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The Role of Optimism/Pessimism in HRQOL in Chronic Hepatitis C Patients

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One hundred and twenty three outpatients with compensated chronic hepatitis C (CHC) completed the SF-36, BSI, and questions regarding the expected impact of CHC on their health. Respondents were categorized as optimists ($N = 17, 13.8\%$), realists ($N = 98, 79.6\%$), and pessimists ($N = 8, 6.5\%$). Pessimism was associated with lower scores on nearly all SF-36 subscales ($p < .001$–$.03$) and higher scores on 6 BSI subscales indicative of greater emotional distress ($p < .05$). Pessimism was not associated with demographics, liver disease severity, substance abuse, or comorbid medical conditions. However, pessimism was associated with the presence of a psychiatric comorbidity and self-reported health status ($p < .05$). We conclude that optimism/pessimism may be an important determinant of QOL and emotional status in CHC patients and that additional studies of cognitive predispositions and coping skills in CHC patients are warranted.

KEY WORDS: optimism; pessimism; emotional status; quality of life; hepatitis C; cognitive predispositions.

INTRODUCTION

Approximately 4 million Americans are chronically infected with hepatitis C, representing 1–2% of the U.S. population (Alter et al., 1999). Although most chronic hepatitis C (CHC) patients are largely asymptomatic in the early stages of their illness, several studies have reported reductions in health-related quality of life (HRQOL) when compared to healthy individuals. (Bayliss et al., 1998; Bonkovsky et al., 1999; Davis et al., 1994; Foster, Goldin, & Thomas, 1998; Hunt et al., 1997; Ware, Bayliss, Mannocchia, & Davis, 1999). These reductions persist, even when controlling for such factors as liver disease severity (Fontana et al., 2001; Hussain et al., 2001), demographics (Fontana et al., 2001; Hussain et al., 2001), and the presence of medical and psychiatric comorbidities (Fontana et al., 2002; Hussain et al., 2001; Moyer et al., 2000). In other words, even patients with asymptomatic hepatitis C and no other medical or psychiatric illnesses report lower HRQOL along most measurable dimensions than similar healthy controls. The reason for impaired HRQOL in CHC patients is not clear. HRQOL is an entirely subjective concept, derived from patients' self-assessments of their overall and domain-specific well-being. This subjectivity has raised questions about factors that may influence quality of life assessment, such as cognitive predispositions like optimism or pessimism. The primary aim of our study was to determine if there is a significant relationship between optimism/pessimism and HRQOL and emotional status in a group of CHC patients. The results of our study in 123 consecutive CHC outpatients not receiving antiviral therapy are presented.

METHODS

Study Population

Consecutive eligible CHC patients attending the Hepatology Clinic at the University of Michigan

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Hospital during a 7-month period between October 1999 and May 2000 were invited to participate in the study. The study was approved by the institutional review board at the University of Michigan Hospital and written informed consent was obtained from each patient. The inclusion criteria were detectable hepatitis C antibody and/or hepatitis C virus RNA (HCV RNA), with or without elevation in serum ALT level. Men and women of all races between the age of 15 and 70 years were included. Patients who were receiving or had received treatment with interferon alone or in combination with ribavirin during the past 3 months and sustained responders to previous therapy were excluded. Patients with decompensated liver disease, coinfection with hepatitis B or human immunodeficiency virus, other causes of liver disease, malignancies in the past 1 year, life-threatening medical problems, or marrow/organ transplantations were also excluded. Potentially eligible participants were invited to complete a confidential survey prior to or after their clinic visit (Fontana et al., 2002; Hussain et al., 2001), and medical records and laboratory test results were reviewed.

Data Collection

A 67-item self-administered survey with the SF-36 embedded within it and the 53-item Brief Symptom Index (BSI) were used to collect data on HRQOL, demographics, risk factors for HCV infection, patients' knowledge about transmission and prognosis of CHC, alcohol and drug use history, and emotional distress as previously described (Fontana et al., 2002; Hussain et al., 2001). Patients who reported a history of intravenous drug use or a history of regular alcohol consumption were asked if they ever considered themselves to be dependent on drugs or alcohol. History of current comorbid medical or psychiatric illness was obtained by a clinical study coordinator and corroborated with physicians' notes and medication lists. Reports of liver biopsies performed within the last 2 years were reviewed for presence or absence of cirrhosis. Serum ALT levels within 3 months of the study visit were recorded.

