original article

Health-related quality of life of Saudi hepatitis B and C patients

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BACKGROUND AND OBJECTIVES: Although usually asymptomatic, many chronic hepatitis C patients have extrahepatic manifestations and impaired health-related quality of life (HRQOL), while hepatitis B virus (HBV) patients have normal or nearly normal HRQOL. The aim of this study was to investigate HRQOL in Saudi patients infected with hepatitis C virus (HCV) in comparison with patients infected with HBV in an effort to document the prevalence of and find factors associated with reduced HRQOL in these patients.

DESIGN AND SETTING: A prospective study that enrolled patients attending a tertiary care referral hepatology clinic in Riyadh from the period of February to July 2008.

PATIENTS AND METHODS: Consecutive patients who had a confirmed diagnosis of hepatitis C or hepatitis B were asked to fill out the SF-36 questionnaire. Information on epidemiological, educational, economic, and social parameters was collected. All clinical, laboratory, and available histological data were recorded.

RESULTS: Two hundred and twenty patients (107 with hepatitis B and 113 with hepatitis C) satisfied the inclusion criteria and participated in this study. Overall, 45% were men, and the average age was 41.6 (18.1) years. Patients with HCV had significantly lower scores in "physical functioning," "role limitations due to physical functioning," "social functioning," and "bodily pain." No significant differences in other parameters were observed. Various epidemiological and laboratory parameters were correlated with different HRQOL domains.

CONCLUSIONS: Saudi hepatitis C patients showed significantly lower HRQOL scores in various domains compared to hepatitis B patients.

Health-related quality of life (HRQOL) has recently become an important outcome in clinical research.[1] In addition to clinical and economic data, it has proven helpful in managing patients better and providing information to health care decision makers. Although it is hard to accurately define "quality of life,", the term "health-related quality of life" focuses on self-perceived health and the general well-being domains of physical functioning, somatic sensations, physiological status, social interactions, functional capacity, and sense of well-being as influenced by health status.[2]

Although the majority of chronic hepatitis C patients are asymptomatic, many extrahepatic manifestations, such as fatigue, anorexia, myalgia, arthralgia, irritability and headaches, can lead to impaired HRQOL.[3] On the other hand, there have been few studies on hepatitis B patients, and those that have been done suggest a normal or nearly normal HRQOL in patients infected with hepatitis B virus (HBV).[4-6] This has led to the assumption that in addition to the virus, many other factors are probably associated with the poor quality of life of patients with hepatitis C virus (HCV), including a number of physical and psychological factors.[7,8]

Viral hepatitis is an important medical problem in Saudi Arabia. Although important research has been performed in relation to this problem in terms of epidemiological prevalence, natural history, and antiviral therapy, no study has addressed the HRQOL issues in these patients. The aim of this study was to investigate HRQOL in Saudi patients infected with HCV in comparison with patients infected with HBV in an effort to document the prevalence of and find factors associated with reduced HRQOL in these patients.

PATIENTS AND METHODS

Consecutive patients attending the hepatology clinic at King Khalid University Hospital in Riyadh between

February and July 2008 were approached for participation in this study. Inclusion criteria were age above 18 and a positive anti-HCV antibody test with confirmation by HCV RNA polymerase chain reaction or positive hepatitis B surface antigen. Exclusion criteria were inability to give informed consent, clinical evidence of decompensated liver cirrhosis (ascites, history of hepatic encephalopathy, or history of variceal bleeding), a history of intravenous drug use, current alcohol or drug abuse, concomitant significant medical illness (such as chronic renal failure, heart failure, or chronic lung disease), well-known diagnosed significant psychiatric illness, and current use of antiviral therapy. The study was explained to all patients, and each signed an informed consent form. The SF-36 questionnaire was fully explained to each patient, and then the forms were filled out by patients themselves. The previously validated Arabic version of the SF-36 questionnaire was used. Patients were also asked to fill out a questionnaire that contained additional personal information on marital status, number of family members, educational level, average income, and living conditions. The patients' charts were accessed, and other general medical information was recorded. The study was approved by the institutional review board of the College of Medicine at King Saud University.

