

HEALTH-RELATED QUALITY OF LIFE AND DEPRESSION AMONG PATIENTS OF LIVER CIRRHOSIS IN PAKISTAN

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ABSTRACT

Objective: The present study was designed to assess HRQoL and depression among patients of liver cirrhosis in Pakistan.

Methods: A descriptive cross-sectional study design was used to assess health-related quality of life and depression among liver cirrhosis patients in Pakistan. Two pre-validated questionnaires i.e. SF 36 and HADS were self-administered to a sample of 382 cirrhotic patient's selected using convenience sampling technique for measuring HRQoL and depression, respectively. After data collection, data was cleaned, coded and analyzed using in SPSS version 21.

Results: The results highlighted that lowest scores for HRQoL were observed in the domain of role physical (40.02,±24.01) followed by role emotional (41.93,±26.99) whereas the highest scores were observed in the domain of physical functioning (51.87,±15.22).

Conclusion: The results of the present study concluded that liver cirrhosis patients in Pakistan had poor HRQoL across all domains along with mild to moderate depression. While all domains were affected, the greatest impact was on role limitation due to physical as well as emotional problems. The most affected group among patients were females and patients having age greater than 60 y. Besides this severity and advanced stage of cirrhosis had a negative effect on all domains of HRQoL. Presence of complications further reduced HRQoL and increased depressive symptoms among liver cirrhosis patients.

Keywords: Liver cirrhosis, Health-related quality of life, Depression, Liver disease stages, SF 36, HADS, Pakistan

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INTRODUCTION

Chronic liver disorders are becoming the most important public health issue across the globe contributing substantially to non-communicable disease burden in developed as well as developing countries. More than 500 million patients have been diagnosed with chronic liver disease caused due to a viral cause. On the other hand, the prevalence of chronic liver disorders due to non-viral etiology such as non-alcoholic and alcoholic fatty liver disease, cryptogenic hepatitis and autoimmune hepatitis is also rising significantly [1]. Liver cirrhosis is a key cause of increased mortality and morbidity among chronic liver disorders. The death rate due to liver cirrhosis has increased to more than one million people in the year 2010 as compared to 0.6 million deaths in year 1980 [2]. This rising prevalence can be linked to an increased burden of risk factors. Infection with hepatitis virus B and C are the main contributing factors towards liver cirrhosis, while intake of alcohol and other chronic diseases for instance diabetes mellitus, have proven to be main risk factors for cirrhosis in developed countries [3].

Liver cirrhosis has not only increased the mortality rate but has negative impact on the health-related quality of life (HRQoL) of the patients. Patients diagnosed with liver cirrhosis suffer from symptoms including extreme fatigue, pruritus, depression and cirrhotic complications such as ascites, hepatic encephalopathy, recurrent variceal bleeding and spontaneous bacterial peritonitis. The presence of these complications mainly leads to a decline in health-related quality of life and well-being of patients [4]. The decline in HRQoL and mental health is present throughout the course of disease but is more profound in advanced stages of cirrhosis. Patients having cirrhosis tend to have poor HRQoL due to the presence of muscle cramps and pruritus [5]. Moreover, half of the patients diagnosed with cirrhosis commonly have depression. The well-being of diagnosed patients is highly affected due to these complications, which is not clearly assessed by using clinical disease markers such as Child-Pugh Classification [6]. Assessment of HRQoL

and depression are considered as efficient tools for monitoring patient care. It focuses on effects of disease on emotional, physical and mental functioning which could help in evaluating the wide range of problems which cirrhotic patients can face. Apart from clinical endpoints, patient reported outcomes such as HRQoL should be the prime focus for healthcare professionals in order to improve disease prognosis [4].

