

QUALITY OF LIFE ASSESSMENT IN PATIENTS WITH CHRONIC LIVER DISEASE USING THE COMBINED MULTIDIMENSIONAL QUESTIONNAIRE SF-LDQOL, INCLUDING COMPLEMENTARY QUESTIONS

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ABSTRACT

Introduction. Chronic liver disease is an important public health problem with a major negative impact on all aspects of patients' lives. The consequences are directly related to the chronic liver disease, but also to the administered treatment.

The objective of the study was to evaluate the quality of life in patients with chronic liver diseases by using SF-LDQOL questionnaire, including complementary questions related to the use of nutritional supplements.

Materials and methods. A cross-sectional analysis on the quality of life of patients with a confirmed diagnosis of chronic liver disease (CLD), using the SF-LDQOL short form questionnaire, on a group of 40 patients was conducted. Data on CLD patients (age, sex, disease activity, risk factors, major clinical symptoms, use of hepatoprotective nutritional supplements (NS)) were collected and analyzed.

Results. The mean age of participants was 68.34±14.45 years. The CLD impact on the general health status and quality of life was moderate to mild in the studied group. In most cases, the linear frequency shows an

RÉSUMÉ

Évaluation de la qualité de vie des patients souffrant d'une maladie chronique du foie à l'aide du questionnaire multidimensionnel combine SF-LDQOL incluant des questions complémentaires

Introduction. Les maladies hépatiques chroniques constituent un problème de santé publique important avec un impact négatif majeur sur tous les aspects de la vie des patients. Les conséquences sont directement liées à la maladie hépatique chronique, mais également au traitement administré.

L'objectif de l'étude était d'évaluer la qualité de vie des patients atteints de maladies chroniques du foie à l'aide du questionnaire SF-LDQOL, comprenant des questions complémentaires liées à l'utilisation de suppléments nutritionnels.

Matériels et méthodes. Une analyse transversale de la qualité de vie des patients avec un diagnostic confirmé de maladie hépatique chronique (CLD), à l'aide du questionnaire court SF-LDQOL, sur un groupe de 40 patients a été réalisée. Les données sur les patients

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increasing trend for minimal impact. Regarding the use of nutritional supplements (NS), more than 80% of patients with CLD used them, especially those with hepatoprotective effects. The use of NS had a positive impact on the quality of life.

Conclusions. The SF-LDQOL questionnaire, supplemented with questions about the use of NS, is a useful tool for physicians and pharmacists to use as a routine assessment of the quality of life in CLD patients, while also assessing the impact of hepatoprotective supplements consumption.

Keywords: chronic liver disease, SF-LDQOL questionnaire, nutritional supplements.

List of abbreviations:

CLD – chronic liver disease

SF-LDQOL questionnaire – short form liver disease quality of life questionnaire

NS – nutritional supplements

INTRODUCTION

Chronic diseases represent a growing challenge to global health¹. According to the World Health Organization (WHO), chronic diseases are characterized by a number of key properties, including their long-term nature, resulting residual disabilities, irreversible pathological changes as a leading cause, the need for specialized training of patients for rehabilitation and prolonged periods of care and monitoring^{2,3}. The latest medical research continues to point the liver disease as one of the most prevalent and serious health problems worldwide, causing problems in over 10% of the living population^{4,5}. Chronic liver disease (CLD) is a progressive deterioration of liver functions for more than six months, including synthesis of clotting factors, other proteins, detoxification of harmful metabolic products and bile excretion. The presence of CLD involves a continuous process of inflammation, progressive destruction, and regeneration of the liver parenchyma. There are many types of chronic liver diseases. Among these, most common are cirrhosis and hepatocellular carcinoma, alcoholic or non-alcoholic fatty liver, viral hepatitis and autoimmune hepatitis. The etiology of the diseases is broad, including accumulation of toxins, alcohol abuse for a prolonged time, infections, autoimmune diseases, metabolic disorders, as well as genetic disorders. CLD is an extremely common clinical condition, and the

atteints de CLD (âge, sexe, activité de la maladie, facteurs de risque, symptômes cliniques majeurs, utilisation de suppléments nutritionnels hépatoprotecteurs (NS)) ont été collectées et analysées.

