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Full Length Research Paper

Impact of chronic liver disease on HRQOL and its association with anaemia in Al-Gharbiyah Governorate, Egypt

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There has been a rapid development in the concept of HRQOL due to growing awareness of the importance of understanding the effect of health related intervention on patients' routine life, rather than only on treatment of their bodies. Because this concept is important for those who live with less optimism of cure such as decompensated liver cirrhosis patients therefore HRQOL is important in terms of physical and psychosocial wellbeing for patients; suffering from chronic debilitating illnesses. We evaluated the impact of chronic liver disease on HRQOL, looked for differences in HRQOL by type and severity of disease, and tried to identify the association of HRQOL with anemia. This study was conducted on 250 patients with chronic liver disease recruited from the hepatology outpatient clinic of Clinical Hepatology Department, El-Mahallah Hepatology Teaching Hospital and hepatology outpatient clinic of Internal Medicine Department, Tanta University Hospitals. Health related quality of life (HRQOL) had been assessed by using chronic liver disease questionnaire (CLDQ). The relationship between severity of impairment of quality of life and hemoglobin level was found statistically significant. The differences in severity of impairment of activities in relation to hemoglobin level were found statistically not significant. The relationship between hemoglobin level and emotional function was found statistically significant. The worries domain in relation to hemoglobin level was not significant. The total score of quality of life shows a negative significant correlation with hemoglobin level where the correlation coefficient was $-0.195(p=0.002)$.

Keywords: Chronic liver disease, anemia and health related quality of life (HRQOL)

INTRODUCTION AND AIM OF WORK

The increasing prevalence of chronic disease in developed countries has led to an increased focus on health related quality of life (HRQOL) (Gutteling et al., 2007).

HRQOL is a multidimensional concept that usually includes self-report of the way in which physical, emotional, social or other domains of well-being are affected by disease or its treatment (Kanwal, 2014).

Recently Quality of Life (QOL) has become the principal goal of medical care because of the increasing emphasis on the patients as focal point of health care, patients' functioning preservation and wellbeing.

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Henceforth measurement of patient's HRQOL is receiving attention in medical research (Hamandz et al., 2011). With the growing interest of hepatologists in monitoring therapeutic interventions by means of HRQOL instruments, the question arose about which biological, psychological, and sociodemographic factors, apart from therapeutic interventions, may influence HRQOL in patients with chronic liver diseases. Only few data are available of the determinants of HRQOL in patients with chronic liver diseases (Martin et al., 2006; Marchesini et al., 2001).

Chronic liver diseases frequently are associated with multiple complications, like hematological abnormalities. Anemia of diverse etiology occurs in about 75% of patients with chronic liver disease (Younossi et al., 2001).

The aim of this study was to assess health related quality of life (HRQOL) in patients with chronic liver disease in association with presence or absence of anemia.

PATIENTS AND METHODS

Study settings

This study was conducted on patients with chronic liver disease recruited from the hepatology outpatient clinic of Clinical Hepatology Department, El-Mahallah Hepatology Teaching Hospital.

Patients were also recruited from hepatology outpatient clinic of Internal Medicine Department, Tanta University Hospitals.

Study design

Comparative cross sectional study during the period from January 2014 to June 2014.

Sampling

The sample size was calculated as 250 patients based on the following criteria

- 1.95% confidence limit.
- 2.80% power of the study.
- 3.Estimated number of patients suffering from poor quality of life secondary to chronic liver disease ranging between 40-46%

This study was conducted on randomly selected 250 patients with chronic liver disease. Systematic sampling was used where one patient from every 3 served patients was taken till completing the total sample size.

All patients who had established diagnosis of liver cirrhosis of any etiology and fulfilling inclusion criteria had been recruited in the study after obtaining the informed consent.

Inclusion criteria

- All adults age >18 years with either history of viral CLD (HBsAg +ve or HCV Ab +ve) or non-viral CLD .
- History of any clinical features of cirrhosis like ascites, encephalopathy or upper gastro intestinal bleeding.
- Any of the laboratory features including prolonged prothrombin time, decreased albumin level and increased total bilirubin.
- Any ultrasonography evidence of CLD including shrunken liver, dilated portal vein, splenomegaly.

Exclusion criteria

Individuals with concomitant co morbidity like heart failure, chronic renal failure, chronic obstructive pulmonary disease, inflammatory bowel disease, and malignancy.

- Patients with dementia and psychosis.

Methods

Study tool

Health related quality of life (HRQOL) had been assessed by using chronic liver disease questionnaire (CLDQ) (Younossi et al., 2001).

The chronic liver disease questionnaire (CLDQ) was applied as the instrument for measuring HRQL as perceived by the patients during the last two weeks. This HRQL investigation instrument was developed at the Department of Gastroenterology, The Cleveland Clinic Foundation by Younossi et al in 1999 as the disease specific instrument for evaluating HRQL of patients with chronic liver disease.

CLDQ covers 29 items. Each item is measured on a Likert scale. It grades the responses on a scale of 5 (most impaired) to 1 (least impaired) with total score of 145.The questionnaire is designed to measure the six domains of Quality of life (QOL).