Defining Optimists and Pessimists

Our instrument included a question about patients' expectations with regard to the impact they thought CHC would have on their lives. The options ranged from "I will continue to stay healthy" to "I will become sick very rapidly and I might die from liver disease in a few years." We recoded patients' responses based on the clinical likelihood of each scenario. Those who said they would continue to stay healthy were recoded as optimists, those who said they would slowly become sick and may or may not eventually die from liver disease were coded as realists. Those who said they would become sick very rapidly and might die from liver disease in a few years were coded as pessimists. Those who said they did not know the impact of hepatitis C were treated as "unknowns," and analysis was completed both including and excluding the separate category of "unknowns." The results were similar regardless of the inclusion of the "unknowns," and no significant differences in patient characteristics were found when comparing "unknowns" to optimists, pessimists, or realists. As the purpose of this paper is to compare optimists and pessimists, the "unknowns" were omitted from this analysis.

Assessment of HRQOL

The SF-36 is a self-administered, generic HRQOL instrument that assesses function and well-being via multi-item scales measuring the following eight domains (Ware et al., 1995; Ware and Sherbourne, 1992; Ware, Snow, Kosinkio, & Crandek, 1993): physical functioning (PF), role physical (RP), role emotional (RE), vitality (VT), mental health (MH), social functioning (SF), general health (GH), and bodily pain (BP). Physical and mental health summary scores (PCS, MCS) were also calculated. The SF-36 subscale scores range from 0 (lowest) to 100 (highest), and summary scores center around a population mean of 50 with a standard deviation of 10 (Ware et al., 1993, 1995; Ware and Sherbourne, 1992).

Assessment of Emotional Functioning

Emotional functioning was assessed using the BSI (National Computer Systems Inc., Minneapolis, MN). The BSI is a 53-item self-administered questionnaire (Derogatis and Cleary, 1977; Derogatis and Melisaratos, 1983) that assesses nine domains: somatization (SOMA), obsessive–compulsive (OC), interpersonal sensitivity (IPS), depression (DEP), anxiety (ANX), hostility (HOS), phobic anxiety (PHOB), paranoid ideation (PAR), and psychoticism (PSY). The BSI subscale scores are created by aggregating

response to sets of questions and converting them to area *T*-scores with a mean value of 50 and a standard deviation of 10. The area *T*-scores are determined by comparing subject responses to those of gender-matched, nonpsychiatric population controls (Derogatis, 1993). The BSI also generates a summary measure, the Global Severity Index (GSI).

Data Analyses

Descriptive statistics were calculated and reported as mean ± standard deviation unless indicated otherwise. SF-36 scores were calculated using SAS software (SAS Inc., Cary, NC). Statistical analysis was performed using SPSS for Windows 1997 (SPSS Inc., Chicago, IL). Normative population data for SF-36 scores were obtained through the Medical Outcomes Trust (Ware et al., 1993). Comparisons of U.S. population data with our sample were conducted using *t* tests and ANOVA. Univariate analysis of associations between clinical variables of interest and optimism/pessimism were determined using correlations, Student's *t* test, ANOVA, chi-square, and Kruskal–Wallis tests. Tukey's test ($\alpha = .05$) for multiple comparisons was used to determine which groups contributed to the significant overall differences for continuous variables found significant via ANOVA. Pairwise comparisons were performed using Mann–Whitney U tests for categorical variables found to be significant.

RESULTS

Patient Population

Two hundred and twenty patients completed the survey instruments, with 214 responding to the question about the impact they thought CHC would have on their future health. Of those 214 respondents, 91 (42.5%) reported not knowing the potential impact of CHC. As mentioned, there were no significant differences between the 91 "don't knows" and the remaining 123 patients, and the "don't knows" were removed from subsequent analyses. The remaining 123 were categorized as optimists ($N = 17$, 13.8%), realists ($N = 98$, 79.6%), and pessimists ($N = 8$, 6.5%). African Americans in our sample were significantly more likely to be optimistic than their Caucasian counterparts [$p = .003$, overall chi-square (Table I)].

