

## EVALUATION OF THE NUTRITIONAL STATUS OF PATIENTS WITH CHRONIC LIVER DISEASES AND THEIR DIETARY CORRECTION

Sherzod Y. Zokirkhodjaev<sup>1</sup>, Malika K. Pattakhova<sup>2</sup>, Mirilkhom U. Solikhov<sup>3</sup>,  
Sardor B. Mutalov<sup>4</sup>

1 Professor, Department of Propaedeutics of Internal Diseases №1  
Tashkent medical academy, Uzbekistan

2 Associate Professor, Department of Propaedeutics of Internal Diseases №1  
Tashkent Medical Academy, Uzbekistan  
E-mail: malikapattahova@gmail.com

3 Senior Lecturer, Department of Propaedeutics of Internal Diseases №1  
Tashkent Medical Academy, Uzbekistan

4 Student of the Tashkent Medical Academy, Uzbekistan  
E-mail: sardormutalov@yahoo.com

### ABSTRACT

Improving the organization and increasing the efficiency of clinical nutrition in the complex management of patients with various diseases is one of the most important problems of modern medicine. Chronic hepatitis is one of the most prevalent illness among liver diseases. The social significance of chronic hepatitis is determined by the fact that they can progress to liver cirrhosis and hepatocellular carcinoma, which are characterized by a high level of disability and mortality. Very little attention has been paid to factors associated with nutritional status which are abnormal in a significant number of patients with chronic hepatitis. The purpose of the study was to study the actual nutrition of patients with chronic liver diseases, which is determined as a risk factor in the development of the disease.

**Key words:** Chronic liver disease, nutrition, diet, treatment

### INTRODUCTION

Proper nutrition is the basis of the adults and children physiology and is an important factor in maintaining resistance to physical and chemical agents of the environment. The accumulated data in basic medical sciences indicates that one of the central places in the strategy of therapeutic management of medical and especially surgical patients, should be occupied by the correction of metabolic disorders and adequate provision of energy and plastic needs. [1, 2, 3, 4, 18].

Proper nutrition contributes to the prevention of diseases, prolongation of life expectancy, increased efficiency of workers and enhances adaptive capacity of organism. Improving the organization and increasing the efficiency of patients' nutrition within the complex management of patients with various diseases is one of the most important tasks of modern medicine.

Chronic hepatitis is one of the most prevalent illnesses among liver diseases. The social significance of chronic hepatitis is determined by the fact that they can progress to liver cirrhosis and hepatocellular carcinoma, which are characterized by a high level of disability and mortality [5]. Very little attention has been paid to factors related to the characteristics of the organism itself, which can potentially interact with the etiological agent and affect the effectiveness of drugs used to treat chronic hepatitis and, thus, affect the outcome of treatment in general. Among these factors, so far little attention has been paid to factors associated with diet, although its significant variation and irregularity occurs in a significant number of patients with chronic hepatitis [6]. These diet irregularities, characterized by changes in dietary components, amount of nutritional supply and metabolism of the main macronutrients, are a very interesting object for study. Because they are useful in practice to predict the effectiveness of the treatment of chronic hepatitis of various etiologies, in particular viral, alcoholic, toxic, etc.

The vast majority of currently used therapeutic diets, especially those prescribed for a long time, approach the physiological need for them in a healthy person. The principle of prescribing each therapeutic diet is determined by 1) the physiological need of the body for nutrients and energy, 2) the phase and stage of the disease, 3) the degree of functional disorders and 4) metabolic abnormality which characterize this particular disease. The ratio of nutrients is considered optimal if 14% of the energy value of the diet is provided by proteins, 30% by fats and 50% by carbohydrates with its total daily energy value equal to 2800 kcal. When prescribing a therapeutic diet, many factors should be taken into consideration: foods' ingredients, their chemical content, the energy value of the diet, the quantitative ratio of individual ingredients and nutrients, the methods of their processing, the use of salt and flavoring substances, the frequency of food intake, etc.

Mechanical processing of food is achieved mainly by grinding, as well as by the appropriate method of heat treatment - holding in boiled form (steamed or in water) [7], [8]. Pevzner's Table No.5 therapeutic diet is prescribed to patients with diseases of the liver and biliary tract. The features of this diet are chemical processing and increased protein content. It is prescribed for diseases of the biliary tract and liver, as well as chronic gastritis and colitis with possible constipation.

The purpose of the therapeutic diet is to protect the function of the liver, improve cholesterol and fat metabolism, and boost intestinal normal function. The therapeutic diet includes the consumption of vegetable salads, low-fat types of meat and fish, and dairy products [1, 7]. Meat, vegetables and milk make urine pH more alkaline and thus they contribute to the excretion of drugs which are weak acids (salicylates, barbiturates, etc.) [10, 11].