Data was entered into an MS Excel spreadsheet. Individual HRQOL items were re-coded, summed, and transformed according to the standardized formula. Descriptive statistics were summarized as a mean score and standard deviation (SD) and median (range) as appropriate. The chi-square test was used to examine relations between categorical variables. Comparison of continuous variables was done using the *t* test or the Wilcoxon-Mann-Whitney test for skewed data. The correlation between continuous variables was evaluated by calculating the Pearson correlation coefficient (r), with skewed data being logarithmically transformed first. The backward stepwise multiple linear regression was used to assess predictors of SF-36 parameters. Variables were retained in the final models if they were significantly associated with the SF-36 parameter being tested. A *P* value of .05 was considered as statistically significant. All analyses were performed with Stata Version 10 (Stata Corporation, College Station, TX, USA).

Table 1. Demographics of the study population.

	Total (N=220)	HCV patients (n=113)	HBV patients (n=107)	*P*
Age	41.6 (18.1)	45.7 (18.6)	37.3 (16.6)	.0005
Gender				
Male	100 (45.5)	36 (31.9)	64 (59.8)	<.0001
Female	120 (54.6)	77 (68.1)	43 (40.2)	
Marital status				
Married	203 (92.3)	104 (82.0)	99 (92.5)	.45
Single	12 (5.5)	5 (4.4)	7 (6.5)	
Divorced	2 (0.9)	2 (1.8)	0	
Widowed	3 (1.4)	2 (18)	1 (0.9)	
Children				
No	162 (73.6)	78 (69.0)	84 (78.5)	.11
Yes	90 (26.4)	35 (31.0)	23 (21.5)	
Level of education				
No high school	123 (55.9)	75 (66.4)	48 (44.9)	.002
High school	41 (18.6)	19 (16.8)	22 (20.6)	
College	48 (21.8)	14 (12.4)	34 (31.8)	
Postgraduate	8 (3.6)	5 (4.4)	3 (2.8)	
Employment status				
Unemployed	185 (84.1)	98 (86.7)	87 (81.3)	.54
Temporarily unemployed	2 (0.9)	1 (0.9)	1 (0.9)	
Employed	33 (15.0)	14 (12.4)	19 (17.8)	
Personal yearly income ($)				
<20 000	177 (80.5)	90 (79.7)	87 (81.3)	.26
20 000–50 000	24 (10.9)	15 (13.3)	9 (8.4)	
50 000–80 000	15 (6.8)	5 (4.4)	10 (9.4)	
>80 000	4 (1.8)	3 (2.7)	1 (0.9)	

HCV: Hepatitis C virus; HBV: hepatitis B virus. Values expressed as mean (standard deviation) or frequency (percentage).

RESULTS

Two hundred and twenty patients (107 with hepatitis B and 113 with hepatitis C) satisfied the inclusion criteria and participated in this study. Overall, 45% were men, and the mean (standard deviation) of age was 41.6 (18.1) years (Demographic characteristics are shown in **Table 1**). There was a significant difference between HBV- and HCV-infected patients in terms of age (patients with HBV were significantly older, *P*<.0001) and level of education (P=.002). No significant differences were observed between HBV- and HCV-infected patients in terms of other medical characteristics (summarized in **Table 2**). Only 27% of the study population had undergone a liver biopsy. Among these, the majority had grades 0 to 2 (62.3%) and stages 0 to 2 (57.5%). More patients infected with HCV than with HBV underwent a liver biopsy. More patients in the HCV group than in the HBV group had stage 3 or 4 fibrosis, though this did not reach statistical significance. Patients with HCV also had significantly higher alanine aminotransferase (ALT, *P*=.0005), aspartate aminotransferase (AST, *P*=.0003), and alkaline phosphotase (ALP, *P*=.03) levels. Albumin, international normalized ratio (INR), and bilirubin did not show

significant differences (**Table 2**).

When patients with HCV and HBV were compared in terms of the SF-36 results, patients with HCV had significantly lower scores in physical functioning (PF), role limitations due to physical functioning (RP), social functioning (SF), and bodily pain (BP) (**Table 3**). No significant differences were observed in other parameters: role limitations due to emotional problems (RE), energy/fatigue (E/F), emotional well-being (EW), and general health (GH).

Several demographic factors were studied to see if there were any correlations with SF-36 scores. Age was associated with reduced SF-36 scores in the following domains: PF (P=.0002), RP (*P*=.0002), E/F (*P*=.02), and BP (*P*=.001). Female gender was associated with a low score in the following areas: PF (*P*=.001), RP (*P*=.0009), E/F (*P*=.001), and BP (*P*=.004). Increasing level of education was associated with higher scores in PF (*P*<.0001), RP (*P*<.0001), E/F (*P*=.0004), and BP (*P*=.0009). Employment was associated with a higher score in PF (*P*=.03) only. There were no associations with marital status, number of children, or income.