Table I. Patient Characteristics by Optimism/Pessimism

	All patients ($N = 123$)	Optimists ($N = 17$, 13.8%)	Realists ($N = 98$, 79.6%)	Pessimists ($N = 8$, 6.5%)	*P* value (comparing opt/real/pess)
Age (mean ± SD)	46.9 ± 7.9 (R:20–69)	44.2 ± 8.6	47.3 ± 7.7	47.0 ± 8.1	NS
Gender (% male)	59.3	70.5	59.2	37.5	NS
Race (%)	White: 84.6	58.8	88.7	87.5	
	Black: 5.7	23.5	2.0	12.5	$P = .003$
	Other: 9.7	17.6	9.2	0	
Marital status (% married)	69.9	76.5	69.4	62.5	NS
Education (%)	Some HS: 6.5	5.8	7.1	0	
	HS grad: 57.7	47.1	57.1	87.5	NS
	Col grad+: 35.8	47.1	35.7	12.5	
Medical comorbidity (%)	64.9	57.1	66.25	66.6	NS
Psychiatric comorbidity (%)	21.1	17.6	18.4	62.5	$P = .013$
Self-assessed health status (1 = *excellent* to 5 = *poor*	3.3 ± 1.03	2.47 ± 0.94	3.4 ± .97	4.0 ± 0.75	$P < .001$
Cirrhosis (%)	27.6	11.7	24.5	12.5	NS
Nonresponders to previous antiviral therapy (%)	27.6	17.6	29.5	25.0	NS

Pairwise comparison of race for optimists vs. realists indicated a significant difference at $p = .003$. There were no significant differences between optimists and pessimists or between realists and pessimists with regard to race.

Optimism/Pessimism and HRQOL

Figure 1(a) illustrates the difference between SF-36 scores for the general U.S. population (Ware et al., 1993) and our 123 patients. On all subscales and summary scores, our CHC patients scored significantly lower than the general U.S. population (Fig. 1(a)). Figure 1(b) illustrates SF-36 scores for optimists, realists, and pessimists with CHC compared to the general U.S. population (Ware et al., 1993). While significant differences exist among groups on all subscales except bodily pain, optimists' scores were similar to those of the general U.S. population, realists' scores were lower, and pessimists scores were consistently the lowest. Using Tukey's test for multiple comparisons, optimists scored significantly higher ($p < .05$) than pessimists on the general health, mental health, and vitality subscales, as well as on the physical health and mental health summary scores. Optimists scored significantly higher than realists on the general health subscale ($p < .05$), and realists scored significantly higher than pessimists on the mental health and vitality subscales.

Optimism/Pessimism and Emotional Status

Figure 2 illustrates BSI scores for optimists, realists, and pessimists with CHC compared to the general U.S. population norm. With higher BSI scores indicative of greater emotional distress, there were significant differences among optimists, pessimists, and realists on BSI subscale scores for SOMA, OC, IPS, DEP, and PHOB, as well as on the GSI summary measure, indicative of global emotional distress. Tukey's tests for multiple comparisons indicated that, compared to optimists, pessimists had significantly elevated BSI scores for SOMA, IPS, DEP, and PHOB, as well as on the GSI at $p<.05$. Pessimists also had significantly elevated BSI scores when compared to realists on the IPS, DEP, and PHOB subscales, as well as on the GSI ($p < .05$). Optimists and realists were not significantly different on any BSI subscale or the GSI.

Correlates of Optimism/Pessimism

The presence and number of medical comorbidities was not associated with optimism/pessimism (Table I). However, having a history of psychiatric illness (defined as ever having sought treatment or taken medication for an emotional or psychiatric problem) was associated with an increased likelihood of being pessimistic [$p = .013$, overall chi-square; pessimist vs. realist, $p = .004$; pessimist vs. optimist, $p = .03$; realist vs. optimist, $p = .302$ (NS)]. In addition, a higher self-reported health status was associated with optimism [$p < .001$, overall ANOVA; optimist vs. pessimist, $p = .001$; optimist vs. realist, $p = .001$; realist vs. pessimist, $p = .23$ (NS)].