These domains are

- Abdominal symptoms (AB) questions no. (1, 5, 17) with total score of 15.
- Fatigue (FA), questions no.(2,4,8,11,13) total score of 25
- Systemic symptoms (SY) questions no.(3,6,21,23,27) total score of 25
- Activity (AC) questions no.(7,9,14) with total score of 15
- emotional functions (EM) questions no.(10,12,15,16,19,20,24,26) total score of 40
- worry (WO) questions no.(18,22,25,28,29)

The total score of quality of life and the score for each domain were calculated as a percentage from the total score. The total percentage score was categorized as mild impairment of quality of life (<50%), moderate impairment (50-75%) and severe impairment if the patient got a score >75%.

Data collection

Patients of chronic liver disease admitted during the period of the study were selected after taking Informed consent. The diagnosis was verified according to the data of anemia, clinical, biochemical and instrumental examinations. Routine examination of patients was done. All patients in the study subjected to the following:

- The baseline information of demographics, socioeconomic status and marital status.
- Full history taking and complete clinical examination.
- Etiology of liver disease and severity of CLD in terms of Child-Pugh score had been recorded from the medical record.
 - laboratory investigations:
 - Complete blood count
 - Liver function tests: serum albumin, bilirubin, ALT, AST & prothrombin time.
 - Abdominal U/S

Data collection, clinical examination and fulfillment of the questionnaire were done by the researchers. Two patients per day were examined which took about 45 minutes for each patient to complete data taking. Most of patients were illiterate so this delayed the time taking of the questionnaire and data was submitted personally by the researchers.

Statistical analysis

The collected data were organized, tabulated and statistically analyzed using SPSS version 19 (Statistical Package for Social Studies) created by IBM, Illinois, Chicago, USA.

Ethical considerations

1. The data collection was performed anonymously.
2. Confidentiality and privacy of data were guaranteed during the whole period of the study.
3. Data were used only for the purpose of the study and not allowed for use for any other purpose.
4. Witnessed verbal consent was taken from each patient after clarifying the objectives and procedure of the study.

RESULTS

As regard the socio-demographic characteristics of studied subjects. Most of patients were aged between 50 and 60 years old with percentage of 46%. Male to female ratio was almost equal. The percentage of patients from rural areas (85.2%) was much higher than those from urban areas. Illiterate people represents 56% of the sample and 30% had primary education. Those who were married represented 93.2%. Housewives represented 46% whereas unemployed and non-skilled manual workers had almost equal percentages of 20.8% and 20%, respectively. And as regard the clinical characteristics of studied subjects. Family history of liver disease was reported by 50.8%. Duration of illness more than 10 years had the lowest percentage of the sample (6.4%). Most of the patients were child A score with percentage of 65.6% then child B score with percentage of 23.2%. Patients had hemoglobin level >12 represent 56.8%.

Table 1 shows distribution of studied subjects by abdominal symptoms domain of hepatic disease quality of life. The highest frequency was reported for the feeling of abdominal bloating which was reported by 42.0% as always feeling it last two weeks. Abdominal pain and discomfort were reported by 28.8% and 28.4%, respectively.

Table 2 shows distribution of studied subjects by fatigue domain of hepatic disease quality of life. More than one half of patients reported never feeling sleepy during the day or felt drowsy during the last two weeks (56.8% and 58.4%, respectively). Feeling tired or fatigued during last two weeks was sometimes felt by 48.8% and most of the time or always present as reported by 26.8%. Feeling decreased strength or level of energy was never felt by 44% and 43.6%, respectively.

Table 3 shows distribution of studied subjects by systemic symptoms domain of hepatic disease quality of life. Patients who suffered sometimes from bodily pain were 55% while 25.2% had body pain most of the times. Shortness of breath during daily activity has never or rarely been a problem to 71.2% of patients although 21.6% had sometimes complained of it. Patients reporting never having muscle cramps were 78.8% while 6.4% had always muscle cramps. Dry mouth was sometimes a problem to 44.4% of patients, whilst 42% never or rarely complained of mouth dryness. Itching had never been or rarely a problem to 80.4% of patients.

Table 4 demonstrates distribution of studied subjects by impaired activities symptoms domain of hepatic disease quality of life. It shows that 46% never or rarely had not been able to eat as much as they like whilst

Table 1. Distribution of studied subjects by abdominal symptoms domain of hepatic disease quality of life.

Abdominal symptoms	Never/rarely		Sometimes		Most of times/always	
	n	%	n	%	n	%
How much of the time during the last two weeks have you been troubled by a feeling of abdominal bloating?	35	14.0	110	44.0	105	42.0
How much of the time during the last two weeks have you experienced abdominal pain?	42	16.8	136	54.4	72	28.8
How much of the time during the last two weeks have you been troubled by a feeling of abdominal discomfort?	39	15.6	140	56.0	71	28.4

Table 2. Distribution of studied subjects by fatigue domain of hepatic disease quality of life.

Fatigue symptoms	Never/rarely		Sometimes		Most of times/always	
	n	%	n	%	n	%
How much of the time have you been tired or fatigued during the last two weeks?	61	24.4	122	48.8	67	26.8
How often during the last two weeks have you felt sleepy during the day?	142	56.8	70	28.0	38	15.2
How much of the time in the last two weeks have you been bothered by having decreased strength?	110	44.0	84	33.6	56	22.4
How often during the last two weeks have you felt a decreased level of energy?	109	43.6	87	34.8	54	21.6
How often during the last two weeks have you felt drowsy?	146	58.4	83	33.2	21	8.4

Table 3. Distribution of studied subjects by systemic symptoms domain of hepatic disease quality of life.

