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Impact of Physical Health on Treatment for Co-occurring Depression and Substance Dependence

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Abstract

Objective—There is a high rate of comorbidity among substance dependence, depression, and physical health problems. This study aimed to examine the impact of pre-treatment physical health stressors (acute and chronic conditions) on outcomes of treatment in a sample of veterans with dual disorders (depression and substance dependence) who were randomized to integrated cognitive behavioral therapy versus 12-Step interventions.

Methods—This study included 205 veterans (89.8% male, mean age = 49.5 years) enrolled in a clinical treatment outcomes trial. Chronic health problems (persistent, ongoing conditions lasting 2 weeks or more; e.g., arthritis, diabetes) and acute health events (occurring on a discrete date; e.g., injury, surgery, myocardial infarction) were coded dichotomously (presence versus absence) and evaluated separately. The impact of physical health stressors on abstinence (defined dichotomously), percentage of days abstinent, and depression symptoms were analyzed at the end of 12 and 24 weeks of treatment. Additionally, associations between intake motivation to change, health stressors, and substance use were examined.

Results—Analyses revealed that participants who had experienced a pretreatment acute health event had higher rates of abstinence at 12-weeks, higher percentage of days abstinent at 24-weeks, and higher depression symptoms at intake. Participants with chronic health difficulties had more severe depression at intake and those participants with severe chronic difficulties had greater depression symptoms across all time points. Chronic health difficulties were related to the Taking Steps factor of motivation to change substance use, but acute health events were not related to motivation to change. Motivation to change was also not related to substance outcomes in our sample.

Conclusions—Physical health appears to have a complex relationship with co-occurring depression and substance dependence. Acute health problems predicted lower substance use, whereas chronic health problems were associated with higher depression levels. Explicitly addressing the connection between substance use and health events during treatment may improve addiction treatment outcomes. However, individuals with chronic health problems may benefit from extending treatment or adjunct strategies focused on addressing chronic health concerns.

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DISCLOSURES

Ms. Tripp, Dr. Skidmore, Mr. Cui, and Dr. Tate report no financial relationship with commercial interests and, outside of the listed affiliations and acknowledged grant funding, we have no additional income to report.

This is an analysis of data collected as part of a clinical trial registered at www.ClinicalTrials.gov as NCT00108407.

Keywords

physical health; depression; substance dependence; treatment; veterans

Substance dependence is associated with many psychiatric disorders, most commonly major depressive disorder. The National Survey on Drug Use and Health (2007) found that adults with an alcohol use disorder were more than twice as likely as those with no past alcohol use disorder to experience a major depressive episode in a one-year span. Likewise, patients who presented to treatment for major depression frequently experienced co-occurring substance use disorders. Davis et al. (2008) found that one-third of patients seeking treatment for major depressive disorder met criteria for a substance use disorder. Due to this high rate of comorbidity, and worsened treatment outcomes among individuals with co-occurring depression and substance dependence (Cohn et al., 2011; Davis et al., 2010), identifying factors associated with treatment response may inform efforts to improve treatment outcomes.

In addition to high rates of co-occurring substance dependence, depression is also frequently linked to physical health problems. One study found that individuals with one or more chronic medical conditions were 2.6 times more likely to have major depression than those without a chronic medical condition (Egede, 2007). As the number of medical conditions increased in a 12-month period, so did the prevalence of major depression. Unsar and Sut (2008) found that elderly patients with chronic illness such as heart disease or cancer were more likely to be depressed as the duration of illness increased.