Résultats. L'âge moyen des participants était de 68,34 ± 14,45 ans. L'impact du CLD sur l'état de santé général et la qualité de vie était modéré à léger dans le groupe étudié. Dans la plupart des cas, la fréquence linéaire montre une tendance à la hausse pour un impact minimal. Concernant l'utilisation de compléments nutritionnels (NS), plus de 80 % des patients atteints de MPC les ont utilisés, notamment ceux ayant des effets hépatoprotecteurs. L'utilisation de NS a eu un impact positif sur la qualité de vie.

Conclusions. Le questionnaire SF-LDQOL, complété par des questions sur l'utilisation du NS, est un outil utile que les médecins et les pharmaciens peuvent utiliser pour évaluer en routine la qualité de vie des patients atteints de MPC, tout en évaluant également l'impact de la consommation de suppléments hépatoprotecteurs.

Mots-clés: maladie hépatique chronique, questionnaire SF-LDQOL, suppléments nutritionnels.

focus is on common etiologies, clinical manifestations and management⁶. Over the past three decades, experts have extensively explored the topic of drug-induced liver injury in patients with liver disease^{7,9}. As liver cirrhosis is among the top ten causes of death in Western countries, the CLD and its complications remain a significant public health problem worldwide. These conditions have a major negative impact on all aspects of patients' life and prognosis. Most researchers consider that the multiple problems directly related to the presence of CLD and to the hepatotropic treatment involve the distinct pathophysiological events. These may increase or decrease the risk of morbidity and mortality, improve, or deteriorate the quality of life.

Our research team conducted a study on the use of hepatoprotective nutritional supplements among patients with chronic diseases in 2022^{4,5}. The results showed that most patients with chronic diseases use hepatoprotective nutritional supplements, but in most cases patients either initiate the use of NS themselves or acquire information from mass-media sources.

From the point of view of long-term treatment, it is of great importance to know how and how often nutritional supplements (NS) are used by patients with CLD. From a pharmacological point of view, knowledge about how to use NS in association with allopathic treatment is also particularly important, because of the possibility of drug-drug interactions.

The active principles in plant extracts may interact with drugs, especially because patients have multiple pathologies for which they take several drugs. CLD patients follow a long-term treatment, therefore the assessment and monitoring of the quality of life is indispensable^{10,11}.

Data from the literature confirm a growing concern about standardizing the assessment of patients' quality of life at international level. Specific, multi-dimensional, sensitive questionnaires that are easy to apply in medical and pharmaceutical practice are used. Among them, the SF-LDQOL short form questionnaire is used by many experts, being a convenient method for the patient and quick for an assessment of different aspects of life¹²⁻¹⁴. This questionnaire is considered a qualified exploration and quantitative approach to quality of life.

THE OBJECTIVE OF THE STUDY was to evaluate the quality of life in patients with CLD by using SF-LDQOL questionnaire, including complementary questions related to the use of NS.

MATERIALS AND METHODS

A cross-sectional study using the SF-LDQOL questionnaire, short form¹², completed with questions related to the use of nutritional supplements, validated in Romanian⁴, was conducted. The consent was obtained from the developer to translate and use the combined multidimensional questionnaire SF-LDQOL. Before the translation, we received permission from the developer to include complementary questions related to the use of NS in the questionnaire. Dr. Fasiha Kanwal, the lead author of the questionnaire, gave her written permission. Forward translation of the questionnaire was carried out by two researchers with medical and pharmaceutical backgrounds. They independently translated the original English items into Romanian and then combined the translations into a single Romanian translation. Two further bilingual translators carried out the backward translation into English and evaluation of discrepancies between the original versions and those obtained by retroversion. They analyzed the fidelity of the measurements compared to the original versions. The final Romanian translation was tested on 10 patients (6 women and 4 men) diagnosed with CLD, as a pilot trial to check the clarity and comprehensiveness of the questionnaire. After all the above steps, the questionnaire was used in the study group.

A number of 40 patients diagnosed with CLD, hospitalized in Bihor County Emergency Clinical Hospital, Romania, completed the SF-LDQOL questionnaire between March 2023 and August 2023.

We have obtained the approval of the ethics committee of the Bihor County Emergency Clinical Hospital (approval no 2455 of 19.01.2023) for the study. All the participants signed an informed consent expressing their agreement to participate in the study.

