

## Quality of life of elderly with chronic liver diseases

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**Abstract:** Chronic liver disease (CLD) is a health and social problem in Egypt and its burden is expected to increase among elderly as the cohort of hepatitis C entering the geriatric age. We assessed the quality of life of 179 elderly with CLD using chronic liver disease questionnaire (CLDQ). The mean score of CLDQ was 3.55 and mean scores of the six domains were 3.6, 3.6, 3.4, 3.5, 3.6, and 3.4; respectively. The mean scores of the total CLDQ and its domains were statistically significantly lower in patients of 70 year; in males; in divorced and widowed elderly; in illiterate; in those living alone; in patients of non-alcoholic fatty liver than those with hepatitis B and C and in Child's B and C cirrhosis. It is the role of gerontological nurses and physicians to assess the effects of CLD on quality of life of elderly and council them.

**Key Words:** Chronic liver disease questionnaire – Health related quality of life – Elderly – Hepatitis C.

### I. Introduction

Globally cirrhosis/chronic liver disease (CLD) whatever the cause, is responsible for major mortality and morbidity<sup>(1)</sup>. Liver disease is a top cause of morbidity and mortality in Egypt where viral related cirrhosis is the most common. The prevalence of chronic liver disease is increasing in the elderly population. With a mostly asymptomatic or non-specific presentation, these diseases may easily go undiagnosed<sup>(2)</sup>.

Both hepatitis B and C (HBV and HCV) have the potential to cause chronic infections associated with liver cirrhosis<sup>(3)</sup>. Hepatitis B and C are, and will remain for some time, major health problems in Egypt. Both infections can lead to an acute or silent course of liver disease, progressing from liver impairment to cirrhosis and decompensated liver failure or hepatocellular carcinoma. The prevalence of HBV in Egypt is of intermediate endemicity (2-8%)<sup>(4,5)</sup>. On the other hand, HCV is now a major cause of CLD in Egypt with a prevalence of 14.7% among the 15-59 years age group<sup>(6)</sup> and contributed to the exceptionally high burden of CLD in Egypt<sup>(7)</sup>. The current evidence suggests that HCV has been associated with tremendous clinical, economic and quality of life (QoL) burden<sup>(8,9)</sup>. It was postulated that the epidemic has been caused by extensive iatrogenic transmission during the era of parenteral-antischistosomal-therapy (PAT) mass-treatment campaigns<sup>(10,11)</sup>.

Non-alcoholic fatty liver disease (NAFLD) is an important cause of CLD. The spectrum of NAFLD ranges from simple steatosis, non-alcoholic steatohepatitis (NASH) with or without fibrosis to advanced fibrosis and cirrhosis<sup>(12)</sup>.

In Egypt the elderly of 60 years or more represented 6.3% of the total population and is expected to be 11.5% and 20.8% in 2025 and 2050; respectively<sup>(13)</sup>. Age was reported to be a factor with negative impact on health-related quality of life (HRQL) in CLD<sup>(14)</sup>. The problem of HCV-associated CLD in geriatrics is expected to increase in Egypt as the cohort exposed to PAT mass-treatment is entering the geriatrics-age period.

HRQL is an important part of psychosocial outcome for patients suffering from chronic debilitating illness and it has become an important outcome measure in the assessment of disease management<sup>(15, 16)</sup> with emphasis on patient's functioning preservation and well-being<sup>(17)</sup>.

To date, the majority of research examining the effects of CLD on QoL utilizes the short-form 36. The chronic liver disease questionnaire (CLDQ) is a validated CLD specific instrument and can be used for all types of liver diseases to get information about CLD-related HRQL<sup>(18)</sup>. Younossi et al, (1999) concluded that CLDQ is short, easy to administer, produces both a summary score and domain scores, and correlates with the severity of liver disease.

The measurement of HRQL is essential in patients with CLD where recovery is not always achievable as in elderly. Despite the high burden of chronic liver diseases in Egypt, the study of the quality of life of these patients, especially the elderly, received little attention. To the best authors' knowledge this is the first attempt to assess HRQL in elderly with CLD in Egypt. The aim of this study is to assess the quality of life of elderly patients with CLD and its associated factors.

## II. Subjects and Method

This is a cross sectional study carried out in-outpatient clinics of three tertiary care hospitals namely, Specialized Medical Hospital, Gastroenterology Center, and Egyptian Liver Hospital, Dakahlia governorate, Egypt, during the period from September 2014 to February 2015.