Physical health problems are also common among adults with substance dependence. A recent study found that among individuals with substance dependence being treated in outpatient and inpatient units, 76% had at least one health problem and 51% had two or more health problems (Keaney et al., 2011). Much of the intervention research to date has focused on acute health problems, and results suggest that in contrast to the negative impact on depression, some health problems may have a beneficial influence on substance use outcomes. Research on brief motivational interventions in healthcare settings have documented reductions in alcohol use after experiencing a health event in both intervention (i.e., those that received the motivational intervention) and control groups (i.e., those that received standard care and no motivational intervention; Handmaker, Miller, & Manicke, 1999; Longabaugh, et al., 2001; Monti, et al., 1999). These findings indicate that experiencing a negative health event may have positive impacts on an individual's problematic substance use. However, research regarding the impact of health problems has focused primarily on the effect of acute health events rather than the effect of chronic physical health issues, and the physical health-substance use relationship has not been explicitly examined in samples with comorbid depression. It is also unclear how health problems impact motivation to change, a key mechanism of action in regard to changing substance use disorders (Miller & Rollnick, 2002). Due to the evidence of associations between physical health, depression, and substance use, increased understanding of these relationships is an important goal.

Current Study

In the current study, we evaluated the relationships between health stressors, which included acute health events and chronic health difficulties, prior to entering treatment and changes in substance use and depression during treatment for co-occurring depression and substance

dependence. This study addresses some of the secondary questions from a larger clinical trial. The trial's primary questions focused on evaluating two types of outpatient psychotherapy interventions for veterans with concomitant depression and substance dependence (Lydecker et al., 2010); secondary questions focused on additional predictors of treatment response. The experimental intervention was Integrated Cognitive Behavioral Therapy (ICBT), which incorporated cognitive behavioral strategies for depression (Muñoz, Ying, Perez-Stable, & Miranda, 1993) and substance dependence (Kadden, 1994). The comparison intervention consisted of a Twelve Step Facilitation intervention that focused solely on alcohol and drug use (TSF; Nowinski, Baker, Carroll, 1994). Both groups received antidepressant medication based on standard protocol.

We hypothesized that experiencing an acute health event prior to treatment would predict decreased substance use during treatment, but that both pre-treatment acute health events and chronic health difficulties would predict higher levels of depression symptoms during treatment. We expected this to be the case regardless of treatment type. Finally, we hypothesized that health stressors (both acute and chronic) would be associated with increased motivation to change substance use, and motivation to change would be associated with substance use outcomes.

METHODS

Participants

Participants in the current study were veterans enrolled in a clinical trial evaluating two outpatient psychotherapy interventions for adults with co-occurring substance dependence and major depressive disorder. Veterans were eligible to participate if they met diagnostic criteria for major depressive disorder with at least one lifetime depressive episode that was not substance-induced, and lifetime alcohol, cannabis, and/or stimulant dependence with recent problem use (within the past 90 days). Veterans who met criteria for opiate dependence via intravenous administration, bipolar disorder, or psychotic disorders were excluded, as were individuals with severe memory impairment, and those residing more than 50 miles from the medical facility. Of the 260 veterans enrolled in the clinical trial, 205 participants who had intake and treatment data for the variables of interest were included in this analysis. The sample was primarily male ($n = 184$, 89.8%) and Caucasian ($n = 152$, 74.1%), with a mean age of 49.5 years ($SD = 7.6$) and an average of 13.5 years of education ($SD = 2.1$).

Procedures

This clinical trial was approved by the Veterans Affairs (VA) and University of California, San Diego Institutional Review Board. The study was described to veterans who were referred to the outpatient clinic for co-occurring substance use and Axis I disorders, and research staff met with potential participants in order to complete more detailed screening, explain study procedures, and obtain informed consent. In addition to study psychotherapy sessions and research assessments, informed consent included agreement for randomization to treatment type, videotaping of psychotherapy sessions to facilitate treatment fidelity, and completion of random toxicology screens. Participants also agreed to not attend other formal treatment for substance dependence or depression during the 24-week treatment period of the study with the exception of medication management appointments and community peer-facilitated 12-Step meetings. Participants, procedures, and interventions have been described in detail elsewhere (Lydecker et al., 2010; Drapkin, Tate, McQuaid & Brown, 2008).

Psychotherapy Interventions and Medication Management

For both the treatment (ICBT) and control (TSF) conditions, there were two intervention periods, each lasting 12 weeks (total intervention time was 24 weeks). Both interventions consisted of three modules that were 8 sessions in length. Participants could enter treatment at the beginning of any module and start times were staggered for the two interventions, so entry points occurred every two weeks (Drapkin et al., 2008). During the first 12 weeks for both conditions, veterans received hour-long twice-weekly group sessions as well as medication management with the clinic psychiatrist. During the second 12 weeks, veterans in both conditions received hour-long, once-weekly group sessions and medication management. Medications were prescribed using standard VA protocol.