Various laboratory parameters weere studied to determine if they correlated with SF-36 scores (**Tables 4 and 5**). Overall, albumin correlated with PF (r=0.24, *P*=.0004), RP (r=0.20, *P*=.003), E/F (r=0.18, *P*=.008), EW (r=0.14, *P*=.04), SF (r=0.14, *P*=.04), BP (r=0.22, *P*=.001), and GH (r=0.17, *P*=.01). LogAST correlated with E/F (r=−0.19, *P*=.005), SF (r=−0.22, *P*=.001), BP (r=−0.25, *P*=.0003), and GH (r=−0.19, *P*=.006). Bilirubin only correlated with SF (r=−0.14, *P*=.04). In HCV patients, albumin correlated with E/F (r=0.21, *P*=.03), and EW (r=0.21, *P*=.03), whereas INR correlated with SF (r=−0.21, *P*=.03) and GH (r=−0.20, *P*=.03), and logAST correlated with E/F (r=−0.24, *P*=.01) and EW (r=−0.24, *P*=.01) (**Table 4**). In patients with HBV, albumin correlated with PF (r=0.32, P=.0006), RP (r=0.24, *P*=.01), SF (r=0.19, *P*=.04), BP (r=0.30, *P*=.002), and GH (r=0.21, *P*=.03), whereas INR correlated with SF (r=−0.23, *P*=.02) and GH (r=−0.19, *P*=.04), and logAST correlated with SF (r=−0.24, *P*=.02), BP (r=−0.31, *P*=.001), and GH (r=−0.29, *P*=.003) (**Table 5**).

In multivariate analyses, several factors predicted different SF-36 domains, as summarized in **Table 6**. LogAST was the most common independent variable negatively associated with several SF-36 parameters including PF, RP, E/F, SF and GH in patients with HBV and EF in patients with HCV. Education and female gender were the next most common predictors of SF-36 parameters. In general, high school graduates were more likely to report lower SF-36 scores particularly in the domain of PF, RP, E/F, and BP in HCV patients and PF, RP and EW in patients with HBV. Only in patients with HBV did female gender appear to be a strong negative predictive factor of SF-36 parameters such as PF, RP, RE, E/F and EW.

Table 2. Medical characteristics of the study population.

	Total (N=220)	HCV patients (n=113)	HBV patients (n=107)	*P*
History of previous treatment				
No	213 (96.8)	111 (98.2)	102 (95.3)	.22
Yes	7 (3.2)	2 (1.8)	5 (4.7)	
Other medical illness				
No	203 (92.3)	102 (90.3)	101 (94.4)	.25
Yes	17 (7.7)	11 (9.7)	6 (5.6)	
History of psychiatric illness				
No	214 (97.3)	111 (98.2)	103 (96.3)	.37
Yes	6 (2.7)	2 (1.8)	4 (3.7)	
Liver biopsy				
No	157 (71.4)	71 (62.8)	86 (80.4)	.004
Yes	63 (28.6)	42 (37.2)	21 (19.6)	
Grade				
0	0	0	0	
1	13 (21.3)	6 (14.6)	7 (35.0)	
2	25 (41.0)	17 (41.5)	8 (40.0)	.18
3	19 (31.2)	14 (34.2)	5 (25.0)	
4	4 (6.6)	4 (9.8)	0	
Stage				
0	2 (3.3)	1 (2.4)	1 (5.0)	
1	14 (23.0)	6 (14.6)	8 (40.0)	
2	19 (31.2)	13 (31.7)	6 (30.0)	.18
3	21 (34.4)	17 (41.5)	4 (20.0)	
4	5 (8.2)	4 (9.8)	1 (5.0)	
ALT (U/L)	60 (17-459)	83 (15-784)	50 (17-460)	.005
AST (U/L)	35 (11-257)	47 (11-197)	29.5 (11-257)	.0003
ALP (U/L)	98.5 (42-550)	103 (44-550)	90 (42-260)	.03
Albumin	37.3 (7.0)	37.1 (7.1)	37.6 (6.9)	.63
INR	1.1 (0.2)	1.1 (0.2)	1.2 (0.3)	.07
Bilirubin	10 (0.7-121)	10 (3-65)	10 (0.7-121)	.74

HCV: Hepatitis C virus; HBV: hepatitis B virus; ALT: alanine aminotransferase; AST: aspartate aminotransferase; ALP: alkaline phosphotase; INR: international normalized ratio. Values expressed as median (range) or mean (standard deviation) or frequency (percentage) otherwise.