The target population is elderly patients attending the outpatient clinics fulfilling the following criteria: age 60 years and more, both sexes, new diagnosis of stable CLD, able to communicate verbally, not treated with antiviral or anticancer medications and agreed to participate in the study. Out of 204 patients fulfilling these criteria, 179 (87.7%) agreed to participate in the study: 48 non-cirrhotic liver diseases, 131 with cirrhosis.

The study was approved by the research ethics committee of Faculty of Nursing, Mansoura University. The necessary approvals of hospital directors were obtained. Patients gave verbal consent to participate in the study. Privacy, confidentiality, anonymity and the right to withdraw at any time was assured. Patients were interviewed individually by the researchers at the first visit before initiation of any treatment in outpatient clinic during the working hours.

Data collected included the socio-demographic characteristics e.g. age, sex, marital status, education, current work, living conditions and residence. Clinical data were abstracted from the patients files e.g. diagnosis, severity, duration of disease and associated co-morbidities.

The chronic liver disease questionnaire (CLDQ) was used to measure quality of life of patients. CLDQ was developed by (Younossi et al., 1999). It is the first specific instrument for measuring QoL in CLD<sup>(19)</sup>. The CLDQ includes 29 items in the following domains: abdominal symptoms, fatigue, systemic symptoms, activity, emotional function and worry. It has 7 Likert's scale type of answers ranging from "all of the time" to "none of the time" possible range 29–203 from worst to best QoL. We followed the scoring system devised by (Younossi et al, 2001).

The CLDQ was translated into Arabic by the two researchers independently and back translated by another two translators not aware about the original form. A consensus was made on controversies. The Arabic form was tested for reliability using test-retest method. A tool was applied on 15 elderly patients with chronic liver disease selected from outpatient clinic of the Specialized Medical Hospital. These patients were not included in the full-scale study. The tool was repeated again on the same patients after two weeks. The Cronbach's alpha of the overall score was 0.86 and ranged from 0.80 to 0.91 in different domains. The test-retest correlation coefficient of the overall score was 0.9 and ranged from 0.76 to 0.94 in different domains.

Data was analyzed using SPSS version 16. Qualitative variables were described as number and percent and quantitative variables were presented as mean  $\pm$ SD. Unpaired t-test was used for comparing score between two categories and ANOVA (F) test was used for comparing for more than two categories with Bonferroni's post-hoc multiple comparison test.  $P \leq 0.05$  was considered statistically significant.

## III. Results

The total score of CLDQ of elderly patients with CLD was  $3.55 \pm 0.96$ . The mean score is statistically significantly lower in patients of 70 year than the younger age groups; in males compared to females (3.7 vs. 3.2; respectively); in divorced and widowed elderly; in illiterate than highly educated elderly; in those living alone; and in patients of non-alcoholic fatty liver than those with hepatitis B and C. The mean score decreased progressively from 4.68 in non-cirrhotic patient down to 3.28 and 2.25 in Child's B and C cirrhosis; respectively (table 1).

Table 2 shows that the mean score of AS, FA and SS domains were 3.6, 3.6 and 3.4; respectively. The AS score was significantly lower in older patients, in females, illiterate, being living lonely, patients with Child's class C cirrhosis and patients with non-alcoholic fatty liver. The same pattern was observed in FA and SS domains of CLDQ.

Table 3 reveals that the mean score of AC, EF and SWO domains were 3.5, 3.6 and 3.4; respectively. The AC score was significantly lower in older patients, in females, illiterate, being living lonely, patients with Child's class C cirrhosis and patients with non-alcoholic fatty liver. The same pattern was observed in EF and WO domains of CLDQ.