Cirrhosis has been identified as common cause of chronic liver disorder in Pakistan. Pakistan is among the ten countries having highest burden of liver diseases like hepatitis which can lead towards cirrhosis [7]. A study conducted in gastroenterology clinics revealed that health-related quality of life was lower in patients with liver cirrhosis. Factors such as hemoglobin, albumin and decompensated liver cirrhosis were linked with poor HRQoL [8]. A study conducted in Islamabad reported that the majority of patients with chronic liver disease were diagnosed with hepatitis. Patients reported poor health-related quality of life [9]. Health related quality of life was also reported to be low in hepatitis B patients. Less educated patients, patients in advanced stages of disease, elderly and female patients had relatively poor HRQoL [10]. Decline in health-related quality of life in liver cirrhosis patients leads to poor treatment outcomes, reduced compliance to treatment, increased complications and poor prognosis of liver cirrhosis. Limited research has focused on assessment of HRQoL and depression in liver cirrhosis patients in Pakistan. Extensive research is required to assess current scenario and factors affecting HRQoL and depression among patients of liver cirrhosis in Pakistan. Thus, the present study was designed to assess HRQoL and depression among patients of liver cirrhosis in Pakistan.

MATERIALS AND METHODS

A descriptive cross-sectional study design was used to assess health-related quality of life and depression among liver cirrhosis patients attending healthcare facilities located in twin cities (Islamabad and Rawalpindi) of Pakistan. Study approval was taken from the Ethical

Committee of Hamdard University (BASR-81-82). All the public and private health care facilities treating liver cirrhosis patients located in twin cities were included in the study. Patients diagnosed with liver cirrhosis with ages between 18-60 y were the study respondents. However, patients who did not fall in Child-Pugh score criteria for liver cirrhosis and those having co-morbidities not affecting the current condition were excluded from the study. Approval was also taken from Medical superintendents of different healthcare facilities of Rawalpindi and Islamabad. Patients were briefed regarding the nature and objectives of the study. Verbal and written consent was obtained prior to data collection. Respondents were ensured of the confidentiality of their responses along with full right to withdraw from the study at any time. The sample size was calculated by using Rao soft at 95% confidence interval and 5% margin of error which came to be 382. Convenience sampling technique was used for the selection of respondents available and willing to participate at the time of data collection. Two pre validated questionnaires i.e. SF 36 and HADS for assessment of HRQoL and Depression, respectively, were used. The questionnaires were self-administered and collected back on the same day to avoid biasness. SF-36 consist of eight subscales including perceived mental health (5 items), physical functioning (10 items), general health perceptions (5 items), role limitations due to physical problems (4 items), role limitation due to emotional problems (3 items), social

functioning (2 items), vitality (4 items) and bodily pain (2 items) [11] while Hospital Anxiety and Depression Scale (HADS) consists of 7 items each for anxiety and depression [12]. Pilot testing was performed on 10% of the sample size for assessing the reliability of the tools. The value of Cronbach's alpha for SF 36 was 0.73 and 0.69 for Hospital Anxiety and Depression Scale (HADS). After data collection, data was cleaned, coded and analyzed using SPSS version 21. Descriptive statistics comprising of frequency and percentages were calculated. Non-parametric tests Kruskal Wallis and Mann Whitney tests ($p \geq 0.05$) were applied to find out the differences among different variables.

RESULTS

Demographic characteristics of respondents

Out of 382 respondents, 58.6% (n=224) were males and 41.4% (n=158) were females. Nearly, 67.3% (n=257) resided in rural settings and 32.7% (n=125) were from urban areas. The patients were suffering from different stages of liver cirrhosis: stage I (n=184, 48.2 %), stage-II (n = 143, 37.4%), stage-III (n = 43, 13.4%) and stage-IV (n = 4, 1%). Regarding the type of treatment, 95% (n=363) were being treated by medicines and only 1.3% (n=5) had undergone liver transplant. Furthermore, 53.1% (n=203) were suffering from hypertension and 30.9% (n=118) were previously diagnosed with diabetes mellitus (table 1).