ICBT—The Integrated Cognitive Behavioral Therapy intervention incorporated three modules (managing cognitions, increasing healthy activities, and building a social network); each module spanned eight sessions. During the second 12 weeks of ICBT the skills taught during the initial 12 weeks were reviewed and strengthened. ICBT represents a combination of principles from cognitive behavioral depression treatment (Muñoz et al., 1993) and cognitive behavioral coping skills training of addiction (Kadden et al., 1994).

TSF—The Twelve Step Facilitation intervention was a therapist-guided group intervention based on the Project MATCH treatment (Nowinski et al., 1994), but which varied slightly from Project MATCH. Our study utilized group therapy sessions (instead of individual sessions as in Project MATCH). The three modules addressed Alcoholics/Narcotics Anonymous (AA/NA) Steps 1–5, topics common in AA/NA meetings, and 12-step literature. If depression-related issues were raised by participants, these were addressed following TSF content, and patients were encouraged to discuss their mood symptoms with their psychiatrist at medication appointments. The topics from the initial 12 weeks were reviewed in the following 12 weeks.

Measures

The following three measures were assessed at baseline

Clinical Diagnosis—Axis I diagnoses were assessed using the Composite International Diagnostic Interview (CIDI; Robins, Wing, Wittchen, & Helzer, 1988), which was administered by a trained research assistant and results were reviewed by a supervising licensed clinical psychologist. Lifetime independent depression was operationalized as depression symptoms meeting Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV) diagnostic criteria following a minimum of 30 days of abstinence from alcohol and illicit drug use at some time in the participant's life. Participants were required to meet criteria for at least one lifetime episode of major depressive disorder independent of substance use, as well as meet criteria for current major depressive disorder irrespective of recent substance use.

Motivation to Change—The Stages of Change Readiness and Treatment Eagerness Scale (SOCRATES), a widely used 19-item self-report questionnaire, was used to assess motivation to change alcohol use (Miller & Tonigan, 1996). This measure was modified for the current sample to include motivation to change both alcohol and illicit drug use. Means for the three factors were used in analyses: (1) *Ambivalence*, which includes items such as, "Sometimes I wonder if I am in control of my drinking/drug use," (2) *Recognition*, which includes items such as, "I have serious problems with my drinking/drug use," and (3) *Taking Steps*, which includes items such as, "I have already changed my drinking/drug use, and I am looking for ways to keep from slipping back into my old patterns."

Health Stressors—Life stressors, which included physical health stressors, were assessed via the Psychiatric Epidemiology Research Interview, modified by the National Institute of Mental Health, Clinical Research branch (PERI-M; Hirschfield et al., 1977). After participants completed the PERI-M checklist of stressors, a trained interviewer assessed additional information about each stressor. Stressors were presented by the interviewer to trained raters, who designated each stressor as either an “event” (having a discrete date of occurrence) or a chronic “difficulty” (continuous stressor that lasts for 2 weeks or longer) and rated the severity of events and difficulties based on the Bedford College Life Events and Difficulties Schedule (LEDS; Brown & Harris, 1978). For the current study, events and difficulties in health domains were evaluated separately, and individuals could have both acute health events and chronic health difficulties. Examples of acute health events included a new injury (e.g., laceration requiring stitches, broken bone), a new diagnosis (e.g., date first advised of diabetes diagnosis, cancer diagnosis), and non-routine medical procedures. Examples of chronic health difficulties included arthritis, diabetes, migraine headaches, and asthma. Generally health experiences required medical treatment to meet the threshold for being rated as a stressor, and severity of stressors was rated based on the impact on life functioning across multiple domains (e.g., work, financial, interpersonal, etc.). When an individual had multiple chronic health difficulties, these difficulties were combined for the purposes of rating severity.