Systemic symptoms	Never/rarely		Sometimes		Most of times/always	
	n	%	n	%	n	%
How much of the time during the last two weeks have you experienced bodily pain?	49	19.6	138	55.2	63	25.2
How much of the time during the last two weeks has shortness of breath been a problem for you in your daily activities?	178	71.2	54	21.6	18	7.2
How often during the last two weeks have you had muscle cramps?	197	78.8	37	14.8	16	6.4
How much of the time during the last two weeks have you had a dry mouth?	105	42.0	111	44.4	34	13.6
How much of the time have you been troubled by itching during the last two weeks?	201	80.4	44	17.6	5	2.0

Table 4. Distribution of studied subjects by impaired activities symptoms domain of hepatic disease quality of life.

Impaired activities symptoms	Never/rarely		Sometimes		Most of times/always	
	n	%	n	%	N	%
How much of the time during the last two weeks have you not been able to eat as much as you would like?	115	46.0	109	43.6	26	10.4
How often during the last two weeks have you had trouble lifting or carrying heavy objects?	81	32.4	96	38.4	73	29.2
How much of the time during the last two weeks have you been bothered by a limitation of your diet?	163	65.2	59	23.6	28	11.2

Table 5. Distribution of studied subjects by emotional functions domain of hepatic disease quality of life.

Emotional functions	Never/rarely		Sometimes		Most of times/always	
	n	%	n	%	n	%
How often during the last two weeks have you felt anxious?	176	70.4	42	16.8	32	12.8
How much of the time during the last two weeks have you felt unhappy?	188	75.2	44	17.6	18	7.2
How often during the last two weeks have you been irritable?	153	61.2	57	22.8	40	16.0
How much of the time during the last two weeks have you had difficulty sleeping at night?	123	49.2	84	33.6	43	17.2
How much of the time during the last two weeks have you had mood swings?	191	76.4	40	16.0	19	7.6
How much of the time during the last two weeks have you been unable to fall asleep at night?	114	45.6	106	42.4	30	12.0
How much of the time during the last two weeks have you felt depressed?	207	82.8	26	10.4	17	6.8
How much of the time during the last two weeks have you had problems concentrating?	164	65.6	70	28.0	16	6.4

Table 6. Distribution of studied subjects by worries domain of hepatic disease quality of life.

Worries	Never/rarely		Sometimes		Most of times/always	
	n	%	n	%	n	%
How much of the time during the last two weeks have you been worried about the impact your liver disease has on your family?	208	83.2	23	9.2	19	7.6
How much of the time during the last two weeks have you been worried that your symptoms will develop into major problems?	215	86.0	12	4.8	23	9.2
How much of the time during the last two weeks have you been worried about your condition getting worse?	209	83.6	25	10.0	16	6.4
How much of the time during the last two weeks have you been worried about never feeling any better?	213	85.2	24	9.6	13	5.2
How much of the time during the last two weeks have you been concerned about the availability of a liver if you need a liver transplant?	236	94.4	9	3.6	5	2.0

43.6% had sometimes problem eating as much as they like. Lifting heavy objects was sometimes a problem to 38.4% while 32.4% never or rarely complained of it. Only 11.2% were always bothered by diet limitation while 65.2% never complained being bothered by diet limitation.

Table 5 shows distribution of studied subjects by emotional functions domain of hepatic disease quality of life. Never or rarely felt anxious was reported by 70.4% while 12.8% always felt anxious. Only 7.2% had always felt unhappy meanwhile 75.2% rarely felt unhappy. Feeling irritable was always felt by 16%. Patients had always difficulty sleeping at night were 17.2%. Patients never had mood swings were 76.4% while those who had always mood swings represents 7.6%. Patients never been able to fall asleep at night represents 45.6% whilst 42.4% sometimes complained of it. Only 6.8% felt always

depressed whilst 82.8% never or rarely felt depressed. Problems concentrating were reported by 6.4% as always happening whilst 28% complained of problem concentrating sometimes.

Table 6 shows distribution of studied subjects by worries domain of hepatic disease quality of life. More than 83% of patients had never been or rarely worried about impact of their liver disease on their family. Also the same percentage of patients has never been or rarely worried about their condition getting worse. Patients have been most of time or always worried that their symptoms may develop into major problems represented 9.2%, while patients who reported sometimes been worried about never feeling any better represented 9.6%. More than 94% of patients reported never or rarely been concerned about the availability of a liver if they need a liver transplant.

Table 7. Association between Child-Pugh score and quality of life of studied subjects.