Table 1: Demographic characteristics of respondents

Indicators		Total n (%)
Age	18-30 y	120 (31.4)
	31-40 y	194 (50.8)
	41-50 y	45 (11.8)
	51-60 y	16 (4.2)
	>60 y	7 (1.8)
Gender	Males	224 (58.6)
	Females	158 (41.4)
Marital Status	Married	298 (78)
	Unmarried	84 (22)
Level of Education	Illiterate	94 (24.6)
	Primary	145 (38)
	Secondary	100 (26.2)
	Bachelors	28 (7.3)
	Masters	14 (3.7)
Income Level	Post-Graduate	1 (0.3)
	≤ 20,000	262 (68.6)
	21,000-40,000	92 (24.1)
	41,000-60,000	24 (6.3)
	61,000-80,000	4 (1.0)
	81,000-100,000	0 (0)
Setting	>100,000	0 (0)
	Urban	125 (32.7)
Stage of Liver Cirrhosis	Rural	257 (67.3)
	Stage-1	184 (48.2)
	Stage-2	143 (37.4)
	Stage-3	51 (13.4)
	Stage-4	4 (1.0)
Type of Co-morbidity	None	56 (14.7)
	Hypertension	203 (53.1)
	Diabetes	118 (30.9)
	Others	5 (1.3)
Type of Treatment	Medicines	363 (95.0)
	Transplant	5 (1.3)
	None	14 (3.7)
Mode of Treatment Payment	Other	0 (0)
	Self-finance	52 (13.6)
	Free	328 (85.9)
Symptoms and Signs affecting HRQoL	Insurance	2 (0.5)
	Cognitive dysfunction	1 (0.3)
	Insomnia	102 (26.7)
	Fatigue	270 (70.7)
	Others	9 (2.4)

Table 2 Domains of health related quality of life among liver cirrhosis patients in Pakistan

Indicator	Mean	Median	Standard deviation
Physical functioning	51.87	50.00	±15.22
Role physical	40.02	50.00	±24.01
Bodily pain	45.99	45.00	±15.88
General health	42.29	45.00	±10.66
Social functioning	50.16	45.00	±14.62
Role emotional	41.93	33.33	±26.99
Vitality	45.74	48.00	±11.84
Mental health	47.09	48.00	±10.57

Domains of health-related quality of life among liver cirrhosis patients in Pakistan

The results highlighted that lowest scores for HRQoL were observed in the domain of role physical (40.02,±24.01) followed by role emotional (41.93,±26.99) whereas highest scores were observed in the domain of physical functioning (51.87,±15.22). A detailed description is given (table 2).

Comparison of health-related quality of life domains by demographic variables among liver cirrhosis patients in Pakistan

Significant difference ($p \leq 0.05$) was found in HRQoL domain among different age groups, income level, stage of cirrhosis and type of co-morbidity. Elder patients had poor HRQoL with a significant decline in physical and mental health. Respondents having income between Rs. 41,000-60,000 reported poor HRQoL. Respondents having stage IV cirrhosis reported poor health-related quality of life in both physical and mental health domains. Respondents having diabetes

as co-morbidity along with cirrhosis had poor health-related quality of life (table 3).

Assessment of depression among liver cirrhosis patients in Pakistan among different demographic variables

The results of the current study showed that respondents having age 51-60 y (10.43,±2.85) were more depressed as compared to respondents having age between 31-40 y (9.09,±2.40). Females respondents were more depressed (9.63,±2.66) as compared to male respondents (9.00,±2.12) having liver cirrhosis. Respondents having stage 4 of liver cirrhosis were more depressed (12.00,±4.61) as compared to those diagnosed with stage 1 of liver cirrhosis (9.06,±2.35). Respondents not undergoing any sort of treatment were more depressed (10.50,±2.90) as compared to those using medicines for management (9.21,±2.34). Respondents having cognitive dysfunction were more depressed (15.00,±0.01) as compared to those having fatigue only (9.24,±2.19). A detailed description is given (table 4).