The following measures were assessed at baseline, 12-weeks, and 24-weeks

Substance Use—The Timeline Follow-back (TLFB; Sobell & Sobell, 1992) was used to assess substance use utilizing a daily calendar. Interviewers recorded quantity of alcohol and type of drug used for each day in the timeframe. Pre-treatment drug and alcohol use included the 90 days prior to beginning treatment. Two substance use variables were analyzed: a dichotomous variable of abstinence from all alcohol and illicit drugs which illustrates the rate of total abstinence among participants during the time period, and percentage days abstinent from substances, which provides a ratio of abstinent days out of total days during the 12-week timeframe.

Depression Symptoms—Depression symptoms in the previous week were assessed via interview using the Hamilton Depression Rating Scale (HAMD; Hamilton, 1960). The HAMD is a 21-item structured interview, which was administered by a trained research assistant. The HAMD has been validated in samples with substance dependence (Willenbring, 1986). Mean HAMD scores were used in the analyses.

Data Analysis

The current study is an analysis of data from a longitudinal treatment outcomes study, addressing secondary questions. The independent variables for health stressors were analyzed using baseline data (acute health events and chronic health difficulties experienced within the 90 days prior to entering treatment). The outcome variable for depression was analyzed using data obtained after 12- and 24- weeks of treatment (depression ratings for the week prior to assessments). The outcome variables for substance use were also analyzed using data obtained after 12- and 24-weeks of treatment (total abstinence for each 12-week period and percentage days abstinent for each 12-week period).

Differences between groups (with health stressor versus without health stressor) on each outcome variable (abstinence, percentage of days abstinent, and depression symptoms) were assessed using analysis of variance (ANOVA) for continuous outcome variables (percentage of days abstinent and depression symptoms) and chi-square tests for the dichotomous abstinence variable (abstinence coded as 0, any use coded as 1). Analyses were conducted to

assess the impact of any health stressor (coded as 1) in comparison to no health stressor (coded as 0). Separate analyses were conducted to examine the impact of severe health stressors (coded as 1) in comparison to no health stressors/non-severe health stressors (coded as 0). All baseline health and substance variables were tested for differences by treatment type (ICBT and TSF), and we found no statistically significant group differences. Consistent with prior reports (e.g., Lydecker et al., 2010), depression symptoms differed at the 24-week assessment by treatment, and thus analyses of 24-week depression outcomes were repeated controlling for baseline depression symptoms and treatment. We also conducted analyses for percentage of days abstinent controlling for treatment and baseline percentage of days abstinent. ANOVA was also used to test for differences in motivational change factors associated with health stressors and dichotomous substance use outcomes; linear regression was used to evaluate motivation and percentage days abstinent.

RESULTS

Physical Health Stressors

Thirty participants (14.6%) experienced an acute health event in the 90 days prior to entering treatment, with six of these rated as severe. One hundred forty-seven participants (71.7%) had chronic health difficulties in the 90 days prior to treatment entry, with 60 participants experiencing severe chronic health difficulties. Fifty-one participants (24.9%) did not have either an acute health event or chronic health difficulty in the 90 days prior to treatment entry. Table 1 lists the types of health events and difficulties experienced. Cardiovascular problems and physical traumas were the most common health events whereas musculoskeletal problems (i.e., arthritis, back pain) were the most common health difficulties.

Physical Health Stressors and Substance Use

Acute health events—At the 12-week assessment, there was a higher rate of total abstinence among participants who had experienced a pre-treatment acute health event (73%) than among those who had not (50%); $\chi^2_1 = 5.60$, $n = 204$, $p = .02$ (see figure 1). However, the difference was not statistically significant at 24 weeks; $\chi^2_1 = 1.14$, $n = 196$, $p = .29$. In regard to percentage of days abstinent, there was a trend at baseline toward participants with an acute health event (80%) having a higher percentage of days abstinent versus those without (70%); $F(1, 202) = 3.83$, $p = .052$. There was no statistically significant difference at 12 weeks, $F(1, 202) = .83$, $p = .36$; however, participants with pre-treatment acute health events had significantly higher percentage of days abstinent after 24 weeks of treatment (96% vs. 85%, respectively); $F(1, 194) = 5.27$, $p = .02$ (presented in figure 2). These results were consistent when controlling for type of treatment received and percentage of days abstinent at baseline. The prevalence of severe acute health events was very low ($n = 6$), and thus separate analyses were not conducted for severe acute health events.

