Published in final edited form as:

Eur J Gastroenterol Hepatol. 2017 June ; 29(6): 679–685. doi:10.1097/MEG.0000000000000860.

AN EFFECTIVENESS STUDY OF GROUP PSYCHOEDUCATION FOR HEPATITIS C PATIENTS IN COMMUNITY CLINICS

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Abstract

Objective—A successful psychoeducation program for serious mental illness, PsychoEducation Responsive to Families (PERF), was modified for hepatitis C (HCV). An effectiveness study was conducted comparing HCV-PERF with didactic education.

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Conflicts of interest

The remaining authors disclose no relevant conflicts.

Methods—A sample of 309 adult HCV patients was recruited from three outpatient settings and randomized (60% HCV-PERF, 40% didactic control). Groups met for 90 minutes bimonthly for six months, following separate structured protocols. HCV-PERF sessions included a didactic curriculum developed uniquely for groups by member choice, with group problem-solving and support interactions. Patients were assessed at baseline, post intervention, and one year later. Demographic and HCV-related variables and structured diagnostic interview data were obtained.

Results—Both groups improved significantly on major depression and alcohol and drug use, quality of life, risk behaviors, and treatment satisfaction, and worsened on disability and perceived HCV-related problems. Intervention groups did not differ on outcomes.

Conclusions—Even though the active intervention did not achieve significant improvement relative to the control condition, the observable improvements in both conditions warrants further exploration of the contributions of education and support as potentially important elements of HCV behavioral intervention. Further study is needed to identify elements common to education interventions that may be contributory to the improved outcomes over time.

Keywords

hepatitis C; psychoeducation; alcohol use disorder; drug use disorder; risky behaviors

INTRODUCTION

Approximately 4 million Americans are chronically infected with the hepatitis C virus (HCV). A substantial proportion of those infected with HCV will develop cirrhosis, often leading to hepatocellular carcinoma. HCV-related hepatic decompensation has emerged as the leading cause of need for liver transplantation [1-6]. A 2013 review of studies conducted in the pegylated interferon/ribavirin era found that only a small minority of HCV patients presenting for health care are treatment-eligible and advance to treatment; even fewer complete treatment, and very few achieve sustained virologic response (SVR) [7]. It has been suggested that psychosocial group interventions could potentially improve medical and psychosocial outcomes for patients with HCV [8].

Multifamily psychoeducation groups could potentially help engage and empower family and other informal caregivers to support patients with HCV. Multifamily psychoeducation groups have been demonstrated to be effective across a variety of populations [9]. For this study, a psychoeducation program, *PsychoEducation Responsive to Families (PERF)* [9-11], was modified to address the specific needs of patients with HCV. PERF is a family-responsive group psychoeducation model that was developed by members of this research team, originally for patients with schizophrenia and their families and subsequently adapted for use for other populations, including patients with serious mental illness, children with mental illness, homeless adults and children, veterans with posttraumatic stress disorder, and patients with HCV. The PERF model was originally based on the structure of the McFarlane [12] psychoeducation model and was further developed by members of this team to add curricula tailor-designed for each group, using didactics systematically created from topics selected uniquely for prior psychoeducation groups conducted by this team [9]. Combined with traditional medical care and education for HCV to improve treatment readiness and

adherence, this PERF intervention for HCV (HCV-PERF) was applied and tested in an effectiveness trial comparing HCV-PERF with a didactic HCV education group intervention providing equivalent intensity of group meeting time and educational materials, in the pegylated interferon/ribavirin era.

METHODS

An RCT of group psychoeducation for patients with HCV was conducted at outpatient hepatitis C clinics at two major university medical centers (Washington University School of Medicine in St. Louis, Missouri and The University of Texas Southwestern Medical Center in Dallas, Texas) and the Veterans Affairs North Texas Health Care System medical center in Dallas, Texas. This study was approved in advance by the Institutional Review Boards of the participating institutions.