Numerous research data obtained in experiments in vitro and in in vivo on laboratory animals with induced acute and chronic liver damage using carbon tetrachloride, D - galactosamine, ethanol, praseodymium, and radiation shows that herbal drugs produced from *Silybum marianum* (milk thistle) have high hepatoprotective activity [12, 13]. A comparative study of the hepatoprotective properties of flamin, convaflavin, flacumin, silibor, and silymarin revealed a hepatoprotective effect associated, according to the authors, with the suppression of lipid peroxidation and their stimulatory effect on the synthesis of nucleic acids and protein [14, 15]. In induced ischemic liver injury in rats (Nagai T. et al., 1991) the ability of licorice glycyrrhizin to reduce the severity of hypertransaminasemia and to decrease the amount of G- SH in the liver, to cease the rising of malonic dialdehyde level was recognized. A similar effect was caused by the use of a-tocopherol [16, 17].

#### **Research objective.**

Our goal is 1) to study the actual nutrition of patients with chronic liver diseases, which may constitute a risk factor and 2) suggest dietary recommendations.

#### **Materials and research methods.**

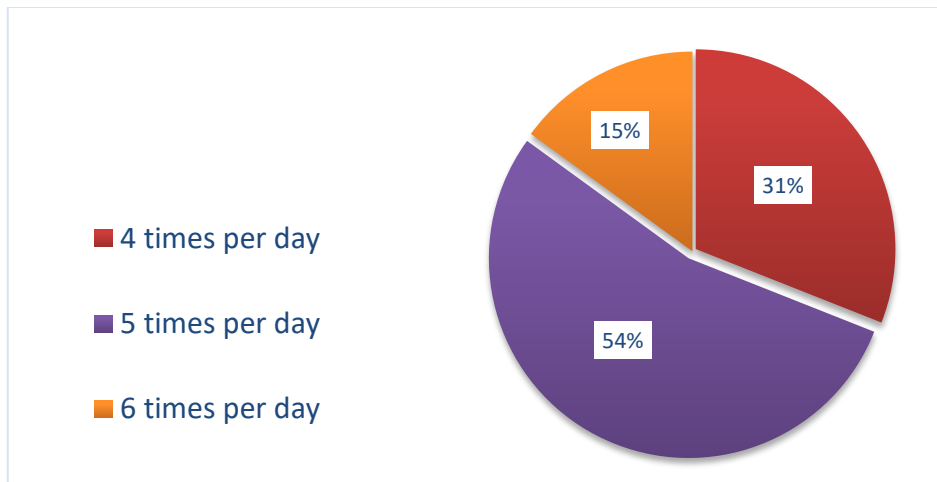
The actual nutrition of patients with chronic liver diseases was assessed in the Internal Medicine Department of the Tashkent Medical Academy. For this purpose, a questionnaire recommended by WHO is used, which takes into account certain foods regularly consumed by patients outside the hospital for breakfast, lunch and dinner. Also, it takes into account the amount and chemical composition of food and the degree of energy utilization. In order to bring nutrition of various groups of the population in specific occupational and living conditions closer to the physiological optimum, on the one hand, indicators characterizing nutrition as an environmental factor (energy value and chemical composition of diets) are studied, and on the other hand, the health status of the surveyed groups using nutritional status indicators are assessed. In the study, we used active questioning. Irrational nutrition and non-compliance with the therapeutic diet in chronic liver diseases create metabolic disorders in the body and contribute to the development of hepatitis or activation of chronic liver diseases with subsequent transformation into liver cirrhosis. In the nutrition of patients with chronic liver diseases, increased

consumption of fats, carbohydrates, lack of vitamins, proteins and alcohol intake with minimal energy consumption should be noted. The energy value of the diet was determined by the chronometric method.

The content and ratio of the main nutrients (proteins, fats and carbohydrates), some vitamins and minerals in the daily diets of 40 patients with chronic liver diseases were studied.