Data processing and statistical analyses were conducted to examine the quality of life of CLD patients, as well as their nutritional supplementation behaviors, using the Statistical Product and Service Solutions (SPSS Inc., Chicago, IL, USA, version 20) software. The mean parameter values, frequency ranges, standard deviations, and tests of statistical significance were computed using the Student's *t*-test and Chi-square test. A significance level of $p < 0.05$ was applied for statistical significance.

The questionnaire contains 17 items, both open-ended and closed-ended, of which the first 8 are items comprising 3-6 questions on a specific topic. Items 9 and 10 contain only one question.

The first item is about symptoms and health problems and contains six questions. For each question, the patients had the opportunity to choose between 6 answer options, where 1 is the score for severe affection and 6 for minimal affection.

The second item are about the effects of liver disease on patients' daily life and contains three questions. For each question, the patients had the opportunity to choose between 6 answer options, where 1 is the score for severe affection and 6 for minimal affection.

The third item refers to concentration and memory problems of the CLD patients. It contains six questions. For each question, the patients had the opportunity to choose between 6 answer options, where 1 is the score for severe affection and 6 for minimal affection.

The next set of two questions asks about patient's sexual function and satisfaction of the sexual function. In this case, the patients had to choose between two answers to each question, where 1 corresponds to the answer Yes and 2 to the answer No.

The fifth item are about the sleep process. and contains five questions. For each question, the patients had the opportunity to choose between 5 answer options, where 1 is the score for severe affection and 5 for minimal affection.

The following item refer to the state of loneliness and contains five questions. For each question, the patients had the opportunity to choose between 5 answer options, where 1 is the score for severe affection and 5 for minimal affection.

The seventh item relate to life expectancy and contains three questions. For each question, the patients had the opportunity to choose between 5

answer options, where 1 is the score for severe affection and 5 for minimal affection.

The eighth item relate to patients' attitudes towards their appearance in public and contains four questions. For each question, the patients had the opportunity to choose between 5 answer options, where 1 is the score for severe affection and 5 for minimal affection.

The ninth item refers to the impact of treatment on overall health status. The patients had the opportunity to choose between 5 answer options, where 1 is the score for severe affection and 5 for minimal affection. The tenth item refers to the general life satisfaction of the patients. Participants could mark a number from 1 to 10 (where 1 represents the worst state and 10 represents the best state), representing their general life satisfaction.

Items between 11 and 17 were developed for identifying the habits regarding the consumption of NS among CLD patients. The items establish the habits of consuming NS or not, the purpose of their use, the type of supplements consumed, the way in which the used supplement was chosen, establish if the recommended doses are respected, the duration of use and the self-assessed impact on health. These items were also used in the study conducted in 2022, regarding the use of NS in patients with chronic diseases ⁴.

RESULTS

The mean age of participants was 68.34 ± 14.45 years. Among them, 25 were male (62.5%) and 15 were female (37.5%). A majority of 29 individuals (72.5%) came from urban area, while 11 (27.5%) were from rural areas. In this cross-sectional study, all the 40 participants had a confirmed diagnosis of CLD. They completed SF-LDQOL questionnaire, short form, completed with questions related to the use of NS.

Figure 1 (A-H) centralizes the results of the processing of the first eight items. Figure 1A shows the results of the first item, about symptoms and health problems. Here, it can be observed the highest frequency of scores 4 and 5, with an average score of 4.6 representing a moderate to mild impact. The linear frequency shows a slight increasing trend for minimal involvement.

Figure 1B shows the results of the second item, about the effects of liver disease on patients' daily life. It can be observed the highest frequency of scores 4, representing a moderate impact. The third item refers to concentration and memory problems patients. Figure 1C shows the highest frequency of scores 4. The linear frequency shows an increasing trend for minimal affection, both in item 2 and in item 3. Figure 1D shows the results of the fourth item. Many patients reported that they had no sexual activity in

the last 4 weeks, and that they had no problems with lack of sexual interest.