Sample

A sample of 309 patients age 18 years who were being considered for HCV treatment by their hepatologists was recruited from outpatient clinics attended by the patients and through flyers, posters, and word-of-mouth. HCV was confirmed by HCV RNA using polymerase chain reaction; median viral loads measured 2.50 mg/ml on average for this sample of patients. Exclusion criteria were inability to provide informed consent, current homicidality/suicidality, and active psychosis. The number of patients excluded by these criteria is not known because the sample consisted only of patients referred by recruitment sources. Written informed consent to participate was obtained prior to study enrollment. By design, 60% (n=186) of participants were randomized to HCV-PERF and 40% (n=123) to the didactic HCV education control group (40%, n=123). The sample was collected over a two-year period (2008-2010); psychoeducation groups proceeded during the year of study enrollment and follow-up data collection was completed in 2012. This study was conducted prior to the release of the HCV protease inhibitors, and many patients in the study were aware that these treatments would soon be released. The HCV-PERF groups were used by the hepatologists as a readiness activity for HCV treatments. Participation was voluntary; participants were offered \$75 for completion of baseline assessments and \$50 for completion of follow-up assessments. They were not offered compensation for participation in psychoeducation groups, but refreshments were provided at all of these meetings.

Intervention

HCV-PERF is a group family psychoeducation model for patients with HCV. Groups convene for 90 minutes twice monthly for 6 months (12 meetings), and are co-facilitated by a medical professional with experience in the management of patients with chronic hepatitis C and a psychosocial professional (social worker or social psychologist). The sessions are problem-oriented, providing information, support, and sharing, with a brief informational didactic presentation on a selected topic followed by group discussions of the topic. The structure of the psychoeducation groups includes an opening discussion, didactic presentation on a specified topic, focused group discussions and exercises relating to the presentation, and a brief wrap-up.

The HCV-PERF curriculum was uniquely developed for each group, whose members generated specific lists of problems and concerns they wanted to cover in the groups. The didactic curriculum for all these topics was standardized into formalized presentations with accompanying handouts. More details of the HCV-PERF model can be found in other published articles [9-11].

The control intervention consisted of education groups for patients with HCV and any interested family members/caregivers, meeting on the same schedule as the HCV-PERF groups. Opportunities were provided for interactive question-and-answer periods with the group leader, without encouraging interaction among group members. Aside from presentation of the same introductory didactic on HCV from PERF, the didactics for the education groups consisted of publicly available audiovisual presentations promoting general health and wellbeing. The control groups received copies of the same handouts provided to the PERF groups.

Regular meetings were held between the group facilitators and project investigators to ensure facilitator consistency within PERF and between the two group interventions.

Assessments

Assessment instruments were administered by study staff, all of whom had advanced degrees (including BSW, PhD, and MD) in psychological/social/medical sciences. Baseline assessments of the participating HCV patients were conducted at study entry, before study randomization. Follow-up assessments were conducted by assessors blinded to the condition at the end of the intervention period (six months after baseline), and again 12 months later to investigate maintenance of benefits following the intervention.

Demographic and personal history data were collected with items from the National Comorbidity Survey [13] interview. The NIMH Diagnostic Interview Schedule (DIS) for DSM-IV psychiatric disorders (DIS-IV) [14] and the World Health Organization Composite International Substance Abuse Module (SAM) [15] provided lifetime and recent diagnoses of major depressive disorder, bipolar disorder, posttraumatic stress disorder, antisocial personality disorder, and substance use disorders.

Information on health status, current medical symptoms, and recent health events was obtained using the Short-Form 36 (SF-36) covering 8 health domains and quality of life and social functioning [16]. Modules from SPNS (Special Projects of National Significance) program, under contract to Measurement, Inc. (www.TheMeasurementGroup.com) [17] were modified to assess HCV instead of HIV to query social and health domains, social support and functioning, sexual and substance-related risk behaviors, and service use/access. The Social Adjustment Scale Self-Report (SAS-SR) assessed social adjustment, work, friendships and relationships, and family contact [18]. Readiness for change was monitored using the University of Rhode Island Change Assessment Scale (URICA) [19], a 32-item questionnaire measuring attitudes toward changing problem behaviors in four stages (precontemplation, contemplation, action, and maintenance) from the transtheoretical model. Knowledge about HCV was tested at baseline and after the last session with 9 true/false

questions covering HCV, transmission of the virus, the course if HCV infection, and its treatment.