Quality of life domains	Child-Pugh score						Total		p
	1		2		3		n	%	
	N	%	n	%	n	%			n
Total score									0.012*
<50%	124	75.6	35	60.3	15	53.6	174	69.6	
50-75%	39	23.8	20	34.5	11	39.3	70	28.0	
>75%	1	0.6	3	5.2	2	7.1	6	2.4	
Abdominal symptoms									0.004*
<50%	31	18.9	3	5.2	1	3.6	35	14.0	
50-75%	130	79.3	49	84.5	24	85.7	203	81.2	
>75%	3	1.8	6	10.3	3	10.7	12	4.8	
Fatigue									0.004*
<50%	86	52.4	15	25.9	5	17.9	106	42.4	
50-75%	69	42.1	34	58.6	17	60.7	120	48.0	
>75%	9	5.5	9	15.5	6	21.4	24	9.6	
Systemic symptoms									0.008*
<50%	123	75.0	36	62.1	16	57.1	175	70.0	
50-75%	41	25.0	18	31.0	10	35.7	69	27.6	
>75%	0	0.0	4	6.9	2	7.1	6	2.4	
Impaired activity									0.001*
<50%	98	59.8	18	31.0	8	28.6	124	49.6	
50-75%	62	37.8	35	60.3	18	64.3	115	46.0	
>75%	4	2.4	5	8.6	2	7.1	11	4.4	
Emotional function									0.272
<50%	123	75.0	37	63.8	18	64.3	178	71.2	
50-75%	36	22.0	19	32.8	10	35.7	65	26.0	
>75%	5	3.0	2	3.4	0	0.0	7	2.8	
Worries									0.056
<50%	146	89	52	89.7	20	71.4	218	87.2	
50-75%	13	7.9	5	8.6	7	25.0	25	10.0	
>75%	5	3.0	1	1.7	1	3.6	7	2.8	

*Significant

Table 7 shows association between Child-Pugh score and quality of life of studied subjects. The total score shows that the majority of subjects suffered from mild impairment of <50% of total score (69.6%). Those with severe impairment of quality of life were 2.4%. The severity of impairment of quality of life was found to increase with increased score of Child-Pugh. Severe impairment was among only 0.6% of child score of one and was found to increase to 5.2% of score two and 7.1% for Child score of three. This relationship between severity of impairment of quality of life and Child score was found statistically significant ($p=0.012$).

Concerning abdominal symptoms, 81.2% reported moderate impairment. This impairment was severe among 1.8% of cases with child score of one and increases to reach 10.3% and 10.7% for Child score of two and three, respectively. This relationship was found

statistically significant ($p=0.004$). the same observation was found for fatigue domain where severe impairment of quality of life was 5.5% for Child score one and 15.5% for score two and 21.4% for score three with statistically significant difference ($p=0.004$).

Mild impairment of systemic symptoms quality of life domain was reported by 70% of studied subjects. The relationship between systemic symptoms impairment and Child-Pugh was found statistically significant ($p=0.008$). The percentage of severe impairment was zero% for Child-Pugh score of one and increased to reach 6.9% and 7.1% for higher Child scores of two and three. Severe impairment of activities was reported by 4.4% of total studied subjects. This severe level of impairment was 2.4% for Child score one and increases to 8.1% and 7.1% for score two and three. These differences in severity of impairment of activities in relation to Child-

Table 8. Association between hemoglobin level score and quality of life of studied subjects.

Quality of life domains	Hemoglobin level				Total		p
	<12		12+		n	%	
	N	%	n	%			
Total score							0.036*
<50%	67	62.0	107	75.4	174	69.6	
50-75%	37	34.3	33	23.2	70	28.0	
>75%	4	3.7	2	1.4	6	2.4	
Abdominal symptoms							0.308
<50%	11	10.2	24	16.9	35	14.0	
50-75%	91	84.3	112	78.9	203	81.2	
>75%	6	5.6	6	4.2	12	4.8	
Fatigue							0.076
<50%	38	35.2	68	47.9	106	42.4	
50-75%	56	51.9	64	45.1	120	48.0	
>75%	14	13.0	10	7.0	24	9.6	
Systemic symptoms							0.072
<50%	68	63.0	107	75.4	175	70.0	
50-75%	36	33.3	33	23.2	69	27.6	
>75%	4	3.7	2	1.4	6	2.4	
Impaired activity							0.080
<50%	48	44.4	76	53.5	124	49.6	
50-75%	52	48.1	63	44.4	115	46.0	
>75%	8	7.4	3	2.1	11	4.4	
Emotional function							0.044*
<50%	70	64.8	108	76.1	178	71.2	
50-75%	36	33.3	29	20.4	65	26.0	
>75%	2	1.9	5	3.5	7	2.8	
Worries							0.296
<50%	90	83.3	128	90.1	218	87.2	
50-75%	14	13.0	11	7.7	25	10.0	
>75%	4	3.7	3	2.1	7	2.8	

*Significant

Pugh score were found statistically significant. (p=0.001)

The majority of studied subjects reported mild impairment for both emotional functions and worries domains (71.02% and 87.2%, respectively). The relationship between child score and both emotional function and worries were found statistically not significant.

Table 8 shows association between hemoglobin level score and quality of life of studied subjects. The total score shows that the majority of subjects suffered from mild impairment of <50% of total score (69.6%). Those with severe impairment of quality of life were 2.4%. The severity of impairment of quality of life was found to increase with decreased hemoglobin level. Severe impairment was among 3.7% of those having hemoglobin level <12 and was found to decrease to 1.4% between patients with hemoglobin level >12. This relationship between severity of impairment of quality of life and

hemoglobin level was found statistically significant (p=.036).

Concerning abdominal symptoms, 81.2% reported moderate impairment. This impairment was severe among 5.6% of cases with hemoglobin level <12 and decreases to reach 4.2% in patients with hemoglobin level >12. This relationship was found statistically not significant (p=0.308). For fatigue domain severe impairment represents 9.6%, mild and moderate affection were almost the same with percentages of 48% and 42%, respectively. This relationship between severity of impairment of quality of life and hemoglobin level was found statistically significant (p=.076).