Chronic health difficulties—Chronic health difficulties were not significantly associated with rates of abstinence or percentage of days abstinent after either 12 or 24 weeks of treatment.

Physical Health Stressors and Depression

Acute health events—At baseline, participants who had experienced a pre-treatment acute health event had higher depression symptoms ($M = 32.3$, $SD = 11.8$) than those who had not ($M = 27.8$, $SD = 10.6$); $F(1, 201) = 4.57$, $p = .03$. However, at both 12 and 24 weeks, there was no statistically significant difference in depression symptoms between participants with versus those without an acute health event. Results were similar when controlling for treatment type and depression symptoms at baseline.

Chronic health difficulties—Similarly, participants with chronic health difficulties had higher depression symptoms at baseline ($M = 30.1$, $SD = 10.7$) than those without chronic health difficulties ($M = 24.4$, $SD = 10.4$); $F(1, 201) = 12.08$, $p = .001$. Further, participants with chronic health difficulties had higher depression symptoms at 24 weeks ($M = 23.5$, $SD = 13.1$) than those without chronic health difficulties ($M = 18.4$, $SD = 10.6$); $F(1, 161) = 5.37$, $p = .02$. There was a non-significant trend at 12 weeks; $F(1, 183) = 2.90$, $p = .09$. When controlling for treatment type and depression symptoms at baseline, chronic health difficulties were no longer predictive at either 12 or 24 weeks.

However, participants with severe chronic difficulties had significantly more depression symptoms at intake, $F(1, 201) = 4.79$, $p = .03$; 12 weeks, $F(1, 183) = 6.30$, $p = .01$; and 24 weeks, $F(1, 161) = 6.99$, $p = .01$, compared to participants with non-severe or no chronic difficulties (see figure 3). When controlling for treatment type and depression symptoms at baseline there continued to be a non-significant trend for greater depression symptoms among individuals with severe chronic health difficulties at 12 weeks, $F(1, 157) = 2.77$, $p = .09$, and the difference remained significant at 24 weeks, $F(1, 157) = 3.76$, $p = .05$.

Physical Health Stressors and Motivation to Change

There were no statistically significant relationships between acute health events and any stages of change factors (Ambivalence, Recognition, or Taking Steps). There was a statistically significant difference on Taking Steps between those individuals with ($M = 4.55$, $SD = .54$) and without ($M = 4.75$, $SD = .43$) a chronic health difficulty; $F(1, 184) = 5.82$, $p = .02$. Chronic health difficulties were not significantly related to Ambivalence or Recognition and severe chronic health difficulties were not related to any of the stages of change factors. There were no statistically significant relationships between any stages of change motivational factors and substance use outcomes.

DISCUSSION

Our results suggest that physical health predicts treatment outcomes for individuals receiving treatment for co-occurring substance dependence and depression. We found differing impacts on substance and depression outcomes for acute health events versus chronic health difficulties. Consistent with previous treatment research (Longabaugh et al., 2001), experiencing an acute health event before treatment entry was associated with better substance outcomes (Monti et al., 1999; Tate, McQuaid, & Brown, 2005). Our findings lend further support to the theory that an acute health event may create a window of opportunity during which individuals may be particularly receptive or motivated to decrease alcohol or drug use. These findings extend previous research conducted in emergency rooms (Longabaugh et al., 2001; Monti et al., 1999), which found that individuals presenting for treatment of an acute health event were likely to change their substance use following the event. In fact, it appears that acute health events continue to have a positive impact on a person's substance use for up to six months following such health experiences.