With patients' annual written informed consent, all HCV-related monitoring laboratory values of liver function tests, blood counts, and drug screening tests were obtained through the full time course of this study from their medical records. Urine drug screening for opiates, cocaine, amphetamine, methamphetamine, cannabis, and alcohol was conducted at each study assessment, using the Roche *OnTRAK* method [20].

Data analysis

Data analysis used SAS (Version 9.3, SAS Institute, Cary, NC). Results are summarized using raw counts and numbers, percentages, means with standard deviations, median values, and ranges (minimum and maximum values). Chi-square tests (substituting Fisher's exact tests in cases of expected cell sizes <5) compared two dichotomous variables. Interval variables were compared with dichotomous variables using nonparametric Wilcoxon-Mann-Whitney U tests (PROC NPARIWAY in SAS) to accommodate instances of nonnormal data. Comparison of baseline and follow-up variables for analysis of repeated variables was conducted using generalized estimating equations (PROC GENMOD in SAS) for categorical variables and using generalized linear mixed models (PROC GLIMMIX in SAS) for numerical variables. To address the likelihood of Type II errors resulting from multiple comparisons of outcomes, a modest Bonferroni correction was made to alpha level by dividing by 5, so that alpha significance level was set at $p = .01$.

RESULTS

Baseline characteristics of the sample

Table 1 lists baseline characteristics of the entire sample, comparing those randomized to HCV-PERF vs. the didactic control condition. The sample was more than half male, average age 53, nearly two-thirds black, just over one-half having a high school education, and 35% (not shown in table) married or cohabitating with a romantic partner. Fewer than one in five was gainfully employed and nearly one-half were disabled. Approximately one-third (32%) of those with known stage of liver fibrosis were in stages F3-F4, and the remaining 68% were in stages F0-F2. Average duration of awareness of having HCV infection was about 8 years. Nearly one-half did not know how they had been infected with HCV, but almost one-third indicated their infection had resulted from injection drug use. Nearly one-third had previously received a course of HCV treatment, but less than 40% had completed the treatment and few had previously responded to treatment. About 40% of the sample reported that they had little or no knowledge about HCV.

The majority reported that they had experienced symptoms in the last month that they believed were HCV-related, and more than one-half reported that these symptoms had been severe. Almost one-half had stayed in bed for one or more days because of illness in the last month. Nearly one-third described the burden caused by HCV to their lives as moderate or large. About three-fourths reported experiencing problems related to HCV and

acknowledged assistance needs in the last month. Work was the most adversely affected functional domain.

The vast majority of the sample had medical comorbidities, the most common being arthritis, in more than one-half. Liver enzymes were mildly elevated on average. Most participants had a lifetime psychiatric disorder, and more than one-half had a current psychiatric disorder, most often major depression (more than one-third). Although more than one-half of the sample had lifetime alcohol or drug use disorders, only about 10% had a current drug or alcohol use disorder. Despite the low prevalence of current substance use disorders, nearly one-half had used recreational drugs (notably cannabis, identified in more than one-third of the sample) and more than one-half had used alcohol in the last six months. More than one-half (54%) had ever used injection drugs, but very few (4%) acknowledged having done so in the last month (not shown in table). More than one-fourth of the sample had a positive urine drug screening test, especially for cannabis, followed by opiates and cocaine in frequency.