Mild impairment of systemic symptoms quality of life domain was reported by 70% of studied subjects. The relationship between systemic symptoms impairment and hemoglobin level was found statistically not significant (p=0.072). The percentage of severe impairment was

Table 9. Comparison of mean value of the domains of score of quality of life in relation to gender.

Quality of life domains	Mean \pm SD		T	p
	Males	Females		
Total score	66.36 \pm 18.86	65.42 \pm 17.08	0.412	0.680
Abdominal symptoms	9.44 \pm 2.28	9.52 \pm 1.74	0.310	0.757
Fatigue	13.21 \pm 3.98	13.32 \pm 3.42	0.240	0.811
Systemic symptoms	11.02 \pm 3.14	11.39 \pm 3.00	0.963	0.337
Impaired activity	7.71 \pm 2.85	7.51 \pm 2.32	0.621	0.535
Emotional function	17.55 \pm 5.96	16.85 \pm 5.99	0.922	0.358
Worries	7.41 \pm 4.40	6.81 \pm 3.73	1.168	0.244

Table 10. Comparison of mean value of the domains of score of quality of life in relation to residence.

Quality of life domains	Mean \pm SD		T	p
	Urban	Rural		
Total score	67.81 \pm 20.99	65.56 \pm 17.43	0.700	0.458
Abdominal symptoms	8.83 \pm 2.37	9.59 \pm 1.94	2.099	0.037*
Fatigue	13.35 \pm 4.62	13.25 \pm 3.54	0.123	0.903
Systemic symptoms	11.62 \pm 3.72	11.13 \pm 2.95	0.886	0.377
Impaired activity	7.27 \pm 2.86	7.67 \pm 2.56	0.873	0.383
Emotional function	18.91 \pm 6.44	16.91 \pm 5.86	1.895	0.059
Worries	7.81 \pm 4.08	7.00 \pm 4.09	1.113	0.267

*Significant

3.7% for hemoglobin level <12 and decreased to reach 1.4% for hemoglobin level >12. Severe impairment of activities was reported by 4.4% of total studied subjects. This severe level of impairment was 7.4% for hemoglobin level <12 and decreased to 2.1% for hemoglobin level >12. These differences in severity of impairment of activities in relation to hemoglobin level were found statistically not significant. (p=0.080)

The majority of studied subjects reported mild impairment for both emotional functions and worries domains (71.2% and 87.2%, respectively). The relationship between hemoglobin level and emotional function was found statistically significant. (p=0.44) whilst worries domain in relation to hemoglobin level was not significant (p=0.286).

Table 9 shows comparison of mean value of the domains of score of quality of life in relation to gender. The total score of impairment of quality of life was slightly higher among males (66.36+18.86) than females (65.42+17.08). However, this difference was found statistically not significant. Again the total score of impaired activities, emotional function and worries were higher among males than females but without statistically significant difference. On the other hand, abdominal symptoms, fatigues and systemic symptoms were higher

among females than males but with no evidence of statistical significance.

Table 10 shows comparison of mean value of the domains of score of quality of life in relation to residence. The total score of impairment of quality of life was slightly higher among urban (67.81+20.99) than rural (65.56+17.43). However, this difference was found statistically not significant. The total score of fatigue, systemic symptoms, impaired activity and worries were almost the same among urban and rural without statistically significant difference. Emotional function impairment was slightly higher in urban (18.91 \pm 6.44) than in rural (16.91 \pm 5.86) but without statistically significance. the only studied domain showing statistically significant differences in relation to residence was the abdominal symptom domain where rural patients showed a mean of 9.59 \pm 1.94 which was higher than urban patients (8.83 \pm 2.37) (p=0.037).

Table 11 shows comparison of mean value of the domains of score of quality of life in relation to marital status. The total score of impairment of quality of life was much higher among currently not married (76.76 \pm 27.06) than currently married (65.10 \pm 16.94). This difference was found statistically not significant. Abdominal symptoms were found to be more in currently married

Table 11. Comparison of mean value of the domains of score of quality of life in relation to marital status.

Quality of life domains	Mean \pm SD		T	p
	Currently married	Currently not married		
Total score	65.10 \pm 16.94	76.76 \pm 27.06	1.751	0.098
Abdominal symptoms	9.48 \pm 1.96	9.35 \pm 2.87	0.193	0.850
Fatigue	13.23 \pm 3.58	13.70 \pm 5.82	0.360	0.723
Systemic symptoms	11.13 \pm 2.91	12.23 \pm 4.76	0.941	0.360
Impaired activity	7.57 \pm 2.48	8.17 \pm 4.01	0.608	0.551
Emotional function	16.82 \pm 5.59	22.41 \pm 8.46	2.678	0.016*
Worries	6.84 \pm 3.89	10.88 \pm 4.88	4.047	0.001*

*Significant

Table 12. Comparison of mean value of the domains of score of quality of life in relation to educational level.