Other baseline demographic and clinical variables were tested for association with optimism/pessimism. Nonresponse to previous antiviral therapy, the presence of cirrhosis, and elevated serum ALT were not associated with optimism or pessimism. In addition, substance abuse history including intravenous drug use, self-defined drug dependence, and history of alcohol abuse did not show significant associations with optimism or pessimism (data not shown).

DISCUSSION

Our results indicate that pessimists have lower SF-36 scores than realists and optimists, with optimists closely matching the general U.S. population's quality of life scores. In addition, pessimists report poorer health status and greater emotional distress than both optimists and realists (Fig. 2, Table I). Our findings are consistent with other previous studies demonstrating significantly lower HRQOL scores in CHC patients compared to the general U.S. population (Bayliss et al., 1998; Bonkovsky et al., 1999; Davis et al., 1994; Fontana et al., 2001, 2002; Foster et al., 1998; Hunt et al., 1997; Hussain et al., 2001; Moyer et al., 2000; Ware et al., 1999). The reasons why CHC patients report a consistently lower HRQOL compared to healthy matched controls remain unclear. Previous research has suggested that there may be a perceived stigma attached to CHC, such that patients who have had the illness longer may be more negatively emotionally impacted by the diagnosis (Kraus et al., 2000). It is possible that patients with CHC develop ineffective coping skills as they learn more about their condition, which has an uncertain and variable natural

