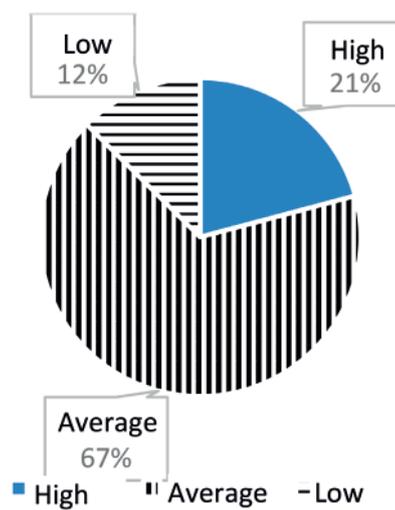


Fig. 16. Factor „G“ Rule-Consciousness

Emotional sensitivity „I“ is another factor characterizing the emotional qualities of an individual. As it can be seen from Fig. 12, the overwhelming majority of the subjects (70%) demonstrated low rates that are characteristic for courageous, emotionally stable, rigorous, practical, realistic, somewhat rigid, self-assured, somewhat skeptical individuals. No high ranges were found.

Concerning factor „O“ Apprehension, which also characterizes the emotional qualities of the individual, average level (71%) prevails in the subjects. High level, characterized by feelings of guilty, uncertainty, vulnerability, depression, reticence, and sense of responsibility is revealed in 21% of patients. 8% of the subjects were characterized by self-confidence, unconcern, cheerfulness, confidence in their successes and opportunities (Fig. 13).

Another factor characterizing the emotional qualities of an individual is the factor „Q4“ Tension. The average level (70%) of the tension prevails in the subjects. The high level found in 30% of the subjects indicates energy, excitability, self-discipline, irritability, dissatisfaction in aspirations, increased motivation, a weak sense of order, restlessness. The respondents, as indicated in Fig. 14, did not demonstrate any low rates for this factor.

With respect to the group of emotional qualities, the average level of manifestation of internal stress, emotional sensitivity, anxiety, self-control, courage and organization in social contacts prevails among patients with LC.

The group of regulatory qualities is characterized by the factor „Q3“ Self-discipline.

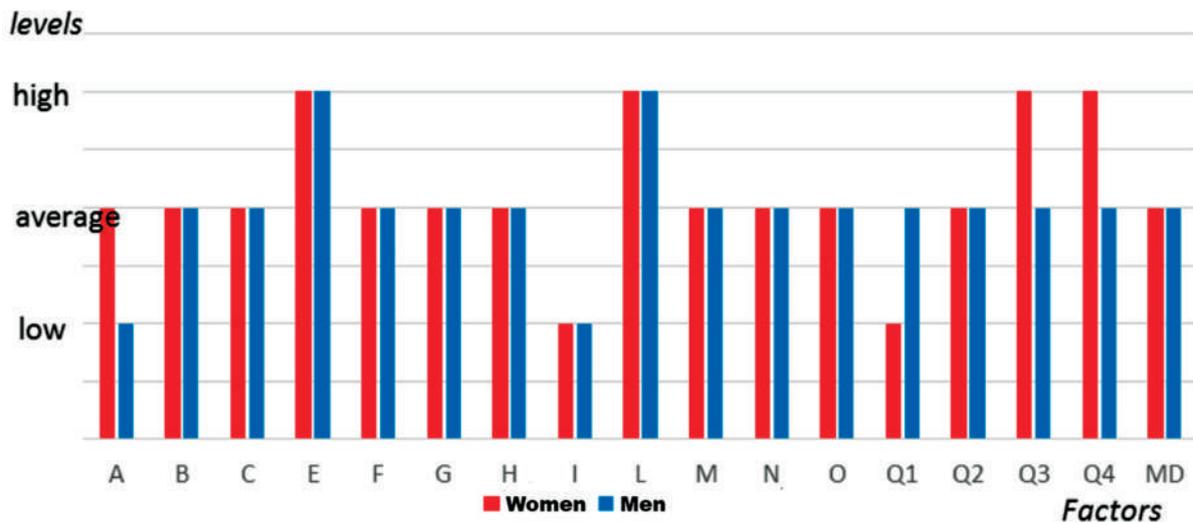


Fig. 17. Comparative analysis of gender peculiarities

High level was found in the vast majority of recipients (79%), as shown in Fig. 15. High rates by this factor are characteristic for organized, volitional, purposeful personalities. Low rates indicating inaccuracy, ignoring social rules, inattention, and indecency, are characteristic for 13% of recipients. The average level is found in only 8% of respondents.

Also, a group of regulatory qualities is characterized by such factor as Rule-Consciousness. High indices were found in only 21% of patients with LC, as shown in Fig. 16. This level is characterized by high normativity, strong character, perseverance, balance, responsibility, determination, emotional discipline, preciseness, compliance with moral standards, conscientiousness. Low level characterized by volatility, variability, laziness, independence, ignoring responsibilities, is characteristic for 12% of respondents. Average level of Rule-Consciousness was found in 67% of patients.

Consequently, as indicated by the results of the study of the regulatory qualities of patients with LC, the vast majority of respondents demonstrated a high level of self-discipline.

As for gender differences, as can be seen from Fig. 17, the predominance of sociability is revealed in the group of women. This can be explained by the differential peculiarities in the development of communication skills in women and in men.

Our expectations about gender differences in the group of intellectual qualities have been confirmed. Men, in comparison with women, have higher rates of the factor Openness to Change, which characterizes the above-mentioned group.

Regarding the group of emotional qualities, the identified gender differences are worth mentioning.