DISCUSSION

Many studies have shown that HCV may compromise HRQOL.[9] For example, in 642 HCV-infected patients studied before and after treatment with interferon-based antiviral therapy, there was a significant reduction in HRQOL at presentation in patients with HCV compared with healthy controls in the pres-

Table 3. SF-36 scores by hepatitis status.

	Total (N = 220)	HCV patients (n=113)	HBV patients (n=107)	*P*
Physical functioning	66.8 (28.7)	60.0 (28.7)	73.8 (27.2)	.0003
Role limitations because of physical functioning	58.6 (41.7)	50.0 (40.8)	67.8 (40.9)	.002
Role limitations because of emotional problems	62.1 (42.7)	63.4 (42.0)	60.7 (43.6)	.64
Energy/Fatigue	55.4 (20.6)	52.8 (21.7)	58.1 (19.2)	.06
Emotional well-being	68.1 (19.4)	68.8 (20.2)	67.4 (18.6)	.59
Social functioning	78.3 (26.5)	74.1 (28.9)	82.7 (23.0)	.02
Bodily pain	71.9 (29.1)	67.1 (30.7)	76.9 (26.5)	.01
General health	60.5 (19.2)	59.6 (20.1)	61.4 (18.3)	.49

Values expressed as mean (standard deviation).

Table 4. Relationship between SF-36 scores and laboratory results in HCV patients (expressed as the Pearson r).

	Log ALT	Log AST	Log ALP	Albumin	INR	Log bilirubin
Physical functioning	-0.00 (.99)	-0.071 (.47)	-0.03 (.79)	0.16 (.09)	0.03 (.79)	0.13 (.18)
Role limitations because of physical functioning	0.09 (.32)	-0.03 (.76)	-0.11 (.23)	0.16 (.09)	0.02 (.80)	0.10 (.30)
Role limitations because of emotional problems	0.09 (.36)	-0.03 (.79)	-0.09 (.37)	0.10 (.28)	-0.09 (.37)	0.11 (.23)
Energy/Fatigue	-0.13 (.17)	-0.24 (.01)	-0.18 (.06)	0.21 (.03)	-0.02 (.86)	-0.03 (.74)
Emotional well being	-0.13 (.17)	-0.24 (.01)	-0.18 (.06)	0.21 (.03)	-0.02 (.86)	-0.03 (.74)
Social functioning	-0.08 (.37)	-0.15 (.11)	-0.07 (.45)	0.09 (.35)	-0.21 (.03)	-0.14 (.14)
Bodily pain	-0.02 (.81)	-0.14 (.16)	-0.18 (.05)	0.15 (.12)	-0.05 (.61)	0.007 (.94)
General health	-0.03 (.75)	-0.09 (.34	-0.03 (.75)	0.13 (.18)	-0.20 (.03)	0.002 (.98)

ALT: Alanine aminotransferase; AST: aspartate aminotransferase; ALP: alkaline phosphotase; INR: international normalized ratio.

ence or absence of cirrhosis.[10] In another study by the International Hepatitis Interventional Therapy Group, Ware et al reported that 5 out of 8 SF-36 domains, physical functioning, role-physical, general health, vitality, and social functioning, were significantly reduced in patients with HCV compared with matched population controls.[11]

However, it is important to note that not all studies on patients with HCV have shown these results. In one study, American blood donors who had been found by chance to have HCV (who seemed to have a high incidence of fatigue [61%] and headache [54%]) in a previous study were re-examined in comparison to normal healthy blood donors without HCV. The fatigue rate in the non-HCV group was as high as 70%, suggesting no difference between the two groups.[12] The situation is less clear in terms of HBV, as only a few studies were available on HRQOL in this group of patients. In a study from Britain, 72 unselected, sequential patients with chronic HCV infection were compared with 30 sequential patients with chronic HBV infection with hepatitis B e antigen positivity.[4] All of the SF-36 scores were markedly reduced in patients with chronic HCV infection, whereas in patients with chronic HBV in-

Table 5. Relationship between SF-36 scores and laboratory results in HBV patients (expressed as Pearson r).