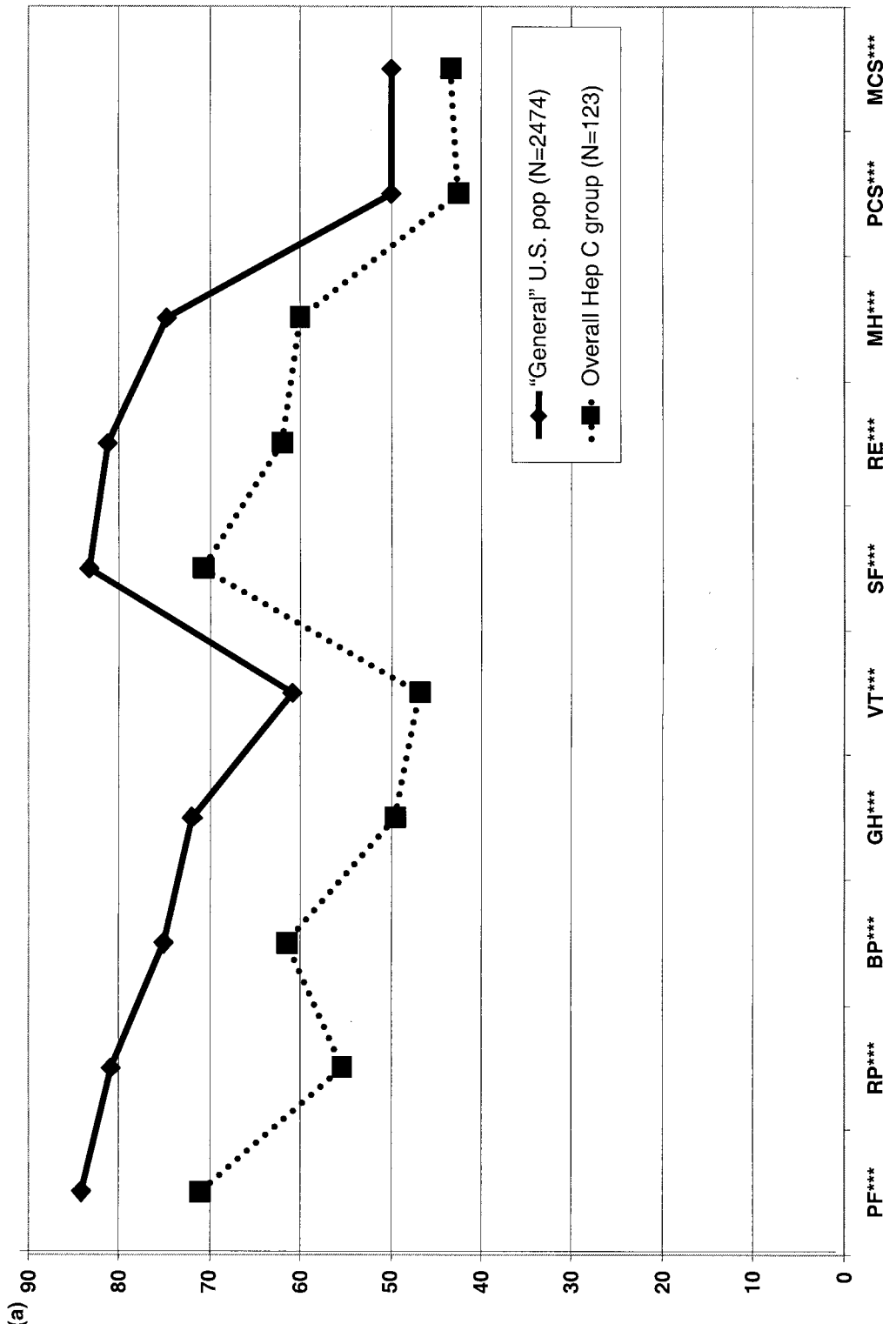

Fig. 1. (a) HRQOL: General U.S. population versus overall CHC group; (b) HRQOL: General U.S. population versus optimists, pessimists, and realists. ($^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$)