Table 3: Comparison of health-related quality of life domains by demographic variables among liver cirrhosis patients in Pakistan

Indicators	Physical health component score				Mental health component score				Composite score				
	n	Mean ranks	Test statistics	p-value	n	Mean ranks	Test statistics	p-value	n	Mean ranks	Test statistics	p-value	
Age	18-30 y	120	198.77	34.309 ^b	0.001	120	195.18	31.324 ^b	0.001	120	196.29	35.056 ^b	0.001
	31-40 y	194	204.80			194	203.20			194	204.22		
	41-50 y	45	144.49			45	166.93			45	155.67		
	51-60 y	16	103.41			16	71.66			16	87.97		
	>60 y	7	47.86			7	79.14			7	43.43		
Gender	Males	224	193.02	16089.500 ^a	0.332	224	189.13	16955.000 ^a	0.893	224	190.01	16573.000 ^a	0.668
	Females	158	181.98			158	187.60			158	185.12		
Marital Status	Married	298	184.40	10847.000 ^a	0.165	298	183.76	10661.000 ^a	0.110	298	183.93	10821.000 ^a	0.169
	Unmarried	84	203.21			84	205.48			84	202.54		
Level of Education	Illiterate	94	152.20	15.770 ^b	0.232	94	157.14	5.985 ^b	0.150	94	155.91	13.872 ^b	0.628
	Primary	145	190.48			145	186.94			145	186.36		
	Secondary	100	204.05			100	201.49			100	205.25		
	Bachelors	28	221.43			28	206.09			28	218.54		
	Masters	14	217.21			14	204.18			14	219.04		
Income Level	≤ 20,000	262	199.49	21.362 ^b	0.001	262	198.04	8.327 ^b	0.040	262	198.79	19.211 ^b	0.001
	21,000-40,000	92	162.51			92	171.91			92	164.68		
	41,000-60,000	24	139.85			24	143.48			24	134.91		
	61,000-80,000	4	350.50			4	216.00			4	330.75		
Setting	Urban	125	211.57	12721.000 ^a	0.004	125	198.23	14363.000 ^a	0.226	125	209.95	12798.500 ^a	0.006
	Rural	257	177.28			257	183.77			257	177.29		
Stage of Liver Cirrhosis	Stage-1	184	186.79	8.754 ^b	0.033	184	181.91	11.085 ^b	0.011	184	181.46	11.553 ^b	0.009
	Stage-2	143	194.06			143	199.91			143	197.29		
	Stage-3	51	191.39			51	192.54			51	198.65		
	Stage-4	4	32.00			4	27.50			4	22.00		
Type of Co-morbidity	None	56	214.21	19.171 ^b	0.001	56	196.68	8.297 ^b	0.040	56	213.07	15.658 ^b	0.001
	Hypertension	203	197.98			203	192.93			203	193.25		
	Diabetes	118	165.07			118	182.36			118	173.04		
	Others	5	40.50			5	57.30			5	33.90		
Type of Treatment	Medicines	363	189.15	2.196 ^b	0.333	363	189.88	1.320 ^b	0.517	363	188.92	1.222 ^b	0.543
	Transplant	5	118.10			5	145.00			5	135.60		
	None	14	196.89			14	168.79			14	183.21		
Mode of Treatment Payment	Self-finance	52	70.70	70.566 ^a	0.001	52	76.41	63.786 ^a	0.001	52	65.67	76.518 ^a	0.001
	Free	328	206.36			328	205.44			328	206.65		
Symptoms and Signs affecting HRQoL	Cognitive dysfunction	1	1.50	19.162 ^b	0.001	1	7.50	23.884 ^b	0.001	1	2.50	26.120 ^b	0.001
	Insomnia	102	183.48			102	151.33			102	167.82		
	Fatigue	270	195.85			270	203.39			270	201.30		
	Others	9	49.33			9	75.00			9	44.78		

Mann-Whitney^a, Kruskal Wallis^b ($p \geq 0.05$)

Table 4: Assessment of depression among liver cirrhosis patients in Pakistan among different demographic variables