**Table 1.**Total CLDQ and Its Variation According To Socio-Demographic And Clinical Data of the Elderly with CLD.

	N(%)	CLDQ score Mean ± SD	Significance test
<b>Overall</b>	179(%)	3.55±0.96	
<b>Age (in years):</b>	70(39.0)	3.9±0.9 <sup>A</sup>	F=17.4, P≤0.001
60-	61(34.1)	3.6±0.9 <sup>B</sup>	
65- ≥70	48(26.8)	2.9±0.8 <sup>A,B</sup>	
Mean ± SD	66.44±4.85		
<b>Sex:</b> Male	120(67.0)	3.7±0.9	t=3.5, P≤0.001
Female	59(33.0)	3.2±0.9	
<b>Marital status:</b>	9(5.0)	3.5±0.8	F=2.2, P=0.08
Single	96(53.6)	3.7±0.9	
Married	45(25.1)	3.3±0.9	
Divorced	29(16.2)	3.3±1.0	
Widowed			
<b>Education:</b>	34(13.4)	2.8±0.4 <sup>A,B</sup>	F=9.02, P≤0.001
Illiterate	36(20.1)	3.3±0.9	
Basic	68(38.0)	3.8±0.9 <sup>A</sup>	
Secondary University	51(28.5)	3.7±0.99 <sup>B</sup>	
<b>Work :</b>	68(38.0)	3.6±1.0	t=0.3, P=0.7
Working	111(62.0)	3.5±0.9	
<b>Living condition:</b>	69(38.5)	3.3±0.95 <sup>A,B</sup>	F=5.7, P=0.004
Alone	90(50.3)	3.7±0.9 <sup>A</sup>	
With partner only With family	20(11.2)	3.5±0.9 <sup>B</sup>	
<b>Residence :</b>	102(57.0)	3.5±1.0	t=0.7, P=0.3
Rural	77(43.0)	3.6±0.9	
<b>Co-morbidity:</b>	66(36.9)	3.4±0.9	F=1.6, P=0.2
None	63(35.2)	3.7±1.0	
1-3	50(27.9)	3.5±0.9	
3+			
<b>Duration of disease:</b>	74(41.3)	3.7±0.96	t=1.8, P=0.1
<5 years	105(58.7)	3.4±0.95	
≥5 years	5.32±1.92		
Mean ± SD			
<b>Disease severity:</b>	48(26.8)	4.68±0.26 <sup>A,B,C</sup>	F=97.9, P≤0.001
No cirrhosis	59(33.0)	3.32±0.89 <sup>A,E</sup>	
Child's class A cirrhosis	51(28.5)	3.28±0.5 <sup>B,F</sup>	
Child's class B cirrhosis Child's class C cirrhosis	21(11.7)	2.25±0.1 <sup>C,E,F</sup>	
<b>Cause of chronic liver disease:</b>			F=10.1, P≤0.001
Viral hepatitis C	107(59.8)	3.5±0.99 <sup>A,B</sup>	
Viral hepatitis B Nonalcoholic fatty liver	41(22.9) 31(17.3)	4.0±0.9 <sup>A,C</sup> 3.0±0.6 <sup>B,C</sup>	

A,B,C,E & F means significant differences between the corresponding groups by Bonferroni's multiple comparison test

**Table 2.** Abdominal Symptoms (AS), Fatigue (FA) and Systematic Symptoms (SS) Domains According To Socio-Demographic and Clinical Data of the Elderly with CLD