Quality of life domains	Mean \pm SD		T	p
	Illiterate	literate		
Total score	66.95 \pm 16.98	64.55 \pm 19.16	1.034	0.302
Abdominal symptoms	9.77 \pm 1.77	9.10 \pm 2.27	2.590	0.010*
Fatigue	13.55 \pm 3.36	12.90 \pm 4.09	1.329	0.165
Systemic symptoms	11.6 \pm 2.83	10.70 \pm 3.30	2.292	0.023*
Impaired activity	7.99 \pm 2.25	7.13 \pm 2.93	2.258	0.012*
Emotional function	17.24 \pm 5.84	17.16 \pm 6.17	0.104	0.917
Worries	6.79 \pm 4.00	7.53 \pm 4.17	1.429	0.154

*Significant

patients but without statistical significance. Fatigue, systemic symptoms and impaired activity were slightly higher in currently not married patients compared to married ones but also without statistical significance. Emotional function impairment was much higher in currently not married patients (22.41 \pm 8.46) than those who were currently married (16.82 \pm 5.59) with statistically significant difference (p=0.016). Also worries were much higher in currently not married subjects (10.88 \pm 4.88) than those currently married (6.84 \pm 3.89) with statistically significant difference (p=0.001).

Table 12 shows comparison of mean value of the domains of score of quality of life in relation to educational level. The total score of impairment of quality of life was slightly higher among illiterate (66.95 \pm 16.98) than literate patients (64.55 \pm 19.16) but statistically not significant. The total score of abdominal symptoms, systemic symptoms and impaired activity were higher among illiterate with statistically significant difference (p=0.010, 0.023 and 0.012, respectively). Emotional function impairment and fatigue were slightly higher in illiterate than in literate patients but without statistically significance, while worries is the only domain which was higher in literate (7.53 \pm 4.17) than illiterate patients (6.79 \pm 4.00) but again without statistically significance difference.

Table 13 shows correlation between quality of life, Child-Pugh score. The total score of quality of life shows a weak positive significant correlation with Child score where the correlation coefficient was 0.270 (p=0.001). All domains showed a significant correlation with Child-Pugh score. However, the level of correlation was weak where it was 0.329 and 0.0308 for abdominal symptoms and fatigue (p=0.001). The level of association became relatively weaker for systemic symptoms and impaired activities where it measured 0.253 and 0.283, respectively with statistically significant association (p=0.001). The emotional function and worries showed the relatively weakest association of 0.184 and 0.150. However, these associations were still statistically significant (p=0.004 and 0.017, respectively).

Table 14 shows correlation between quality of life and hemoglobin level. The total score of quality of life shows a negative significant correlation with hemoglobin level where the correlation coefficient was -0.195 (p=0.002). Systemic symptoms shows the highest negative correlation with hemoglobin level -0.215 with statistically significance (p=0.001). Impaired activity showed a correlation coefficient of -0.197 and -0.135 for emotional function with statistical significance (p=0.002 and 0.032, respectively). The correlation coefficient was -0.124 for abdominal symptoms and -0.123 for worries and both

Table 13. Correlation between quality of life, Child-Pugh score.

Quality of life domains	Child-Pugh score	
	r	P
Total score	0.270	0.001*
Abdominal symptoms	0.329	0.001*
Fatigue	0.308	0.001*
Systemic symptoms	0.253	0.001*
Impaired activity	0.283	0.001*
Emotional function	0.184	0.004*
Worries	0.150	0.017*

Significant*Table 14.** Correlation between quality of life and Hemoglobin level.

Quality of life domains	Blood hemoglobin level	
	r	P
Total score	-0.195	0.002*
Abdominal symptoms	-0.124	0.050
Fatigue	0.206	0.001*
Systemic symptoms	-0.215	0.001*
Impaired activity	-0.197	0.002*
Emotional function	-0.135	0.032*
Worries	-0.123	0.052

Significant*Table 15.** Correlation between quality of life and duration of illness in years.

Quality of life domains	Duration of illness in years	
	r	P
Total score	0.228	0.001*
Abdominal symptoms	0.276	0.001*
Fatigue	0.261	0.001*
Systemic symptoms	0.198	0.002*
Impaired activity	0.315	0.001*
Emotional function	0.143	0.024*
Worries	0.070	0.271

without statistically significant association. Fatigue showed weak positive association of 0.206 with statistical significance ($p=0.001$).

Table 15 shows Correlation between quality of life and duration of illness in years. The total score of quality of life showed a weak positive significant correlation with duration of illness where the correlation coefficient was 0.228 ($p=0.001$). All domains showed a significant correlation with duration of illness. However, the level of correlation was weak where it was 0.315 for impaired

activity ($p=0.001$). The level of association became relatively weaker for abdominal symptoms and fatigue where it measured 0.276 and 0.261, respectively with statistically significant association ($p=0.001$). The systemic symptoms and emotional functions showed also weak association of 0.198 and 0.143, respectively. However, these associations were still statistically significant ($p=0.002$ and 0.024, respectively). The worries showed the weakest correlation of 0.070 with no statistical significance.

DISCUSSION

Despite the many studies that have shown a reduced HRQOL in hepatology, relatively few studies have investigated which factors influence liver patients HRQOL. That is a problem when we want to move from just measuring HRQOL towards treatment that improves HRQOL.

The results of the present study showed that most of patients were aged between 50 to 60 years and male to female ratio are almost equal. The total score of impairment of quality of life was slightly higher among males than females but this difference was found statistically not significant. Also the total score of impairment of quality of life was slightly higher among urban than rural. The total score of fatigue, systemic symptoms, impaired activities and worries were almost the same among urban and rural without statistically significant difference. Emotional function impairment was slightly higher among urban than rural but also without statistically significant difference.