The vast majority had a lifetime history of risky behaviors; more than one-half had engaged in risky behaviors in the last month. Most participants were in the Contemplation and Action stages of readiness for change. Average scores on satisfaction with quality of life were about 5-6 on a 10-point scale, and the lowest-scoring domain was sex life. The average participant had several social supports, and rankings of social support averaged toward the high end of scores. The vast majority had experienced one or more major life events in the last six months. Aside from illness or injury experienced by nearly one-half, other most common life events were death of a family member or friend (nearly one-third) and loss of employment or income and marital separation (more than one-fourth each). The most commonly endorsed coping methods were religion/faith/spirituality and problem solving/seeking information. Overall, coping methods were largely positive (e.g., receiving moral support from others, problem solving and information seeking, religious/spiritual coping, engaging in activities, helping others), with positive coping methods endorsed twice as often as negative coping methods (e.g., use of substances, avoidance).

Randomization and intervention

Patients randomized to HCV-PERF did not differ from those randomized to the didactic control intervention on demographic characteristics, lifetime or current substance use or disorders, medication adherence, burden of illness, current symptoms of HCV, level of HCV knowledge, service use in the last 6 months, treatment satisfaction, life events, number of risky behaviors, social support, phase of readiness for change, quality of life, adverse effects of HCV on domains of functioning, or coping methods. There were no differences between these two groups in prevalence of any medical comorbidities or in laboratory values. More patients in the PERF group than in the control group had a lifetime (66% vs. 46%; $\chi^2=12.51$, $df=1$, $p<.001$) and current (45% vs. 29%; $\chi^2=8.39$, $df=1$, $p=.004$) history of major depression, but there were no other differences between these two groups in any other psychiatric disorders.

Altogether, 12 HCV-PERF and 12 didactic control groups were convened. Most (98%) patients attended at least one group meeting, but only 33% attended more than one session.

Among those who attended more than one session, the mean number of meetings attended was 4.6. Attendance did not differ between the two intervention groups for number of meetings attended or having attended any meeting ($p>.01$). Post-test knowledge did not improve overall, with no difference observed between the two intervention groups ($p>.01$).

Post-intervention findings

First follow-up—The first follow-up assessments were conducted at the completion of the intervention groups (six months after baseline), with 225 completed assessments, representing 73% of the baseline sample and 80% of 282 who were eligible for re-assessment (e.g., alive, in the geographic area, not incarcerated or too ill); eligible follow-up and attrition groups did not differ in proportions with psychopathology.

The proportion of all patients in the study with current major depression had decreased ($\beta=.47$, $SE=.16$, 95% $CL=.77$, $.16$, $z=3.01$, $p=.003$). The proportions with alcohol ($\beta=.90$, $SE=.16$, 95% $CL=1.20$, $.59$, $z=5.72$, $p<.001$) and drug ($\beta=1.49$, $SE=.18$, 95% $CL=1.85$, 1.13 , $z=8.13$, $p<.001$) use in the last six months had decreased. Quality of life scores had increased ($F=83.70$, $DenDF=308$, $p<.001$). Employment, perceived level of HCV burden, and knowledge scores did not differ from baseline. There were no differences between the first follow-up and baseline in satisfaction with treatment, number of recent life events, recent risky behaviors, support functions or social supports, positive coping methods, problems caused by HCV, or readiness for change score reflecting action phase.

No significant differences between the HCV-PERF and control groups were found at the first follow-up on any of the variables measured in this study.

Second follow-up—The second follow-up assessments were conducted one year after the first follow-up assessments (18 months after baseline), but the project ended before the follow-up date for the last pair of groups, so that only 291 participants had the opportunity to participate the second follow-up assessment. The second follow-up assessment was completed for 180 of the 291 participants, representing 62% of the second follow-up sample (67% of the 268 who were eligible for reassessment). For those eligible to participate in the second follow-up assessment, the HCV-PERF group was more likely than didactic control group to complete the assessment (75% vs. 55%; $\chi^2=11.77$, $df=1$, $p<.001$); eligible follow-up and attrition groups did not differ in proportions with psychopathology.