	Domain		
	AS	FA	SS
<b>Overall</b>	3.6±1.04	3.6±0.95	3.4±0.88
<b>Age (in years):</b>	3.96±1.0 <sup>A</sup>	4.0±0.9 <sup>A</sup>	3.8±0.9 <sup>A,B</sup>
60-	3.75±0.99 <sup>B</sup>	3.7±0.9 <sup>B</sup>	3.5±0.7 <sup>A,C</sup>
65-	2.99±0.88 <sup>A,B</sup>	3.1±0.8 <sup>A,B</sup>	2.8±0.7 <sup>B,C</sup>
≥70			
Mean ± SD			
<b>Sex:</b>	3.8±1.0 <sup>***</sup>	3.8±0.9 <sup>***</sup>	3.5±0.8 <sup>**</sup>
Male	3.3±1.0	3.3±1.0	3.2±0.9
Female			
<b>Marital status:</b>	3.7±1.0	3.6±0.8	3.5±0.9
Single	3.8±1.0	3.8±0.9	3.6±0.8
Married	3.4±1.1	3.4±1.0	3.3±0.9
Divorced	3.4±1.0	3.3±1.1	3.1±0.9
Widowed			
<b>Education:</b>	2.9±0.5 <sup>A,B</sup>	2.9±0.7 <sup>A,B</sup>	2.7±0.5 <sup>A,B,C</sup>
Illiterate	3.4±1.0	3.4±0.9 <sup>C</sup>	3.3±0.9 <sup>A</sup>
Basic	3.9±1.0 <sup>A</sup>	3.9±0.9 <sup>A,C</sup>	3.6±0.8 <sup>B</sup>
Secondary	3.8±1.1 <sup>B</sup>	3.8±0.99 <sup>B</sup>	3.5±0.9 <sup>C</sup>
University			
<b>Work :</b>	3.7±1.0	3.6±1.0	3.4±0.9
Working	3.7±0.9	3.7±0.9	3.4±0.9
Not working			
<b>Living condition:</b>	3.4±1.1 <sup>A,B</sup>	3.4±1.0	3.2±0.9 <sup>A</sup>
Alone	3.7±0.99 <sup>A</sup>	3.8±0.9	3.5±0.9
With partner only	4.0±1.0 <sup>B</sup>	4.0±0.8	3.8±0.7 <sup>A</sup>
With family			
<b>Residence :</b>	3.6±0.9	3.5±1.0	3.4±0.9
Rural	3.5±1.0	3.6±0.9	3.5±1.0
Urban			
<b>Co-morbidity:</b>	3.5±0.97	3.5±0.8	3.3±0.8
No	3.8±1.1	3.8±1.0	3.5±0.88
1-3	3.6±1.0	3.6±0.96	3.4±0.96
3+			
<b>Duration of disease:</b>			
<5 years	3.8±1.0	3.9±1.0	3.6±0.8 <sup>*</sup>
≥5 years	3.5±1.0	3.5±0.9	3.3±0.9
Mean ± SD			
<b>Disease severity:</b> No cirrhosis	4.76±0.52 <sup>A,B,C</sup>	4.67±0.37 <sup>A,B,C</sup>	4.44±0.5 <sup>A,B,C</sup>
Child's class A cirrhosis	3.28±1.03 <sup>A,E</sup>	3.45±0.95 <sup>A,E</sup>	3.24±0.6 <sup>A,E</sup>
Child's class B cirrhosis	3.52±0.46 <sup>B,F</sup>	3.41±0.6 <sup>B,F</sup>	3.18±0.34 <sup>B,F</sup>
Child's class C cirrhosis	2.29±0.3 <sup>C,E,F</sup>	2.42±0.18 <sup>C,E,F</sup>	2.1±0.12 <sup>C,E,F</sup>
<b>Cause of chronic liver disease:</b>			
Viral hepatitis C	3.6±1.1 <sup>A</sup>	3.6±0.9 <sup>A</sup>	3.4±0.9 <sup>A</sup>
Viral hepatitis B	4.0±1.1 <sup>B</sup>	4.1±0.9 <sup>A,B</sup>	3.8±0.9 <sup>A,B</sup>
Nonalcoholic fatty liver	3.1±0.7 <sup>A,B</sup>	3.2±0.6 <sup>B</sup>	3.0±0.5 <sup>B</sup>

A,B,C,E & F means significant differences between the corresponding groups by Bonferroni's multiple comparison test

\*, \*\* & \*\*\* significant difference by t-test at P≤0.05, P≤0.01 & P≤0.001; respectively

**Table 3.** Activity (AC), Emotional Function (EF) And Worry (WO) Domains According To Socio-Demographic And Clinical Data Of The Elderly With CLD