The only studied domain showing statistically difference in relation to residence was the abdominal symptom domain which was higher in rural than urban patients.

The total score of impairment of quality of life was much higher among currently not married than currently married and among illiterate than literate patients but statistically not significant whereas the total score of abdominal symptoms, systemic symptoms and impaired activities were higher among illiterate with statistically significant difference.

Similar to these results Italian Cirrhosis Study (Marchesini et al., 2001) and US-American hepatitis C Studies (Hussain et al., 2001), found no significant influences of gender on HRQOL. Also Hauser et al (2004), noted no influences of gender and other quantitative sociodemographic measures such as social class and marital status. Our findings about gender are also similar to those reported by Sumskiene et al. (2006), and Parakash et al. (2012) who also found that mean CLDQ score is not significantly different among different age groups. Hence this suggests that increasing age does not affect mean CLDQ score.

Younossi et al. (2001) had suggested that older age affects QOL in patients with cirrhosis. However the other studies can't be compared with Younossi et al, as they had enrolled all types of CLD patients including patients with hepatocellular carcinoma. Also Dan et al (2006) found no association between CLDQ score, gender and race.

Rugao et al (2012) also found that aging had negative effect on multiple domains especially on mental domains. Possible cause was that female patients paid more attention on their health and spent more on consulting treatment. Marital status had positive effect as married

patients with CLD could get psychological support from their partner.

Les et al (2010) found that the two factors that were independently associated with HRQOL and are not modifiable (non-alcoholic etiology and female sex) suggest a role for psychological factors, which may be modifiable. Differences between men and women have been reported for particular domains of HRQOL by Marchesini et al (2001) this may be explained by differences in self-perception of health status between sexes. Women reported a lower HRQOL than men in other chronic somatic diseases (Pettersson et al., 2008). In addition, in Mediterranean countries women have a major role in taking care of the family. Sex differences could be related to this burden. Afendy A. et al 2009 supported the findings that aging, female gender, present ascites and prolonged prothrombin time had negative effect on HRQOL. Potential treatable factors, correction of ascites, hypoalbuminemia, minimal hepatic encephalopathy, anemia, eating BCAA enriched snack and long term late evening snack may cause a positive impact on HRQOL in patients with CLD (Yamanaka–Okumura et al., 2010).

CLDQ was introduced to evaluate quality of life and clinical effect for patients with chronic liver disease. It includes six domains and 29 questions to test different aspects of life quality in patients with CLD. Fatigue domain consists of sense of fatigue, daytime drowsiness, decreased physical strength and decreased level of energy. Abdominal symptoms include abdominal distention, pain and discomfort. Systemic symptoms include body pain, shortness of breath, itching, dry mouth and muscle cramps. Emotional function domain includes anxiety, depression unhappiness, irritability and sleep disorders. With the higher scores the quality of life worsens and the patient had more severe symptoms.

The results of the present study showed that as regard to abdominal symptoms domain the highest frequency was reported for abdominal bloating. Feeling tired or fatigued was felt by about half of our sample. For systemic symptoms domain about 25% of the patients had body pain most of the time while dry mouth was a problem in 44% of patients. Psychological aspects of CLD and HRQOL have also received some attention. Depression, anxiety, illness understanding, social stigma, worry about family situation, fear of complications, concentrating and memory problems are all related to HRQOL in patients with CLD (Gutteling et al., 2007; Hauser et al., 2004).

The results of current study showed that a small number of patients felt anxious, and about 6.8% felt always depressed. Patients have been most of time or always worried that their symptoms may develop into major problems represents only about 9.2% of the sample. This small percentages of people have worries may be due to most of patients were illiterate and not

capable of fully understanding their disease burdens and complications.

Kanwal et al 2009 also found that psychologically, patients with cirrhosis might have a disproportionately higher incidence of depression, anxiety from the impending physical demise and difficulties in coping with their disease. The ability to perform activities of daily living and to maintain baseline social interactions are also significantly impaired (Grainek et al., 2000).

Also it was found that prevalence of psychiatric disorders in patients with CLD is greater than suspected by hepatologists and similar to the prevalence of psychiatric disorders found in other groups of patients with chronic physical illnesses. According to a meta-analysis of HRQOL studies, mental health has a much greater impact on HRQOL than physical functioning (Cirrincione et al., 2002).

Longitudinal studies have shown interdependency between chronic physical illness and psychiatric disorders. Because of their physical and somatic burden, physical illnesses increase the risk of psychiatric disorders. Conversely, psychiatric disorders increase the risk for chronic physical illness and non adherence to treatment⁽¹⁶⁷⁾. Further studies are necessary in order to establish the relation between psychological symptoms and the QOL in cirrhotic patients.

The results of current study showed correlation between quality of life and Child-Pugh score. All domains showed significant correlation with Child-Pugh score. The severity of impairment of quality of life was found to increase with increased score of child-Pugh score, lower CLDQ score was seen in child c compared to child A. the result is comparable with the study by Sumskien et al who had found that HRQOL in cirrhosis worsens with increasing of severity of liver cirrhosis that is from better HRQOL (higher CLDQ score) in CP A to poor HRQOL (lower CLDQ score) in CP C. Younossi ZM et al had also suggested that when disease severity worsens in CLD, HRQOL is affected.