Indicators		Total mean (\pm SD)	Severity of depression
Age	18-30 y	9.11 (\pm 2.05)	Mild
	31-40 y	9.09 (\pm 2.40)	mild
	41-50 y	10.04 (\pm 2.50)	Mild
	51-60 y	10.43 (\pm 2.85)	Mild
	>60 y	8.85 (\pm 3.76)	Mild
Gender	Males	9.00 (\pm 2.12)	Mild
	Females	9.63 (\pm 2.66)	Mild
Marital Status	Married	9.30 (\pm 2.51)	Mild
	Unmarried	9.11 (\pm 1.79)	Mild
Level of Education	Illiterate	9.82 (\pm 2.40)	Mild
	Primary	8.90 (\pm 2.22)	Mild
	Secondary	9.09 (\pm 2.29)	Mild
	Bachelors	10.28 (\pm 2.97)	Mild
	Masters	8.61 (\pm 1.89)	Mild
Income Level	Post-Graduate	7.00 (\pm 0.01)	Normal
	\leq 20,000	9.01 (\pm 2.16)	Mild
	21,000-40,000	9.62 (\pm 2.36)	Mild
	41,000-60,000	10.69 (\pm 3.93)	Mild
Setting	61,000-80,000	9.00 (\pm 0.01)	Mild
	Urban	9.31 (\pm 2.45)	Mild
	Rural	9.24 (\pm 2.34)	Mild
Stage of Liver Cirrhosis	Stage-1	9.06 (\pm 2.35)	Mild
	Stage-2	9.09 (\pm 2.01)	Mild
	Stage-3	10.27 (\pm 2.85)	Mild
	Stage-4	12.00 (\pm 4.61)	Moderate
Type of Co-morbidity	None	9.85 (\pm 2.78)	Mild
	Hypertension	8.99 (\pm 2.36)	Mild
	Diabetes	9.38 (\pm 1.98)	Mild
	Others	11.00 (\pm 4.58)	Moderate
Type of Treatment	Medicines	9.21 (\pm 2.34)	Mild
	Transplant	9.40 (\pm 2.60)	Mild
	None	10.50 (\pm 2.90)	Mild
Mode of Treatment Payment	Self-finance	11.01 (\pm 3.62)	Moderate
	Free	8.98 (\pm 1.98)	Mild
Symptoms and Signs affecting HRQoL	Cognitive dysfunction	15.00 (\pm 0.01)	Severe
	Insomnia	9.38 (\pm 2.76)	Mild
	Fatigue	9.24 (\pm 2.19)	Mild
	Others	8.00 (\pm 2.12)	Mild

Table 5: Comparison of depression among liver cirrhosis patients in Pakistan among different demographic variables

Indicators		n	Mean ranks	Test statistics	p-value
Age	18-30 y	120	184.85	9.544 ^b	0.049
	31-40 y	194	184.33		
	41-50 y	45	224.81		
	51-60 y	16	239.50		
	>60 y	7	152.14		
Gender	Males	224	184.27	16077.500 ^a	0.149
	Females	158	200.60		
Marital Status	Married	298	193.00	11880.500 ^a	0.500
	Unmarried	84	183.93		
Level of Education	Illiterate	94	217.60	13.528 ^b	0.019
	Primary	145	177.91		
	Secondary	100	180.16		
	Bachelors	28	223.89		
	Masters	14	168.00		
Income Level	Post-Graduate	1	51.00	5.160 ^b	0.160
	\leq 20,000	262	183.40		
	21,000-40,000	92	203.76		
	41,000-60,000	24	227.35		
Setting	61,000-80,000	4	181.50	15856.500 ^a	0.938
	Urban	125	191.63		
	Rural	257	190.70		
Stage of Liver Cirrhosis	Stage-1	184	185.86	10.420 ^b	0.015
	Stage-2	143	180.89		
	Stage-3	51	233.97		
	Stage-4	4	239.75		
Type of Co-morbidity	None	56	208.14	6.548 ^b	0.088
	Hypertension	203	177.69		
	Diabetes	118	205.42		
	Others	5	202.00		