	Domain		
	AC	EF	WO
<b>Overall</b>	3.5±1.1	3.6±1.01	3.4±1.2
<b>Age (in years):</b>	3.9±0.9 <sup>A</sup>	3.98±0.96 <sup>A</sup>	3.8±1.2 <sup>A</sup>
60-	3.6±1.1 <sup>B</sup>	3.6±1.0 <sup>B</sup>	3.5±1.3 <sup>B</sup>
65-	2.8±0.9 <sup>A,B</sup>	3.1±0.8 <sup>A,B</sup>	2.95±0.9 <sup>A,B</sup>
≥70			
Mean ± SD			
<b>Sex:</b>	3.7±1.1 <sup>**</sup>	3.8±1.0 <sup>***</sup>	3.7±1.2 <sup>**</sup>
Male	3.2±1.0	3.3±1.0	3.1±1.1
Female			
<b>Marital status:</b>	3.6±0.9	3.4±0.7	3.2±0.8
Single	3.8±1.0	3.8±1.0	3.7±1.2
Married	3.3±1.1	3.4±1.0	3.2±1.1
Divorced	3.3±1.2	3.3±1.0	3.1±1.2
Widowed			
<b>Education:</b>	2.8±0.7 <sup>A,B</sup>	2.9±0.4 <sup>A,B</sup>	2.5±0.3 <sup>A,B</sup>
Illiterate	3.2±1.0	3.4±0.9 <sup>C</sup>	3.2±1.1
Basic	3.8±1.0 <sup>A</sup>	3.9±1.0 <sup>A,C</sup>	3.8±1.3 <sup>A</sup>
Secondary	3.7±1.2 <sup>B</sup>	3.7±1.0 <sup>B</sup>	3.6±1.2 <sup>B</sup>
University			
<b>Work :</b>	3.5±1.1	3.7±1.0	3.6±1.3
Working	3.5±1.1	3.6±1.0	3.4±1.2
Not working			
<b>Living condition:</b>	3.2±1.1 <sup>A</sup>	3.3±0.9 <sup>A</sup>	3.1±1.0 <sup>A,B</sup>
Alone	3.6±1.1	3.8±1.0 <sup>A</sup>	3.6±1.2 <sup>A</sup>
With partner only	4.0±1.0 <sup>A</sup>	3.9±1.0	4.0±1.3 <sup>B</sup>
With family			
<b>Residence :</b>	3.4±1.0	3.6±0.9	3.3±1.1
Rural	3.6±1.2	3.5±1.1	3.5±1.1
Urban			
<b>Co-morbidity:</b>	3.4±1.0	3.5±1.0	3.3±1.2
None	3.8±1.1	3.8±1.0	3.6±1.2
1-3	3.4±1.0	3.6±0.97	3.4±1.1
3+			
<b>Duration of disease:</b>			
<5 years	3.7±1.0	3.8±1.0	3.5±1.2
≥5 years	3.4±1.1	3.5±1.0	3.4±1.2
Mean ± SD			
<b>Disease severity:</b>	4.89±0.39 <sup>A,B,C</sup>	4.87±0.63 <sup>A,B,C</sup>	4.68±0.26 <sup>A,B,C</sup>
No cirrhosis	3.38±0.93 <sup>A,E</sup>	3.1±1.16 <sup>A,E</sup>	3.32±0.89 <sup>A,E</sup>
Child's class A cirrhosis	3.27±0.59 <sup>B,F</sup>	3.02±0.66 <sup>B,F</sup>	3.28±0.5 <sup>B,F</sup>
Child's class B cirrhosis	2.42±0.12 <sup>C,E,F</sup>	2.39±0.16 <sup>C,E,F</sup>	2.25±0.1 <sup>C,E,F</sup>
Child's class C cirrhosis			
<b>Cause of chronic liver disease:</b>			
Viral hepatitis C	3.5±1.1 <sup>A</sup>	3.6±1.0 <sup>A</sup>	3.5±1.2 <sup>A,B</sup>
Viral hepatitis B	4.0±1.1 <sup>A,B</sup>	4.1±0.96 <sup>A,B</sup>	4.0±1.2 <sup>A,C</sup>
Nonalcoholic fatty liver	3.0±0.7 <sup>B</sup>	3.1±0.7 <sup>B</sup>	2.8±0.9 <sup>B,C</sup>

A,B,C,E & F means significant differences between the corresponding groups by Bonferroni's multiple comparison test

\*\* & \*\*\* significant difference by t-test at  $P \leq 0.01$  &  $P \leq 0.001$ ; respectively

#### IV. Discussion

This is the first study conducted in Egypt on HRQL of elderly with CLD. It focuses not only on liver disease factors but also on other socio-demographic and clinical variables.

Elderly with CLD had poor QoL with means of the total and domains of CLDQ score of less than 5. Elderly concerns about signs and symptoms in addition to socio-demographic disadvantages may lead to lower QoL. Higher mean scores of CLDQ and its domains were reported among CLD patients of younger ages in different cultures (Sobhonslidsuk et al, 2004; Mahmoud et al., 2008; Parkash et al., 2012; Mucci et al., 2013)<sup>(20,21,22,23)</sup>. The mean score of total CLDQ and its six domains decreased significantly with advance age (70 years or more). A previous study revealed that old age had a negative impact on HRQL (Younossi et al, 2001a)<sup>(16)</sup>. In general elderly is associated with less favorable appraisal of personal health due to their health

concerns, pessimistic health appraisals, social isolation and unemployment (Garrity et al, 1978)<sup>(24)</sup>. Patients of CLD may exhibit a range of emotional responses, including worry, fear, hopelessness, depression and anger. Other studies have shown that increasing age does not affect the mean CLDQ score (Sumskiene et al, 2006; Parkash et al., 2012)<sup>(22, 25)</sup>. This variability among different studies could be attributed to heterogeneity of patients, varied severity and causes of CLD, different socio-demographics and cultural status of studied patients.