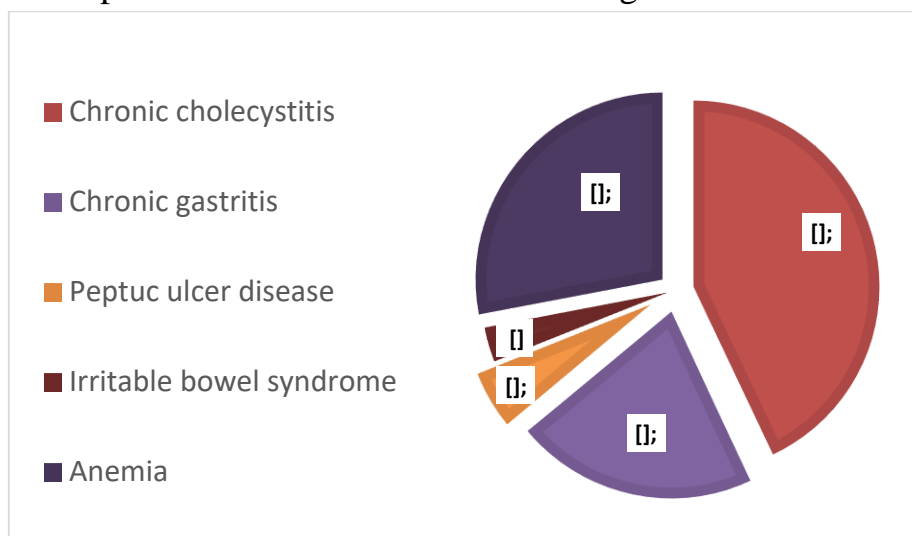
**Results of the research and their discussion.**

Non-compliance with Pevzner’s therapeutic diet No. 5 was revealed in some patients. It was found that 31% of patients eat 4 times a day, 54% - 5 times a day and 15% - 6 times a day. The study showed that 94% of patients eat at home and only 6% eat out.



**Fig 1. Distribution of patients by meal frequency**

Among the comorbidities, 43% of patients were diagnosed with chronic cholecystitis, 21% with chronic gastritis, 5% suffered from gastric ulcer, 3% had IBS, and 28% of patients had anemia of different degrees.



**Fig 2. Distribution of patients by comorbidity**

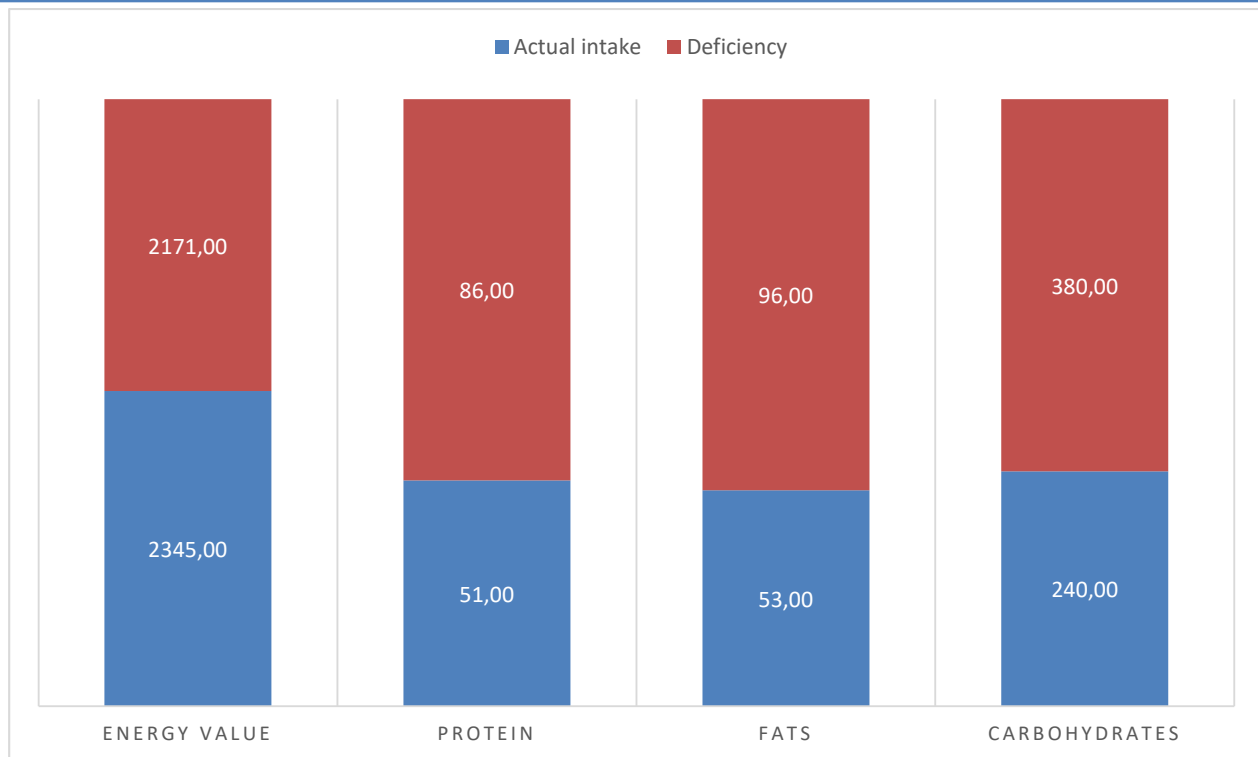
An extremely low consumption of fish products, as well as fresh vegetables, fruits and berries in the winter season were noted. At the same time, fat-rich foods, pasta and bakery products are consumed in some excess. The content of basic nutrients, especially proteins of animal origin, is 61% of RDI, and the amounts of vitamins C, B1, B2, B6 and such minerals as potassium, calcium, magnesium, phosphorus, iron, copper, manganese in diets are below RDI and does not meet physiological needs.