Figure 1E shows the results of the fifth item, referring to the state of loneliness. It shows the highest frequency of scores 3, representing a serious affection. Linear frequency shows a slight decreasing trend for severe affection. Figure 1F shows the results of sixth item, related to the life expectancy, with the highest frequency of scores 4, representing a moderate affection. For this item, linear frequency shows an increasing trend for minimal affection. Figure 1G shows the results of seventh item, related to the life expectancy. The highest frequency is of scores 3 and 4, representing a moderate affection. Regarding item eight, related to patients' attitudes towards their appearance in public, Figure 1H shows the results, with the highest frequency of scores 4 and 5. For these items, the linear frequency shows an increasing trend for minimal affection.

The ninth item refers to the impact of treatment on overall health status. As can be seen in Figure 2, most respondents (57.5%) feel to be mildly affected by the drug treatment. Only one (2.5%) patient feels severely affected after the treatment. The linear frequency shows a significant increasing trend for minimal affection.

The following item refers to the general life satisfaction. Only 8 (20%) participants answered with 5, all others scored higher numbers, 10 (25%) participants scored 6, 15 (37.5%) scored 7 and the remaining 7 (17.5%) scored 8. The mean score was 7.3, showing a moderate to mild impairment in the quality of life of CLD patients.

Items between 11-17 are about the use of NS. The results are presented in Table 1. According to the answers, 82.5% of the participants use NS. Many respondents use NS for their hepatoprotective effect (42.5%) and body protection (25.0%). Half of the participants use *Silybum marianum* extracts. A smaller percentage use *Cichorium intybus* and *Cynara scolymus* extracts. An very small percentage of respondents (22.5%) declared that they consume supplements on the recommendation of their doctor or pharmacist. Most of them use the supplements on the advice of friends (27.5%) or on their own initiative (17.5%). Regarding the period, half of the respondents have been using supplements for three months or longer. More than half of the users (57.5%) noted major positive changes in their health status after they started to consume NS.

The graphical presentation of the bivariate correlations, point cloud figure model, between the items related to quality of life and those related to the use of NS is presented in Figure 3. As the level of NS use increases, so does the quality of life of patients. The bivariate