At the second follow-up, only 19% had received treatment for HCV during the course of the study, and only 7% had achieved a sustained virologic response. More participants were disabled compared to baseline ($\beta=.63$, $SE=.18$, 95% $CL=.27$, $.98$, $z=3.43$, $p<.001$). The decrease in the proportion with recent alcohol ($\beta=.96$, $SE=.18$, 95% $CL=1.31$, $.61$, $z=5.42$, $p<.001$) and drug use ($\beta=1.72$, $SE=.21$, 95% $CL=2.14$, 1.30 , $z=8.07$, $p<.001$) compared to baseline use identified at the first follow-up persisted at the second follow-up. The reduction in current major depression at the first follow-up was not apparent at the second follow-up. The number of risk behaviors had decreased from baseline ($F=332.44$, $DenDF=174$, $p<.001$). Quality of life retained the increase identified at the first follow-up ($F=150.10$, $DenDF=308$, $p<.001$). Although general treatment satisfaction had not improved at the first follow-up, it was significantly improved from baseline at the second follow-up ($F=12.01$,

DenDF=153, $p<.001$). The baseline number of problems caused by HCV had increased ($F=10.29$, DenDF=173, $p=.002$).

No significant differences between the HCV-PERF and control groups were found at the second follow-up on any of the variables measured in this study.

DISCUSSION

This project successfully recruited a sample of patients with HCV who were contemplating treatment for HCV, and then developed and delivered a tailor-designed family-responsive psychoeducation program for them. Study participants improved on several important variables over time. By six months (at completion of the intervention), current major depression and alcohol and drug use had decreased, and quality of life had improved. Twelve months later, findings related to alcohol and drug use and quality of life retained the improvement observed at the end of the intervention. Additionally, current risk behaviors had decreased, and treatment satisfaction had increased. Increased disability and perceived HCV-related problems over time, however, pointed to worsening medical illness. A patient/family group education study by Mohamed and El-Bahnasawy [8] similarly found a decline in health status over time. In contrast to their study, however, the current study did not demonstrate significantly improved HCV-related knowledge after the intervention.

In the current study, only a small fraction of the baseline sample went on to receive therapy for HCV in the following year, and very few achieved a sustained virologic response. The study's timing was unfortunate in relation to anticipation of release of new medications expected to be more effective with hopefully fewer side effects. Many participants in this study reported that their physicians had advised them to postpone initiation of treatment until the new medications were available. This inauspicious timing may have reduced opportunities for the psychoeducation intervention to lead to superior medical outcomes resulting from improved treatment readiness and adherence to prescribed treatment.

The psychoeducation group did not differ significantly from the control group on outcomes assessed at either follow-up. Besides the low rates of advancement to HCV therapy, another difficulty with treatment initiation and engagement observed in this study was the low participation in the psychoeducation intervention. The HCV population faces many barriers to participation in interventions requiring regular attendance, including transportation difficulties, conflicts with busy schedules, competing demands, insufficient interest, and illness-related difficulties [7]. Differences in clinical outcomes in the two intervention groups could have been obscured through four potential mechanisms related to the delivery of the interventions as considered below. First, the equivalent outcomes of the two interventions could have derived from a common set of group experiences. Second, many of the intervention groups in both conditions were facilitated by one senior clinician, who may have been similarly therapeutic for both sets of intervention groups. Third, the element of social support, a central component of the active family psychoeducation intervention, may have also inadvertently occurred in the didactic education control condition to an equivalent degree through conversations outside of the formal group activities. Fourth, members attending group meetings exchanged information about anticipated and emerging new

treatments released during this study, which may have substantially motivated participants in both groups to optimize their lifestyle choices to qualify for the new pharmacotherapies.

Strengths of the study were enrollment of a relatively large sample of 309 HCV participants recruited from real-world clinical settings, randomization of the interventions and systematic assessments including full diagnostic interviews, and prospective longitudinal follow-up with high follow-up assessment rates. Noteworthy limitations, in addition to the problems with differentiation of active elements of the interventions and poor participation in treatment and interventions described earlier, were that most (69%) of the sample was from one site.