Females had significantly lower total CLDQ and its domain scores compared to males. This can be attributed to the difference in health care-seeking pattern with late consultation among females. In traditional communities, females should be accompanied by an adult male family member to go outside home even for clinic visits. This is in agreement with (Sobhonslidsuk et al., 2006; Basal et al., 2011)<sup>(14,26)</sup>. While Fontana et al (2001), Sumskiene et al., (2006); Mahmoud et al, (2008); and Parkash et al., (2012)<sup>(21,22,25,23,27)</sup> found no significant influence of sex on HRQL in HCV patients.

Marital status, work and residence had no effect on the score of CLDQ and its domains. This is in agreement with (Basal et al., 2011)<sup>(26)</sup>. This may be explained by close-knit type of the Egyptian society especially in rural areas. CLD patients could get psychosocial support from other family members and neighbors even they are divorced or widowed. In Muslim culture elderly tend to be more religious with advancing age. It was concluded that religious beliefs and practices are associated with better mental health and QoL (Sawatzky et al., 2005; Moreira-Almeida et al, 2006)<sup>(28, 29)</sup>. Elderly seek spiritual solutions in adversity and hardship such as illness (Rostampour-Vajari et al, 2012)<sup>(20)</sup>. However, the contradicting finding of being living lonely is associated with significantly lower scores of the total CLDQ and its domains is difficult to explain.

Illiterate elderly with CLD have significantly lower mean scores of CLDQ and its domains. Education can help people cope with their problems. Illiterates are prone to psychological problems and unable to cope with their illness. This agrees with Basal et al (2011)<sup>(26)</sup>.

Associated co-morbidity and duration of CLD have no effect of the meanscores of the total CLDQ and its domains. This is in contrast to other studies (Hussain et al., 2001 and Hauser et al., 2004; Basal et al, 2011)<sup>(17, 26, and 31)</sup>. It is not clear whether this is due to the overlapping of the non-specific symptoms of CLD with those of the other geriatric morbidities or the CLDQ is specific to CLD and not affected by other co-morbidities.

Advanced liver disease is associated with significant reduction in the scores of total CLDQ and its domains. Higher degrees of CLD decreased HRQL in all domains of the CLDQ in CLD patients in different countries and cultures<sup>(1, 9, 16, 18, 23, 24, 32-38)</sup>. The mean scores of total CLDQ and its domains were significantly low in non-alcoholic liver disease in comparison to hepatitis B and C. Sobhonslidsuk et al., (2006)<sup>(14)</sup> failed to find an impact of viral hepatitis infection, especially viral hepatitis C on HRQL due to small number of HCV cases. On the other hand, (Younossi et al., 2014)<sup>(9)</sup> concluded that compared with other liver diseases, HCV has the lowest mental aspect of HRQL. Another study reported that CLDQ score is more affected in patients with chronic hepatitis C associated cirrhosis (Foster et al., 1998)<sup>(39)</sup>.

In the light of the study findings, it can be concluded that there is a marked decline in the quality of life of elderly patients suffering from CLD especially with cirrhotic liver than non-cirrhotic. This decline may be due to the extra hepatic effects and common symptoms of this disease. It is the role of gerontological nurses and physicians to assess the effects of CLD on the QoL of elderly patients and council them so to improve their quality of life. There is a need to design a self-care program which can assist elderly patients to maintain their quality of life. A previous study confirmed the positive effects of the educational and self-care program on the QoL of cirrhotic patients (Zandi et al., 2005)<sup>(19)</sup>. A nation-wide study using CLDQ in all types of CLD need to be carried out to better understand the effect of CLD on HRQL and to test the effect of different interventions to improve it.

**Study Limitations:** This study involved a convenient sample of elderly with CLD attending tertiary care hospitals the results of which may not reflect the general population of the elderly with CLD in the community. A second limitation is that HRQL was assessed only before treatment. It is important to assess the effect of treatment on QoL in these patients. Another limitation is that patients with advanced hepatic encephalopathy were not included due to their inability to answer questions and give consent.

**Conflicts of Interests:** None

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