	Log ALT	Log AST	Log ALP	Albumin	INR	Log bilirubin
Physical functioning	0.06 (.56)	-0.08 (.41)	-0.11 (.25)	0.32 (.0006)	-0.02 (.85)	0.04 (.67)
Role limitations because of physical functioning	0.02 (.81)	-0.12 (.24)	-0.12 (.20)	0.24 (.01)	-0.05 (.61)	-0.10 (.31)
Role limitations because of emotional problems	0.06 (.54)	0.02 (.83)	-0.08 (.43)	0.12 (.21)	-0.05 (.62)	-0.007 (.94)
Energy/Fatigue	0.003 (.98)	-0.10 (.33)	-0.15 (.12)	0.14 (.15)	-0.06 (.51)	-0.05 (.59)
Emotional well-being	0.14 (.14)	0.06 (.52)	-0.04 (.65)	0.19 (.05)	0.04 (.70)	0.20 (.04)
Social functioning	-0.08 (.42)	-0.24 (.02)	-0.19 (.05)	0.19 (.04)	-0.23 (.02)[a]	-0.17 (.08)
Bodily pain	-0.09 (.36)	-0.31 (.001)	-0.20 (.04)	0.30 (.002)	-0.18 (.06)	-0.18 (.06)
General health	-0.04 (.67)	-0.29 (.003)	-0.22 (.02)	0.21 (.03)	-0.19 (.04)	-0.25 (.01)

HBV: Hepatitis B virus; ALT: alanine aminotransferase; AST: aspartate aminotransferase; ALP: alkaline phosphotase; INR: international normalized ratio

Table 6. SF-36 scores and multivariate analysis.

	HCV patients			HBV patients		
SF-36 score		**Regression coefficient (CI)**	***P***		**Regression coefficient (CI)**	***P***
Physical functioning	High school College Postgraduate	10.3 (-3.8, 24.3) 19.5 (3.5, 35.5) 32.5 (7.2, 57.8)	0.15 0.02 0.01	Gender (female) High school College Postgraduate Log AST	-21.0 (-30.5, -11.5) 4.3 (-7.7, 16.3) 18.1 (7.7, 28.4) 27.1 (-0.003, 54.1) -7.5 (-14.5,-0.6)	<.0001 .48 .001 .05 .03
Role limitations because of physical functioning	High school College Postgraduate	9.6 (-10.4, 29.8) 30.2 (7.4, 53.0) 37 (0.8, 73.2)	0.35 0.01 0.04	Gender (female) High school College Postgraduate Log AST	-25.1 (-40.6, -9.7) 8.0 (-10.4, 29.8) 22.8 (7.4, 53.0) 40.7 (0.8, 73.2) -12.6 (-23.9, -1.3)	.02 .42 .009 .07 .03
Role limitations because of emotional problems	-		-	Gender (female)	-18.6 (-35.4, -1.9)	.03
Energy/Fatigue	High school College Postgraduate Log AST	7.4 (-3.3, 18.1) 13.4 (1.3, 25.4) 12.7 (-6.3, 31.8) -8.0 (-14.3, -1.8)	0.17 0.03 0.19 0.01	Gender (female) Log AST	-14.2 (-21.3, -7.1) -5.2 (-10.5, 0.03)	<.0001 .04
Emotional well-being	-		-	Gender (female) High school College Postgraduate	-13.1 (-19.8, -6.4) 2.7 (-6.0, 11.4) 8.5 (0.88, 16.1) 26.4 (6.7, 46.0)	<.0001 .54 .03 .009
Social functioning	INR	-10.9 (-20.5, -1.3)	0.03	Log AST	-7.9 (-14.3, 1.5)	.02
Bodily pain	High school College Postgraduate	18.2 (3.2, 33.3) 21.5 (4.4, 38.6) 21.0 (-6.0, 48.1)	0.02 0.01 0.13	Albumin	1.2 (0.5, 1.9)	.002
General health	INR	-7.3 (-14.0, -0.54)	0.04	Log ALT Log AST	10.4 (2.9, 17.9) -16.0 (-23.7, -8.3)	.007 <.0001