Even though the active intervention was not superior to the control condition for outcomes, observable improvements in outcomes in both conditions warrants further exploration of the contributions of education and support as potentially important elements of HCV behavioral intervention. Additional investigation of the elements of both interventions is merited to determine common factors within them that may be contributory to positive outcomes. With the development and utilization of new, more effective and tolerable medications, behavioral interventions that facilitate engagement in and adherence to medical treatment can be expected to be even more consequential to improving outcomes.

CONCLUSIONS

Only a small minority of HCV patients presenting for health care are treatment-eligible and advance to treatment; even fewer complete treatment, and very few achieve sustained virologic response (SVR). This randomized controlled trial of family psychoeducation for HCV did not differentiate it from a control condition in outcomes, but the control condition had many similarities to the active intervention. Observable improvements in patients in both conditions in this study warrants further exploration of the contributions of education and support as potentially important elements of HCV behavioral intervention.

Acknowledgments

Source of Funding

The authors acknowledge support for this work from NIH Grant R01 AA15201 (NIAAA) to Dr. North and a grant from Vertex Pharmaceuticals to Dr. Jain. The authors wish to acknowledge the contributions of the VA North Texas Health Care System, The University of Texas Southwestern Medical Center, and Washington University School of Medicine in support of this research.

Dr. Jain has received research grants from Vertex Pharmaceuticals, Gilead Sciences, AbbVie, Bristol Myers-Squibb, Boehringer Ingelheim, and Janssen. Dr. Brown has received research grants from Gilead Sciences. Dr. Brown has received research grants from Gilead Sciences.

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Table 1

Baseline characteristics of HCV study participants

	Interval variables		Categorical variables
	Mean (SD)	Median (range)	N (%)
DEMOGRAPHICS (N=309)			
Sex			
Male			189 (61.2)
Female			120 (38.8)
Mean (SD) age	52.6 (7.5)	53 (23-78)	
Race (N=307)			
White			100 (32.4)
Black			196 (63.4)
Other			13 (4.2)
Education			
High school graduate			178 (57.6)
Marital status			
Married			68 (22.1)
Divorced			91 (29.6)
Separated			41 (13.3)
Widowed			22 (7.1)
Never married			86 (27.9)
Living with intimate partner			80 (25.9)
Current employment status (N=268)			
Employed			51 (19.0)
Unemployed			69 (25.8)
Disabled			126 (47.0)
HCV HISTORY/TREATMENT			
Mean (SD) months aware of HCV diagnosis (N=293)	98.0 (95.6)	72 (0-444)	
How infected with HCV (N=264)			
Don't know			128 (48.5)
Drug use (sharing needles, paraphernalia)			78 (29.6)
Blood transfusion			27 (10.2)
Tattoo or body piercing			16 (6.1)
Sex			6 (2.3)
Occupational (e.g., needle stick, blood splash in eye)			5 (1.9)
Medical procedure (e.g., surgery, injection)			3 (1.1)
Shot or stabbed			2 (0.8)