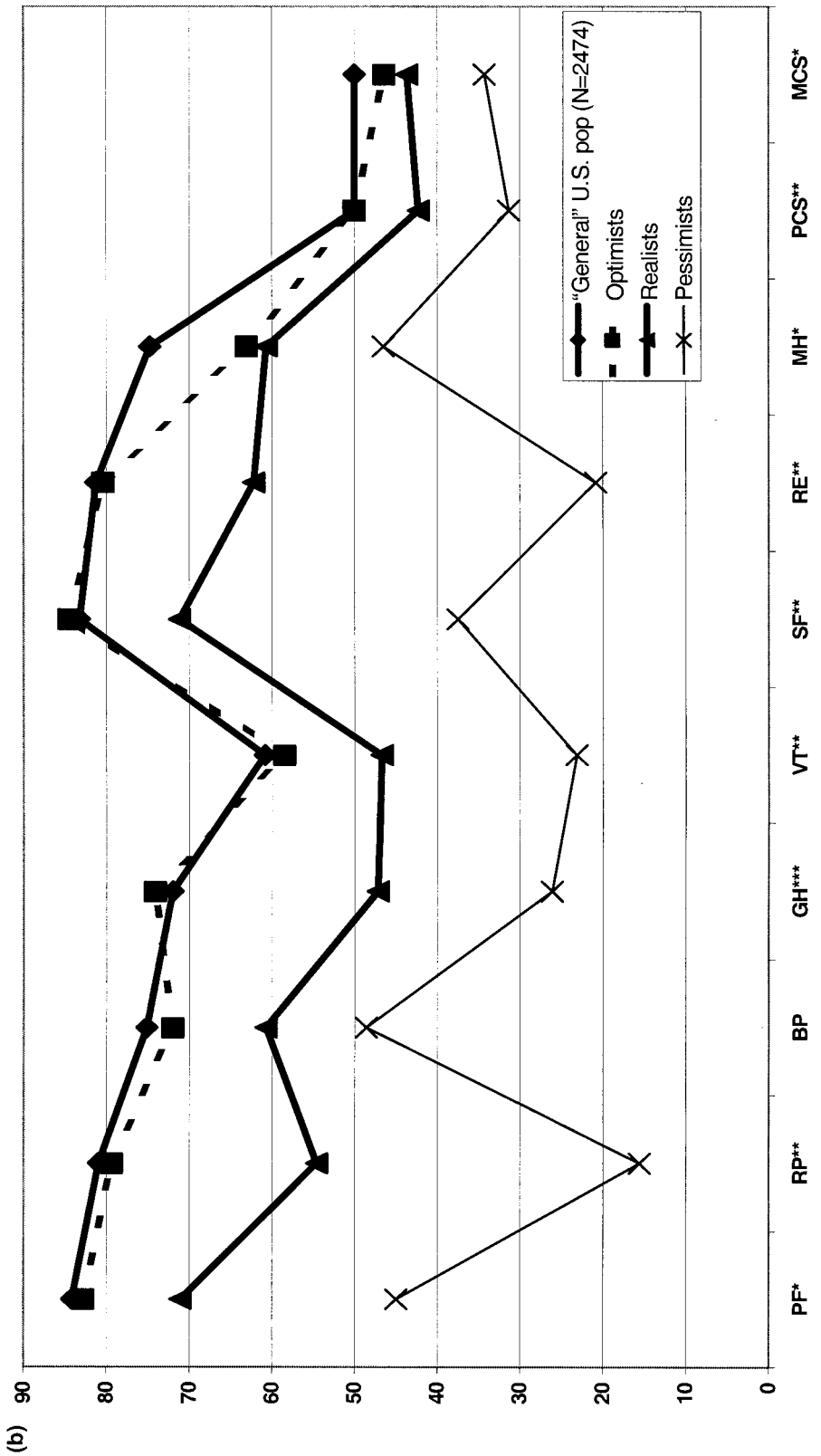

Fig. 1. *(Continued)*

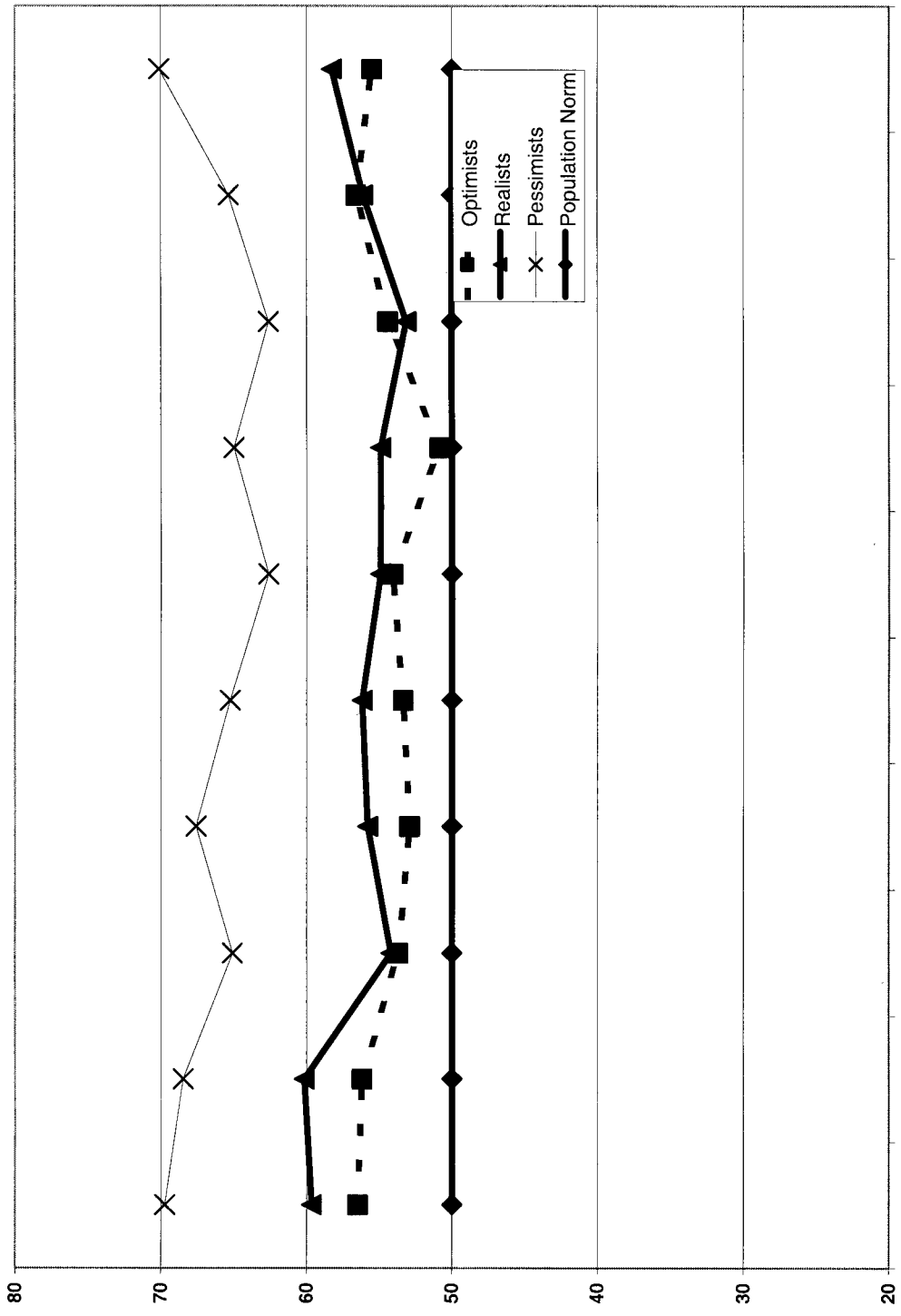

Fig. 2. BSI scores, overall CHC group versus optimists, pessimists, and realists. ($^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$)