CI: Confidence interval; HCV: Hepatitis C virus; HBV: Hepatitis B virus; ALT: alanine aminotransferase; AST: aspartate aminotransferase;

fection, no significant reductions in the SF-36 scores were observed except in the variables of "mental health" and "general health perception." When the two groups (HCV and HBV) were compared directly, patients with HCV had more impairment in social functioning, physical limitations, and energy and fatigue parameters compared to patients with HBV. Similar results were found in another study where patients with HCV were compared with patients with HBV and primary biliary cirrhosis (PBC) as well as healthy controls.[5] Both patients with HCV and PBC had significantly lower HRQOL scores, whereas patients with HBV had similar HRQOL scores as healthy controls. This has been confirmed in a more recent study from Asia, in which HRQOL scores in HBV inactive carriers were found to be similar to those of healthy controls, but slightly higher than in patients with active HBV infection.[6]

Although the above studies suggest that chronic HCV, but not HBV appears to directly compromise HRQOL, multiple factors related to personality, upbringing, and ethnic background may affect the frequency of reporting of HRQOL parameters. This has led to different prevalence rates of reduced HRQOL scores when HCV-infected patients have been studied in different ethnic backgrounds. For example, in a study by a Japanese group, no characteristic subjective symptoms in patients with HCV compared to healthy controls were found, except for a lower aggression score.[13] This was confirmed by another study from Japan.[14] Similarly, in an interesting study from Egypt, where patients were tested for HRQOL before knowing their HCV status, 146 HCV-positive patients had similar scores, compared to 1140 uninfected controls from the same rural area.[15] This interesting result has been explained by a possibly lower morbidity among Egyptian HCV-infected patients, by a higher morbidity among uninfected controls, or by the effect of not knowing the diagnosis at the time of testing.

This variation in the published studies and the likely effects of non-viral factors in HRQOL in viral hepatitis patients have led us to study the changes in HRQOL in Saudi Arabian patients. Unlike the majority of patients in the Western countries, most patients infected with HCV in Saudi Arabia are not intravenous drug users and have been infected through blood transfusion or unknown causes mostly thought to be iatrogenic. In the current study, significant differences were observed between Saudi patients with HCV and HBV in 4 out of 8 domains of the SF-36 questionnaire. When laboratory parameters showed significant correlations with SF-36 domains, most of these laboratory parameters were related to liver function (albumin, INR, and AST), suggesting that active liver disease or perhaps significant fibrosis was more likely affecting the HRQOL domain score rather than the virus itself. Although the stage and grade of inflammation of liver biopsy did not confirm this assumption, it has to be remembered that only 27% of the study population had had a liver biopsy. The results from our multivariate analysis show that the AST level is associated with the quality of life in patients with HCV, further supporting that active disease has an impact on the quality of life in these patients. The general trend of patients with lower educational status reporting lower scores could be because these patients have limited understanding of HCV and HBV, which may in turn lead to poorer disease management. As Saudi Arabia has an equal-access health care system, it is unlikely that inadequate access to health care is a reason for this disparity.

Like any other study, this study has some strengths and suffers from some limitations. In terms of strengths, to our knowledge, it is the first to study HRQOL in viral hepatitis patients in Saudi Arabia and is among only a few in the Arab world. It is also among the few studies worldwide that have compared patients with HCV and HBV directly. Similarly, it is one of few studies to correlate HRQOL measures with biochemical parameters. One limitation of this study is that the SF-36 scores were not compared to expected Saudi Arabian norms, as such data have not been produced. Both HCV and HBV groups served as controls for one another. Second, the percentage of patients who had had a liver biopsy in this study was low, making us unable to clearly understand the positive correlation between the reduced HRQOL scores and the levels of albumin, INR, and AST. Although none of these patients had clinical evidence of decompensated liver disease, some did have histologically (subclinical) advanced fibrosis, which might have affected their HRQOL. Third, all patients included in this study were patients who were seen in a tertiary care center, which may not represent the majority of the HCV patient pool.[16] This fact is important, as knowledge of the diagnosis and the psychological stress related to medical care may significantly influence HRQOL. Two interesting studies examined patients presenting with chronic fatigue syndrome and assessed their HCV status retrospectively to avoid the psychological effects of knowing about the HCV infection.[17,18] Neither study reported an association between HCV status and chronic fatigue. Similarly, in the aforementioned study in rural Egypt, patients who

were not aware of their viral status also showed no significant reduction in HRQOL compared to the general population.[15] Fourth, we used only one HRQOL instrument. Although SF-36 is the most reliable and widely used tool, it can be argued that a more sensitive tool would have been needed to detect very subtle changes, especially in patients with HBV. In conclusion, our sample of Saudi hepatitis C patients show significantly lower HRQOL scores in various domains compared to hepatitis B patients.

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