	Interval variables		Categorical variables
	Mean (SD)	Median (range)	N (%)
Ever took medication for HCV (N=302)			92 (30.5)
Ever stopped HCV medication for reason other than SVR (N=77)			52 (67.5)
Ever completed HCV treatment (N=84)			33 (39.3)
HCV treatment response (N=59)			15 (25.4)
HCV KNOWLEDGE			
Level of knowledge of HCV and its treatment (N=302)			
Complete			22 (7.4)
General			66 (22.1)
Some			88 (29.4)
Very little			79 (26.4)
None			44 (14.7)
# correct of 9 true/false HCV knowledge items (N=107)	4.0 (1.4)	4 (1-7)	
HCV EFFECTS ON FUNCTIONING AND BURDEN OF ILLNESS (N=266)			
HCV-related symptoms in last week	5.4 (3.6)	1 (0-10)	212 (87.6)
Severe HCV-related symptoms in last week	1.7 (2.0)	5 (0-16)	137 (57.6)
Had days sick in bed last month	3.0 (5.6)	1 (1-10)	141 (47.0)
Had days missing work/activities in last month for HCV (N=266)	1.9 (6.0)	0 (0-31)	52 (19.6)
HCV-related adverse functioning in last month (1-10 scale; 10=most negatively affected):			
Work (N=224)	4.3 (4.1)	4 (0-10)	
Home (N=285)	3.4 (3.6)	2 (0-10)	
Social leisure (N=284)	3.8 (3.9)	3 (0-10)	
Personal leisure (N=286)	3.1 (3.5)	1 (0-10)	
Close relationships (N=285)	3.4 (3.8)	1 (0-10)	
Sex (N=276)	4.1 (4.1)	3 (0-10)	
Average of subscales (N=287)	3.6 (3.2)	3.2 (0-10)	
Amount of burden from HCV: (N=284)			
Large			33 (11.6)
Moderate			57 (20.1)
Small			58 (20.4)
None			136 (47.9)
In last month, HCV caused problems (N=235)	4.2 (4.2)	3 (0-12)	226 (74.8)
In last month, participant had identified needs for help (N=302)	3.3 (3.3)	2 (0-12)	236 (78.2)
MEDICAL COMORBIDITIES (lifetime) (n=309) (combined interview and clinical chart variables)			

	Interval variables		Categorical variables
	Mean (SD)	Median (range)	N (%)
Heart disease			52 (16.8)
Stroke			27 (8.7)
Cancer			32 (10.4)
Asthma			60 (19.4)
Diabetes mellitus			52 (16.8)
Renal disease			30 (9.7)
Arthritis			144 (46.6)
Tuberculosis			28 (9.1)
Epilepsy			12 (3.9)
Bleeding ulcer			24 (7.8)
Obesity			19 (6.2)
Other medical comorbidity			250 (80.9)
Any medical comorbidity			285 (92.2)
LABORATORY VALUES			
HCV viral load by polymerase chain reaction (1000s) (N=171)	2,571 (3,775)	1,172	
Alanine aminotransferase (ALT) (N=126)	72.6 (54.7)	56.5	
Aspartate aminotransferase (AST) (N=126)	63.4 (38.9)	50.0	
Bilirubin (N=210)	0.7 (0.7)	0.5	
Alkaline phosphatase (N=208)	92.0 (40.9)	83.0	
Albumin (N=203)	4.3 (3.9)	4.1	
Creatinine (N=208)	1.1 (1.4)	0.9	
Platelet count (1000s) (N=205)	212.2 (108.7)	196.0	
White blood count (WBC) (N=208)	6.5 (2.6)	6.3	
Hemoglobin (N=208)	13.6 (2.0)	13.9	
PSYCHIATRIC DISORDERS			
Any psychiatric disorder (N=309)			
Lifetime diagnosis			273 (88.4)
Current diagnosis			166 (53.7)
Major depressive disorder			
Lifetime diagnosis (N=304)			177 (58.2)
Current diagnosis (N=309)			121 (39.2)
Posttraumatic stress disorder			
Lifetime diagnosis (N=307)			112 (36.5)
Current diagnosis (N=309)			69 (22.3)
Alcohol use disorder			