Also Parakash O et al (2012) in their study found that neither meld score nor CP score were independent predictors of CLDQ score. Similarly in a study conducted in North America which revealed that HRQOL was not affected by the severity of the disease. Also Thai study had shown that mean CLDQ score decreases as severity of the disease worsens from compensated group to decompensated group. The Thai study had divided these patients with chronic hepatitis and CP score A into compensated group, while patients with CP score B & C into decompensated group. The mean CLDQ score of compensated group was slightly higher in the Thai study because they had recruited chronic hepatitis patients while in this study cirrhotic patients were recruited (Younossi et al., 2001).

However, Younossi ZM et al 2006 had reported lower mean CLDQ score that can be explained because

Younossi had also included patients with more advanced disease including patients with hepatocellular carcinoma. This variability among different studies is because of heterogeneous group of patients being studied in different studies. Other reason for differences in CLDQ score might be because of different socioeconomic and sociodemographic status attributed of study participants. Nevertheless some studies didn't find this relationship as Foster et al 1998, Hauser et al 2004 and Kramer et al 2005.

This may have been due to the relatively small number of patients with CLD in a more advanced stage that was included in these studies.

Foster et al (1998) didn't include patients with cirrhosis, Kramer et al 2005 excluded patients with decompensated cirrhosis and most patients in the study had mild chronic hepatitis c CP score A without ascites. Over 70% of the patients in the study performed by Hauser et al 2004 didn't have cirrhosis.

The current study had shown that low Hb level had slightly affected the HRQOL. The severity of impairment of QOL was found to increase with decreased Hb level. Severe impairment was among 3.7% of those having Hb level <12 and decrease to 1.4% among patients with Hb level >12.

Low Hb level in liver cirrhosis is multifactorial. Hypersplenism, upper and lower GI bleeding and poor nutritional intake because of diet restriction imposed on such patients by community as well by physicians are sample causes of low Hb level in patients with CLD.

HRQOL can be improved by rise in Hb level either by transfusion whenever necessary or by giving therapies such as erythropoietin or iron supplements (Silverberg et al., 2003).

In a study by Les et al n=212 cirrhotic patients in Barcelona Spain to identify the potential treatable factors associated with liver cirrhosis. The Spanish study had determined that factors as prior history of decompensation, non-alcohol etiology, hypoalbuminemia, decreased Hb level and female gender are independent predictors of HRQOL. Low Hb level (anemia) may lead to symptoms as tiredness, shortness of breath, mild pedal edema and low grade fever which depend upon severity of anemia.

Low Hb level as a determinant of HRQOL had also been seen in other diseases like chronic kidney injury and congestive heart failure (Drüeke et al., 2006).

So we can emphasize that timely management of such complications like anemia and decompensation that was associated with higher CLDQ would lead to decrease CLDQ score that ultimately would be translated into better HRQOL and improves survival as well.

Also Dan et al 2006 in his study found that anemia negatively affected disease-specific and generic aspects of HRQOL. Screening for and managing treatment-induced depression and anemia during antiviral therapy

are important for the well-being of patients with HCV.

Also Les et al 2010 found an impact of Hb on HRQOL in cirrhosis. The effect of anemia on comparable domains of CLDQ supports this finding. Their data suggested that increasing the concentration of Hb may be a specific aim of therapy for improving HRQOL in cirrhosis.

SUMMARY AND CONCLUSION

The present study aims to assess health related quality of life in patients with CLD in association with hemoglobin percentage (HB %).

The present study was conducted on 250 subjects with CLD recruited from the hepatology outpatient clinic of Clinical Hepatology Department, El-Mahallah Hepatology Teaching Hospital and from hepatology outpatient clinic of Internal Medicine Department, Tanta University Hospitals.

All patients included in the study were subjected to full history taking, complete clinical examination, the baseline information of demographics, socioeconomic status and marital status, etiology of liver disease and severity of CLD in terms of Child-Pugh Score, complete blood count, liver function tests, abdominal ultrasound and HFQOL assess by using chronic liver disease questionnaire (CLDQ).

The main findings can be summarized as follows

- Most of patients were aged between 50 and 60 years old. Male to female ratio was equal. Patients from rural areas (82.2%) were much higher than those from urban.
 - Illiterate people represent 56% of the sample.
 - Most of the patients were Child A score with percentage of 65.6%. Patients with hemoglobin level <12 represented 43.2%.
 - As regard abdominal symptoms domain of CLDQ; the highest frequency was reported for the feeling of abdominal bloating which was reported by 42%, while feeling tired or fatigued was felt by 48.8%. Dry mouth was a problem in 44.4% of patients.
 - Only 12.8% always felt anxious and only 6.8% felt always depressed.
 - More than 83% of patients had never been or rarely worried about impact of their liver disease on their family.
 - The total score of quality of life shows positive significant correlation with Child Score where the correlation coefficient was 0.270(p=0.001), and with duration of illness where the correlation coefficient was 0.228(p=0.001).

- The total score of quality of life shows a negative significant correlation with hemoglobin level where the correlation coefficient was -0.195(p=0.002).

- Systemic symptoms shows the highest negative correlation with hemoglobin level -0.215 with statistically significance (p=0.001)

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