Type of Treatment	Medicines	363	188.73		
	Transplant	5	201.40	3.792 ^b	0.150
	None	14	246.04		
Mode of Treatment	Self-finance	52	243.25	5733.000 ^a	0.001
Payment	Free	328	181.53		
Symptoms and Signs affecting HRQoL	Cognitive dysfunction	1	369.50	5.962 ^b	0.113
	Insomnia	102	185.46		
	Fatigue	270	194.44		
	Others	9	131.11		

Mann-Whitney^a, Kruskal Wallis^b ($p \geq 0.05$)

Comparison of depression among liver cirrhosis patients in Pakistan among different demographic variables

Mann-Whitney and Kruskal Wallis tests were used to find the differences among different demographic variables. Significant difference ($p \leq 0.05$) was found in depression among respondents having different age groups ($p=0.049$), level of education ($p=0.019$), stage of cirrhosis ($p=0.015$) and mode of payment for treatment ($p=0.001$). Respondents having age between 51-60 y were more depressed as compared to younger respondents having age between 31-40 y. Respondents having bachelors as their education were more depressed as compared to those having post-graduate education. Respondents having stage 4 cirrhosis were more depressed as compared to those diagnosed with stage 1 and 2 liver cirrhosis. Respondents undergoing treatment through self-finance were more depressed as compared to those undergoing free treatment. No significant difference ($p \geq 0.05$) was found in depression among respondents having different genders, marital status, income level, setting, type of co-morbidity, type of treatment and symptoms of cirrhosis affecting HRQoL (table 5).

DISCUSSION

The increasing prevalence of liver cirrhosis in developed as well as developing countries along with increased morbidity and mortality has highlighted it as the most important global public health issue. The severity and progressive nature of the disease has a significant negative impact on health related quality of life of patients. The complications due to liver cirrhosis further complicate treatment outcomes and leads to poor patient reported outcomes [13]. The findings of the present study reported poor HRQoL among liver cirrhosis patients and highlighted a significant impact of liver cirrhosis on various domains of health-related quality of life. High scores of health-related quality of life were observed for physical functioning and social functioning, whereas low scores were observed for role limitation due to physical and emotional functioning followed by lower scores in general health. Similar results were observed in a study conducted in USA where majority of the patients reported decline in physical and emotional health due to liver cirrhosis [14].

The debilitating symptoms, as well as severe complications of liver cirrhosis, can severely affect the physical activities of patients. The findings of the current research revealed that most of the liver cirrhosis patients had difficulty in carrying out strenuous activities such as running, lifting heavy items and walking more than a mile. Majority of the patients achieved less than they had thought they could have achieved. Similar results were reported in a study conducted in Austria where physical activities of liver cirrhosis patients were reported compromised [15]. The findings of the current research showed that most of the liver cirrhosis patients had less energy and felt tired to perform daily activities. Patients reported body pain most of the times, which interfered with their daily activities. Similar results were reported in a study conducted in Poland where patients had low energy levels and had fatigue as major symptom of liver disease [16]. The results of the present study showed that the social functioning of most of the liver cirrhosis patients was moderately impaired. Liver cirrhosis patients were unable to give proper time to their work and performed less activities than usual due to emotional disturbances. Similar results were obtained from a study conducted in USA where patients with cirrhosis due to hepatitis reported poor social functioning [17].

Physical, as well as mental health can be impaired with patients diagnosed with liver cirrhosis. The results of the present study highlighted that patients aged 60 y or above had impaired health related quality of life across all domains. This might be due to the fact that elderly patients face severe complications of cirrhosis and have poor prognosis. Similar results were obtained from studies conducted in Europe where elder patients were reported with declined HRQoL [18]. The findings of the current research highlighted that females had relatively poor HRQoL in physical as well as mental health domains as compared to male liver cirrhosis patients. This might be due to the fact that females have low physical strength and are more emotional related to health as compared to males. A study conducted in Brazil reported similar results with females having poor HRQoL across all domains [13]. Moreover, the present study reported that patients having income level between Rs. 41000-60000 had poor health-related quality of life across all domains. This might be due to the fact that middle-class income patients were unable to avail free treatments through the government and had to pay out of their pockets. Furthermore, patients presenting with stage IV cirrhosis had poor health-related quality of life. However, patients with stage I of liver cirrhosis also reported poor health-related quality of life as compared to stage II and III patients. This might be due to the fact that limited knowledge about the disease and its prognosis as well as reduced social support in patients with stage I can lead to decreased HRQoL. Similar results were found from a study conducted in India where poor health-related quality of life was reported in advanced stages of disease [19].