In particular, in women, unlike men, there is a high level of tension (in men –an average level). We assume that this may be explained by the increased emotional status of female patients, as compared to male patients.

Regarding the regulatory qualities, gender differences were detected in relation to the Self-discipline factor, a high level of which was demonstrated by female patients, compared with male patients (average level).

The main limitation of our study is related to the small number of patients included.

## CONCLUSIONS

On the basis of the analysis of scientific literature, a multilateral assessment of the individual psychological state of the patient with liver cirrhosis is determined. Problems of psychological health that may appear in different stages of the disease and intensify with associated stress factors complicate the process of treatment and the course of the disease itself.

Consequently, as indicated by the results of the study of the communication qualities of patients with LC, a high level was found regarding dominance and vigilance. In the process of therapy, doctors should take into account that these patients are inclined to blame others in conflicts, to show aggressiveness in communication. Such patients have a desire of domination, independence, they are inclined to ignore social conventions and authority. In order to arrange effective therapy in the process of communication interaction between a physician and patients with LC disease, the first must consider the tendency of these

patients to internal tension, the desire to focus attention on failures, the desire to require others to bear responsibility for errors.

Regarding the group of intellectual qualities, the average level prevailed among the subjects of the sample.

As for the group of emotional qualities, patients with LC are characterized by the demonstration of internal tension, emotional sensitivity, anxiety, and the ability to self-control.

The ability of patients with LC to manifest a high level of self-discipline should also be considered in the treatment process and these opportunities and reserves should be used in order to regulate individual psychological peculiarities.

In the process of therapy, doctors should also take into account the gender aspect. In particular, a comparative analysis of gender peculiarities has shown that sociability and tension prevail in women with LC; they are more inclined to self-discipline than men. In the meantime, men with LC are more open to the perception of changes.

It should be noted that both men and women of the given sample were found to have a low level of emotional sensitivity, that in the course of treatment can manifest in the form of a non-serious attitude towards the disease, the treatment process and the stage of rehabilitation.

The prospect for further research is the development of a training program for the correction of individual psychological peculiarities of patients with LC, which can be used by medical psychologists in professional activities with the above-mentioned patients.

#### Compliance with Ethics Requirements:

„The authors declare no conflict of interest regarding this article“

„The authors declare that all the procedures and experiments of this study respect the ethical standards in the Helsinki Declaration of 1975, as revised in 2008(5), as well as the national law. Informed consent was obtained from all the patients included in the study“

„No funding for this study“

#### REFERENCES

1. Rodger AJ, Jolley D, Thompson SC, Lanigan A, Crofts N. The impact of diagnosis of hepatitis C virus on quality of life. *Hepatology*. 1999;30:1299-301.
2. Davis G, Balart L, Schiff E, et al. Assessing health-related quality of life in chronic hepatitis C using the Sickness Impact Profile. *Clin Ther*. 1994;16:334-43.
3. Schaefer M, Schwaiger M, Garkisch AS. Prevention of interferon-alpha associated depression in psychiatric risk patients with chronic hepatitis C. *J Hepatol*. 2005;42(6):793-798.
4. Singh N, Gayowski T, Wagener MM, Marino IR. Depression in patients with cirrhosis. Impact on outcome. *Dig Dis Sci*. 1997;42:1421-7.
5. Dwight MM, Kowdley KV, Russo JE, Ciechanowski PS, Larson AM, Katon WJ. Depression, fatigue, and functional disability in patients with chronic hepatitis C. *J Psychosom Res*. 2000;49:311-7.
6. Ulyukin IM, Orlova ES. Kognitivnyie narusheniya i ih medikamentoznaya korrektsiya u bolnyih hronicheskimi virusnyimi gepatitami. *Vestnik rossiskoy voenno-meditsinskoy akademii*. 2016; 3(55):220-226.
7. .hakimov ZZ, Krakovskii ME. The correction of disorders in the microsomal oxidation system of the liver in experimental acute liver failure. *Patol Physiol Exp Ter*. 1990;1:21-23.
8. Rodrigue JR, Davis GL, Howard RJ, et al. Psychological adjustment of liver transplant candidates. *Clin Transplant*. 1993;7:228-9.
9. Bianchi G, Marchesini G, Nicolino F, et al. Psychological status and depression in patients with liver cirrhosis. *Digestive and Liver Disease*. 2005;37(8):593-600.
10. Pumilia C. Psychological impact of the physician-patient relationship on compliance: A case study and clinical strategies. *Prog Transplant*. 2002;12:10-16
11. Steindl PE, Finn B, Bendok B, Rothke S, Zee PC, Blei AT. Disruption of the diurnal rhythm of plasma melatonin in cirrhosis. *Ann Intern Med*. 1995;123:274-7.
12. O'Carroll R. Psychological aspects of liver disease and its treatment. *Health Psychology Review*. 2013;7(1):111-128.
13. Ferrans CE, Zerwic JJ, Wilbur JE, Larson JL. Conceptual model of health-related quality of life. *J Nurs Scholarsh*. 2005;37:336-42.
14. Ewusi-Mensah I, Saunders JB, Wodak AD, Murray RM, Williams R. Psychiatric morbidity in patients with alcoholic liver disease. *British Medical Journal*. 1983;287:1417-1419.
15. Ewusi-Mensah I, Saunders JB, Williams R. The clinical nature and detection of psychiatric disorders in patients with alcoholic liver disease. *Alcohol and Alcoholism*. 1984;19(4):297-302.
16. Sarin SK, Sachdev G, Jiloha RC, Siloah RC, Bhatt A, Munjal GC. Pattern of psychiatric morbidity and alcohol dependence in patients with alcoholic liver disease. *Digestive Disease and Science*. 1988;33:443-448.