The results of our studies have shown that in the daily diet there is a protein deficiency of 15%, a fat deficiency of 20-25 %, especially polyunsaturated fatty acids, a deficiency of vitamins A, C, P, B1, B6, B12, excessive consumption of carbohydrates: sucrose - by 40% due to bread products, deficiency of microelements. The composition of the daily diet of patients is shown in Table No. 1.

**Table 1**

**Average food requirement in patients with chronic liver disease**

No.	The product's name	Patients' dietary intake (grams)	Recommended daily intake (gram)
1	Wheat bread	90	200
2	Wheat flour	45-55	15.0
3	Pasta	60-65	40.0
4	Rice	70	20
5	Sugar	35-45	50.0
6	Meat	82	150.0
7	Fish	2-4	20.0
8	Egg, pcs	0.65	one
9	Milk	300	500.0
10	Cheese	10-15	10.0
11	Butter	10-20	25-30
12	Vegetable oil	20.5	25
13	Potato	200-210	400
14	Vegetables	80-85	550
15	Fruits and juices	64-68	100.0
16	Energy value	2345+15	2171+17
17	Proteins	51+0.5	86-80
18	Fats	53+0.8	96-82
19	Carbohydrates	240+3.1	380-330



**Fig. 3. Diet compliance**

The presence of dairy products such as milk, suzma , cheese, etc. as well as meat products like beef, lamb, chicken was noted.

Among vegetables: potatoes, carrots, beets, tomatoes; among fruits: apples, grapes, pomegranates, pears, persimmons, figs, peaches, citrus fruits; among grain products: bread, flour, peas, rice are popular foods consumed by the patients. Nutritions of women and men were studied separately. In general, 300 ml of milk consumed by both genders on average: 250 ml by women and 200 ml by men. When comparing the results with daily RDI, it was found that the patients' daily milk intake is 2 times lower than RDI. The number of eggs in the daily diet is on average 12.6 g: 9.3 g for women, 16 g for men. 10-15g of suzma, 10-20 g of cheese are consumed daily on average. Meat products consumed per day: 78 grams of beef is consumed daily on average for both genders: 77 grams for men, and 80 grams for women. The obtained results (176 g) are 2.2 times lower than the RDI.

Grain products consumed per day on average: 84 g of grain products are consumed daily on average: 74 g by women, 94 g by men. 64 g of rice is consumed daily on the average: 95 g by men, 33 g by women. 10- 15 g of peas are consumed daily on average. 250-300 g of wheat flour is consumed daily on average. The total amount of grain products is 500-1400 gr. Grain products consumption is 1.2 times more than the RDI. Intake vegetables and fruits per day: 83.5 g of potatoes are consumed on average by both genders: 72 g by women, and 95 g by men. 46 g carrots are ingested on average: 44 g by men, 48 g by women.

10-11 g. of cucumbers, 1 g. of turnip, 20-30 g. of tomato, 0.10-0.15 g of onion, 1-5 g of green leaves. The total amount of vegetables and fruits is 190.5 gr. It is 1.5-2 times lower than DRI.

### Conclusions

1. In the daily diet of patients with chronic liver diseases, protein-rich foods such as dairy products, meat, fish and chicken are below the RDI by 10-25%; vitamin C, iron and PUFA are below the RDI by 20-35%.

2. The basal metabolic rate for men is 1565 kcal, for women is 1450 kcal, the specific dynamic effect of food is 150.7 kcal, the total energy value is 2347.5 kcal for men, 2171.0 kcal for women.

3. Patients need a correction of their diet, additional enriching it with proteins, amino acids such as lysine, monounsaturated fatty acids, in particular linolenic and arachidonic acid. Enrichment of the diet with meat, liver, fish, dairy products, vegetables, and fruits is recommended.