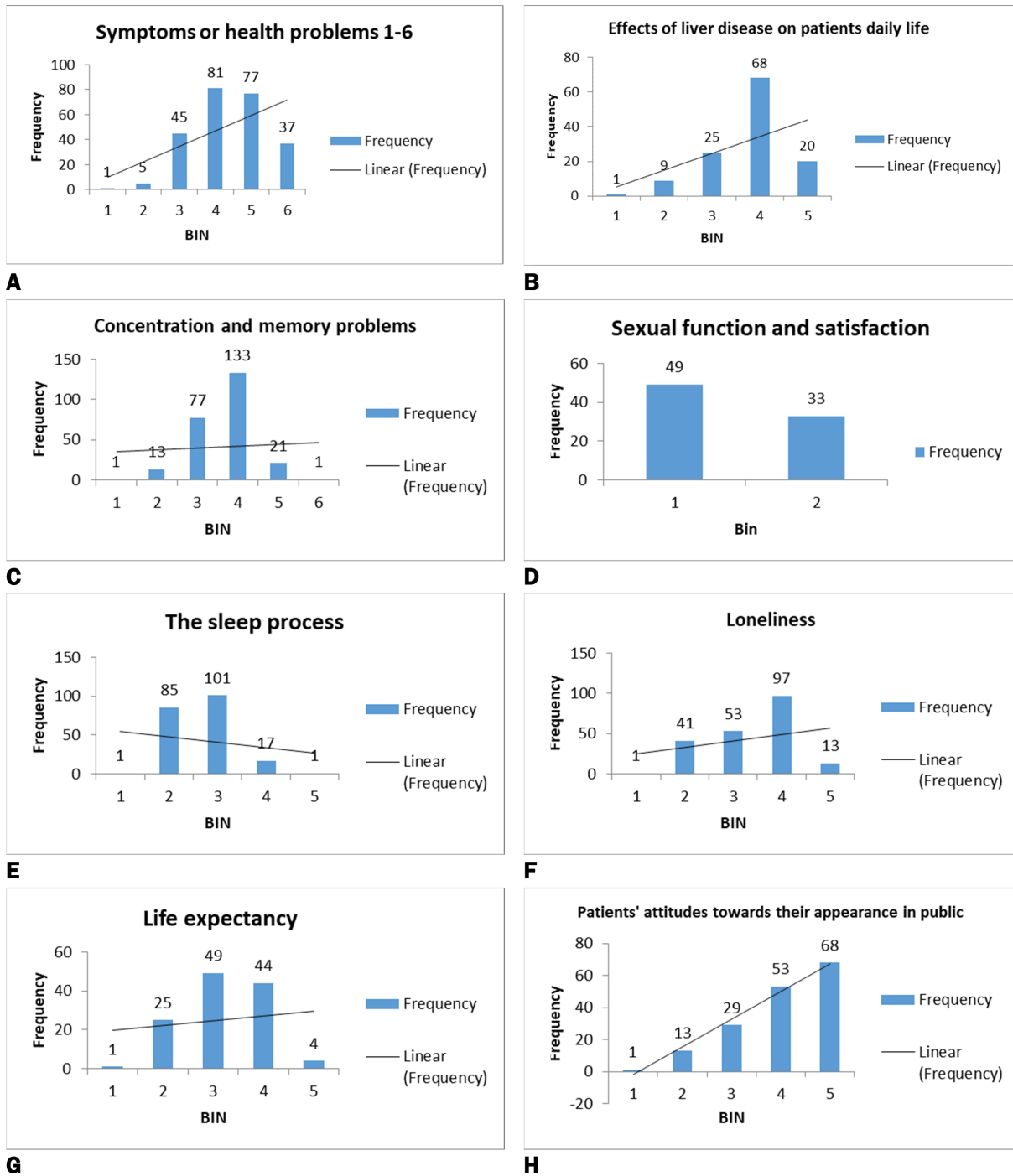


Figure 1. Results obtained after the evaluation of the study group by items 1 to 8 (A to H).

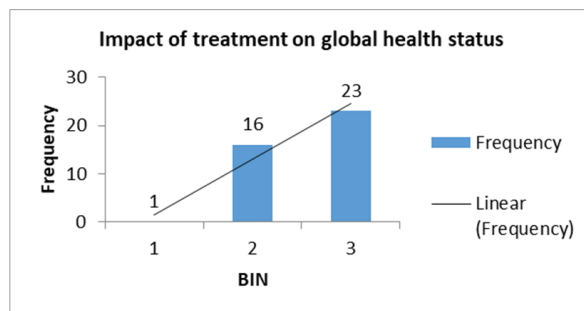


Figure 2. Results of the ninth item, referring to the impact of treatment on overall health status. 1 – severe; 2 – moderate; 3 – mild.

Table 1. Results obtained after the evaluation of the study group by items 11-17.

Item	Answer option	N	%
11. Use of supplements	No	7	17.5
	Yes	33	82.5
12. For what purpose?	No	7	17.5
	Hepatoprotective	17	42.5
	Body protection	10	25.0
	Preventive	4	10.0
	Other	1	2.5
13. The used type of nutritional supplement	Don't use	7	17.5
	<i>Silybum marianum</i>	20	50.0
	<i>Cichorium intybus</i>	5	12.5
	<i>Cynara scolimus</i>	5	12.5
	Other	3	7.5
14 Recommended by	Don't use	7	17.5
	Their own initiative	7	17.5
	Friends	11	27.5
	Mass media	6	15.0
	Doctor	5	12.5
15. Used dose	Pharmacist	4	10.0
	Other	0	0.0
	Don't use	7	17.5
	Recommended dose from the supplement prospects	15	37.5
	Recommended dose by doctor/pharmacist	18	45.0
16. How long	Using a higher dose than the recommended dose	0	0.00
	Using a lower dose than the recommended dose	0	0.00
	Don't use	7	17.5
	1 week	2	5.0
	2 weeks	1	2.5
17. Changes in health status	1 month	5	12.5
	2 months	5	12.5
	3 months	8	20.0
	More than 3 months	12	30.0
	Don't use	7	17.5
17. Changes in health status	Major	23	57.5
	Minor	8	20.0
	No change	2	5.0
	Worsening	0	0.0