history (Glacken, Kernohan, & Coates, 2001; Kraus, Schäfer, Csef, Scheurlen, & Faller, 2000). Our data suggest that optimism/pessimism as well as coping skills may be an important determinant of HRQOL in CHC patients.

Previous research suggests that cognitive predispositions such as optimism/pessimism may play a significant role in how a person copes with chronic illness and assesses his symptoms (Affleck, Tennen, & Apter, 2001). In addition, optimism/pessimism may influence health outcomes (Peterson & Seligman, 1984; Peterson, Seligmen, Yurko, Martin, & Friedman, 1998; Peterson, Vaillant, & Seligman, 1988). For example, Affleck and colleagues found that the most optimistic asthma patients were least likely to take extra medication for worsening symptoms, whereas the most pessimistic asthma patients were more likely to vent distressing emotions (Affleck et al., 2001). In the Terman Life-Cycle Study, results indicate that pessimism—as measured via questionnaires completed in the 1930s and 1940s—was a strong predictor of early mortality as of 1991, especially among males, and especially for accidental or violent deaths (Peterson et al., 1998). Similarly, Peterson and colleagues found that pessimism among Harvard graduates in the 1940s predicted poor health at ages 45 through 60, even when physical and mental health at age 25 were controlled (Peterson et al., 1988).

The results of studies such as these suggest that pessimism can influence a person's coping style, overall emotional well-being, and health status. Consequently, it is not unreasonable to suggest that pessimism or perception of a disease's impact on future health may also affect perceptions of HRQOL. Not surprisingly, we found that pessimism among CHC patients was associated with a history of psychiatric illness and a lower self-reported health status (Table I). However, patients with a history of substance abuse or more severe liver disease were not more likely to be pessimistic. Pessimistic CHC patients in our study did report significantly higher BSI subscale and summary scores indicative of greater emotional distress.

There are several limitations to this study worth discussing. First, the overall sample size is relatively small, and the distribution of optimists, realists, and pessimists was skewed such that there was a small number of optimists and pessimists. We utilized nonparametric statistics to account for the skewed distribution, but it is possible that a more equally split sample might yield different results. Second, our measure of optimism/pessimism was not a validated instrument. Our single-item assessment of patients' perception of the potential impact of CHC on their lives may not yield the same results as a multi-item instrument that has been subjected to rigorous psychometric testing. Finally, our sample consisted of patients visiting a tertiary care center for treatment for their CHC, which may lead to a referral bias compared to CHC patients in the general U.S. population.

Although our pilot study suggests that optimism/pessimism may play an important role in QOL, more research is needed. For example (1) Does optimism alone compensate for the degradations in QOL caused by CHC, or is it the absence of pessimism? (2) How does coping style interact with optimism and pessimism in this population, and how does that consequently affect QOL? (3) How do optimism and pessimism impact upon CHC patients' perception of symptoms? (4) Do optimism and pessimism affect both emotional and physical dimensions of QOL? and (5) If optimism and pessimism genuinely affect the physical dimensions of QOL, are there explanatory mechanisms? (e.g. altering specific health risk behaviors like drug use or more general health behaviors like exercise, or is there some as yet unidentified psychoneuroimmunological process underway?) It also worth exploring whether optimism/pessimism has psychotherapeutic treatment implications. Can we turn pessimists into optimists, and if so, what effect might that have on QOL, emotional distress, and health outcomes? Future population-based studies using larger sample sizes may confirm or alter our preliminary findings. Nonetheless, our data suggest that optimism/pessimism may be an important factor worth considering in future investigations of HRQOL and emotional status in CHC patients.

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