4. Patients should follow the ideal nutritional formula 1:1:4, a 4-time/day food consumption regimen strictly, diversify the range of the daily diet, and increase pectin by 5-10%.

5. Exclude spicy, salty fried foods from the diet.

6. Drinking of herbal teas with choleric, membrane-stabilizing and hepatoprotective effects is recommended.

### REFERENCES

1. V.A. Tutel'jan, chl.-korr. RAMN, professor M.G. Gapparov, professor A.V. Pogozeva i dr, Metodicheskoe pis'mo. «Sposob opredelenija pishhevo statusa bol'nyh i metody ego korrrekcii specializirovannymi produktami lechebnogo pitaniya v uslovijah stacionarnogo i sanatorno-kurortnogo lechenija». /Sankt-Reterburg,2004 god/.

2. Maevskaja M.V., Ivashkin V.T. Pechen' i pitanie. Optimal'naja dieta pri nealkogol'noj zhirovoj bolezni pecheni. Rossijskij zhurnal gastrojenterologii, gepatologii, koloproktologii. 2018;28(5):105-116.

3. Maevskaja M.V., Maevskij R.M. Eda kak obraz zhizni. Ros zhurn gastrojenterol gepatol koloproktol 2016;26(5):104–15 [Mayevskaya M.V., Mayevsky R.M. Food as a lifestyle Rus J Gastroenterol Hepatol Colproctol. 2016;26(5):104–15 (In Rus.)].

4. Lu W., Li S., Li J., et al. Effects of omega-3 fatty acid in nonalcoholic fatty liver disease: a meta-analysis. Gastroenterol Res Pract. 2016;2016:1459790.

5. Jushhuk N. D., Znojko O. O., Jakushechkina N. A. i dr. Ocenka social'no-jeekonomicheskogo bremeni gepatita S v Rossijskoj Federacii // Jepidemiologija i vakcinoprofilaktika. 2013, № 2 (69), s. 18–33.



6. Hart C. L., Morrison D. S., Batty G. D., et al. Effect of body mass index and alcohol consumption on liver disease: analysis of data from two prospective cohort studies // *BMJ*. 2010. - Vol.340. -. -P.C1240.
7. Kaganov B.S. Kniga: Lechebnoe pitanie pri hronicheskikh zabolevaniyah / B.S. Kaganov, H.H. Sharafetdinov – M.: Jeksmo, 2016.- 272 s.
8. Dietologija / Pod red. A. Ju. Baranovskogo. . 4-eizd. — SPb.: Piter, 2012. — 1024 s.: il.
9. Gurvich M.M. Bol'shaja kniga o pitanii dlja zdorov'ja / M.M. Gurvich – M.: Jeksmo, 2013. – 384 s.
10. Derimedved' L. V. Vzaimodejstvie lekarstv i jeffektivnost' farmakoterapii / L. V. Derimedved', I. M. Percev, E. V. Shuvanova i dr. — H.: Izd-vo «Megapolis», 2002.— 784 s
11. Red'kin R. Pishha dlja razmyshlenija: produkty i lekarstva [Jelektronnyj resurs] / R.Red'kin, N. Orloveckaja, O. Dan'kevich // *Farmacevt Praktik*. – 2016. – №1.
12. Lesiovsckaja E. E., Pastushenkov L. V. Farmakoterapija s osnovami fitoterapii: ucheb. posobie. 2-e izd. M., 2003. 593 s.
13. Rukovodstvo po fitoterapii / A. Krylov, V. Marchenko. SPb., 2000. 462 s
14. Lekarstvennyye rastenija Sibiri / Minaeva V. G. 5-e izd., pererab. i dop. Novosibirsk, 1991. 431 s.
15. Lesiovsckaja E. E., Pastushenkov L. V. Farmakoterapija s osnovami fitoterapii: ucheb. posobie. 2-e izd. M., 2003. 593 s.
16. Berry D, Wathen JK, Newell M. Bayesian model averaging in meta-analysis: vitamin E supplementation and mortality. *Clinical trials*. 2009; 6(1):28–41. [PubMed: 19254931]
17. . S. Gawriech, N. Chalasani Pharmacotherapy for Non-alcoholic Fatty Liver Disease. *Semin Liver Dis*. 2015. August: 35 (36 338-348. Doi. 10.-1055/s-0035 — 1562951.
18. George ES, Forsyth A, Itsiopoulos C, Nicoll AJ, Ryan M, Sood S, Roberts SK, Tierney AC. Practical Dietary Recommendations for the Prevention and Management of Nonalcoholic Fatty Liver Disease in Adults. *Adv Nutr*. 2018 Jan 1;9(1):30-40.