N - number of participants

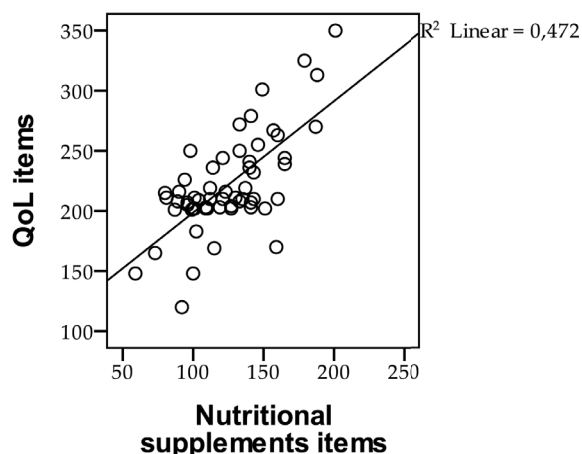


Figure 3. Point cloud model for correlation between the items related to quality of life and those related to the use of NS.

coefficient was calculated from the data obtained according to Young's modulus (E), according to the formula $E = (k = (\sum x + \sum y) \text{ initial} - (\sum x + \sum y) \text{ final})^{15}$.

DISCUSSION

CLD is a serious illness, which not only causes high mortality and morbidity but also negatively influences the quality of life¹⁶. The incidence of patients with CLD is continuously increasing¹⁷. From the point of view of long-term treatment, it is obvious that there is a need for continuous assessment of the health status and quality of life of patients^{18, 19}. There is now a growing concern for standardization of patients' quality of life assessment internationally. The SF-LDQOL short form questionnaire is used successfully in several countries, providing a convenient method for the patient and a quick method for an assessment of different aspects of life. This questionnaire is considered a qualified exploration and quantitative approach to quality of life^{20, 21}.

In this study, we used the SF-LDQOL questionnaire. Given the long-term treatment of patients with CLD, it is very important to know how and how often NS are used by patients. Considering at the same time the limited knowledge about the use of NS, we proposed to complete the questionnaire with some items related to the use of NS²²⁻²⁵.

The first 10 items of the questionnaire include questions that refer to different aspects of patients' quality of life. In most cases there is an increased frequency of answers marked with 3 and 4, less frequently 5, which reflects that the studied patients feel moderately disturbed or slightly disturbed by the presence of CLD²⁵. The linear frequency shows an increasing trend for minimal affection, as shown in Figure 1

A-H. The majority of respondents (57.5%) feel to be mildly affected by the drug treatment, in 80% of them the overall life satisfaction being positive²⁶.

Regarding the items analyzing the use of NS, items 11-17, the results show that 82.5% of the subjects with CLD who participated in this study use NS²⁷. A high percentage of patients choose to use supplements based on *Silybum marianum* extracts, as shown in Table 1. A smaller percentage of participants use *Cichorium intybus* and *Cynara scolymus* extracts. The used medicinal plant species correspond with those used by patients with chronic diseases studied previously¹⁶, which shows that this is the most known, recommended and used NS^{28,29}. The presumed mechanism of action of these plant extracts may involve immunomodulation and stimulation of hepatic DNA synthesis, as well as superoxide dismutase and glutathione reductase stimulation to inhibit oxidative stress in hepatocytes³⁰.

By correlating the results obtained from the evaluation of the items directly related to the quality of life with the results of those related to the use of Ns, it can be observed that the favorable results related to the quality of life of patients can also be because more than 80% of patients use NS, as shown in Figure 3.

Limitations and strengths of the study

A study carried out at the level of the general population would probably generate different results. For the population with CLD in Romania, until now no similar study has been carried out regarding the use of the SF-LDQOL questionnaire, supplemented with questions related to the use of NS. This study represents a reference one, to be continued in other age groups or other categories of patients or in the general population.

CONCLUSIONS

The use of the SF-LDQOL questionnaire, supplemented with questions related to the use of NS, is a useful instrument both for physicians and pharmacists. The findings derived from utilizing the questionnaire indicate that it ought to be utilized as a standard assessment tool for evaluating the quality of life in patients with CLD.

Authors Contribution:

Conceptualization, M.F., D.M.T., and A.P.; methodology, M.F. and A.P.; software, T.C.G. and A.M.F.; validation, D.M.T. and T.C.G.; formal analysis, D.M.T.; investigation, M.F., A.P., A.M.F. and T.C.G.; writing—original draft preparation, M.F. and D.M.T.; writing—review and

editing, M.F., A.P. and T.C.G.; visualization, D.M.T.; supervision, D.M.T.; project administration. All authors have read and agreed with the final version of this article.

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”

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