	Interval variables		Categorical variables
	Mean (SD)	Median (range)	N (%)
Lifetime diagnosis (N=309)			163 (52.8)
Current diagnosis (N=309)			31 (10.0)
Drug use disorder			
Lifetime diagnosis (n=298)			208 (69.8)
Current diagnosis (N=309)			33 (10.7)
RECENT SUBSTANCE USE (combined data from all variables)			
Substance use in last 6 months (N=309)			
Cannabis			102 (34.1)
Opiates			25 (8.1)
Cocaine			55 (18.3)
Amphetamine			14 (4.5)
Sedative-hypnotics			8 (2.6)
Other drugs			9 (2.9)
Any drugs			154 (49.8)
Alcohol			158 (51.1)
Smoked cigarettes regularly in last month (N=309)			128 (43.0)
Urine substance test positive (N=247)			
Cannabis			51 (20.7)
Cocaine			24 (9.7)
Amphetamine			4 (1.6)
Methamphetamine			10 (4.1)
Opiate			36 (14.6)
Cannabis/cocaine/amphetamine/methamphetamine			68 (27.5)
RISKY BEHAVIORS			
Risky behavior(s) (of 13 specific behaviors): (N=303)			
Lifetime	5.7 (2.8)	6 (0-13)	295 (97.4)
Last month	1.1 (1.2)	1 (0-5)	187 (61.7)
READINESS FOR CHANGE			
URICA readiness for change score (1-5 scale; 1=strongly disagree to 5=strongly agree): (N=261)			
Precontemplation (8 items)	2.1 (0.6)	2.0 (1.0-4.1)	
Contemplation (8 items)	4.2 (0.5)	4.3 (1.1-5.0)	
Action (8 items)	4.1 (0.9)	4.0 (1.0-14.6)	
Maintenance (8 items)	3.3 (0.7)	3.4 (1.3-5.0)	

	Interval variables		Categorical variables
	Mean (SD)	Median (range)	N (%)
Total (32 items)	9.5 (1.9)	9.5 (1.9-20.6)	
SATISFACTION WITH QUALITY OF LIFE			
(1-10 scale; 1=worst to 10=best) in last month:			
Work life (N=204)	5.2 (3.7)	5 (0-10)	
Home life (N=289)	6.4 (3.0)	7 (0-10)	
Social leisure (N=288)	5.3 (3.4)	5 (0-10)	
Personal leisure (N=288)	5.8 (3.2)	6 (0-10)	
Close relationships (N=287)	6.4 (3.3)	7 (0-10)	
Sex life (N=275)	4.5 (3.8)	5 (0-10)	
Average of above (N=290)	5.6 (2.6)	5.7 (0-100)	
SOCIAL SUPPORT			
Number of social supports (N=299)	5.6 (8.8)	3 (0-80)	
Social support score (11 items, 1-10 scale, 10=most) (N=290)	7.5 (3.0)	8.7 (0-17.7)	
LIFE EVENTS IN LAST 6 MONTHS (N=296-298)			
Loss of job/income			78 (26.3)
Moved			66 (22.2)
Romantic breakup			38 (12.8)
Friend breakup			40 (13.4)
Marital separation			78 (26.2)
Car broke down			55 (18.5)
Robbed			12 (4.0)
Mugged			8 (2.7)
Had bad debts			60 (20.2)
Ill or injured			147 (49.3)
Legal problems			33 (11.1)
Household illness/injury			58 (19.6)
Household death			10 (3.4)
Family/friend death			90 (30.3)
Pressure to house guest			37 (12.5)
Summary of life events (N=298)	2.9 (2.3%)	2 (0-13)	255 (85.6)
COPING in last month (N=289)			
0-10 scale (0=none,10=most):			
Engaging in activities	4.0 (3.7)	4 (0-10)	

	Interval variables		Categorical variables
	Mean (SD)	Median (range)	N (%)
Problem solving and seeking information	6.0 (3.6)	7 (0-10)	
Moral support from family/friends	4.8 (4.0)	5 (0-10)	
Denial/nonresponse	3.0 (3.8)	0 (0-10)	
Religion/faith/spirituality	6.4 (3.9)	8 (0-10)	
Alcohol/drugs	1.8 (3.1)	0 (0-10)	
Humor	5.1 (3.9)	5 (0-10)	
Helping others	5.2 (3.8)	5 (0-10)	
Average # of positive coping methods (N=280)	5.2 (2.7)	5.5 (0-10)	
Average # of negative coping methods (N=280)	2.4 (2.8)	1 (0-10)	
# of coping methods (sum of positive and negative) (N=280)	2.8 (3.2)	2.8 (-5-10)	