Liver cirrhosis can lead to major psychological distress in diagnosed individuals causing moderate to severe depression. Due to prolonged therapy and poor prognosis, decline in mental functioning is common among patients of liver cirrhosis. The presence of depressive symptoms can lead to reduced quality of life, adherence to treatment and increased functional impairment [20]. The results of the current study revealed that majority of the liver cirrhosis patients had mild to moderate depression. Most of them felt tensed, restless and frightened quite often and had little interest in their appearance or doing routine activities. Similar results were reported in studies conducted in USA where majority of the cirrhotic patients had depressive symptoms [21, 22]. Moreover, results of the present study showed that elder cirrhotic patients were relatively more depressed than younger patients. This might be due to the fact that older patients had more debilitating symptoms and complications, poor prognosis and less chances of survival. A study conducted in Taiwan reported similar results with older patients having higher level of depression as compared to younger patients [23].

Patients having depression with cirrhotic liver disorders have poor clinical outcomes and decline in mental health. The results of the current study revealed that female cirrhotic patients were more depressed than male counterparts. This might be due to the fact that as females have more family responsibilities to fulfill so depression prevails in this gender. Similarly, married respondents had more depressive symptoms as compared to unmarried. Similar results were reported in a study conducted in Europe where females and married patients had a higher level of depression [24]. Moreover, the current study reported that literate patients were found more depressed as compared to illiterate ones. This might be due to the fact that educated patients could better understand the disease and might be depressed due to its complications and prognosis. Similar results were observed in a study conducted in Brazil where educated cirrhotic patients had higher level of depression [25].

The development and prognosis of liver cirrhosis is influenced by psychological factors such as presence of depressive symptoms which can lead to an adverse impact on the treatment of disease. The results of the current study highlighted that patients with stage IV liver cirrhosis were more depressed as compared to those diagnosed with stage I of cirrhosis. Patients not undergoing any sort of treatment had more depressive symptoms than patients undergoing pharmacological management or liver transplant. This might be due to the fact that in advanced stages of disease the complications were more severe and management of patient was difficult. A study conducted in China reported similar results with higher level of depression in advanced stages of the liver disease [26].

Assessment and treatment of psychological disorders is necessary for effective management of liver cirrhosis. The current study highlighted that cirrhotic patients with cognitive dysfunction and fatigue as a symptom of liver cirrhosis were found to be more depressed than others. This might be due to the fact that these symptoms interfered with the normal functioning of individuals diagnosed with liver cirrhosis. Similar results were reported from studies conducted in USA where a negative impact was observed on patient mental health due to the symptoms and complications of cirrhosis [20, 22].

CONCLUSION

The results of the present study concluded that liver cirrhosis patients in Pakistan had poor HRQoL across all domains along with mild to moderate depression. While all domains were affected, the greatest impact was on role limitation due to physical as well as emotional problems. The most affected group among patients were females and patients having age greater than 60 y. Besides this, severity and advanced stage of cirrhosis had negative effect on all domains of HRQoL. Presence of complications further reduced HRQoL and increased depressive symptoms among liver cirrhosis patients. All relevant stakeholders must collaborate to design innovative pharmacotherapy strategies for improving health-related quality of life and depression in liver cirrhosis. Well-structured pharmacotherapy and psychosocial support programs should be designed so the management of liver cirrhosis could be made more optimal and clinical outcomes can be achieved timely with which prognosis of disease can be improved.

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AUTHORS CONTRIBUTIONS

All the authors have contributed equally.

CONFLICTS OF INTERESTS

Declared none

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