However, we found that chronic health difficulties did not influence substance outcomes. These findings are consistent with our previous findings related to treatment retention, which found that experiencing acute health events was predictive of attending more sessions whereas chronic health difficulties were not predictive of attendance (Tate et al., 2011). One hypothesis for these findings is that individuals habituated to longstanding health difficulties, thus desensitizing them to the relationship between their health and substance use. Conversely, acute health events may be much more salient and thus serve as a motivator for change. The health belief model posits that individuals must believe that their behavior will alter their outcome or well-being in order to engage in health behavior changes. Thus, individuals who experience an acute health event may believe that decreasing substance use

will reduce future health problems whereas those with chronic health difficulties may doubt that decreasing substance use will have beneficial effects (Janz & Becker, 1984; Strecher, Champion, & Rosenstock, 1997).

A different picture emerges when examining the associations between health problems and depression. As hypothesized, individuals with chronic health difficulties experienced higher levels of depression. Of note, over 70% of our sample reported chronic health difficulties, with cardiovascular disease and musculoskeletal problems, primarily arthritis, being the most common. The prevalence of these two types of health difficulties and co-occurring depression have been long-documented in the literature (e.g., Schleifer et al., 1989; Murhpy, Creed & Jayson, 1988). This is important, as co-occurring depression and cardiovascular disease are associated with greater mortality risk (Meijer et al., 2011), and co-occurring mental health disorders and arthritis have been associated with reduced ability to work and carry out daily activities (Stang et al., 2006).

Our findings are consistent with theories of learned helplessness as well as the health belief model described above. Individuals with chronic conditions may develop learned helplessness over time regarding their condition and this feeling of helplessness may hinder their depression treatment response. In contrast, acute health events experienced prior to treatment entry were not associated with depression treatment outcomes. Thus, it does not appear that physical health problems in general are related to depression treatment response, but only health problems that have long-standing impacts.

Somewhat surprisingly, experiencing an acute health event prior to treatment was not related to baseline levels of motivation to change, nor was intake motivation related to substance use outcomes. This may reflect the relatively high levels of motivation and recognition of substance problems reported at intake by our veteran sample at treatment entry. It may also be that the stages of change measure used to assess motivation did not adequately capture changes resulting from acute health events. However, it does appear that individuals with chronic health difficulties demonstrated slightly less action towards changing their substance use than individuals without chronic health difficulties. However, this motivation was not reflected in actual substance use outcomes, which were similar for individuals with and without chronic health difficulties.

Strengths and Limitations

Our examination of the role of physical health in the treatment outcomes of individuals with depression and substance dependence expands on the small literature on the topic. The distinction in our measurement of acute health events and chronic health difficulties allowed for a more specific examination of physical health and the role it plays in both depression and substance use outcomes.

Our findings should be interpreted in light of some limitations. The sample was made up of mostly male, White veterans, which negatively impacts the generalizability of our results. Furthermore, we examined health problems, but we did not specifically assess pain (either acute or chronic), which research suggests is related to depression and substance dependence (Morasco et al., 2011; Ohayon & Schatzberg, 2003, 2010). The life stress assessment we used to measure health problems evaluates severity of health concerns based on the level of adjustment required or impact on a person's life. Pain levels are thus considered indirectly based on life impact (e.g. disrupted sleep, limited mobility, reduced social interaction, loss of leisure activities, financial loss, and reduction in work). Although the health assessment we used has limitations, it provides a means for evaluating the diverse health problems experienced in our sample and in other samples with mental health problems. In contrast, much of the prior literature on health and depression or substance use disorders has focused

on a single health diagnosis (e.g. diabetes, cardiovascular problems, cancer), limiting generalizability.

Implications and Future Directions

Our findings provide clinical and research implications and suggestions for future directions. First, it appears that acute health events may serve as catalysts for changing substance use. Interventions may benefit from addressing acute health events explicitly and discussing the role of substance use in the health event or recovery from the event. Providing ongoing feedback about health status may be an effective intervention strategy for individuals with substance use problems. Additionally, our findings lend support for screening individuals in medical settings when they may be especially primed for making changes to their substance use. Finally, our results suggest that individuals with severe chronic health difficulties are more depressed and may be less responsive to treatment. Future research could seek to improve treatments for individuals with depression and co-occurring chronic health difficulties as well as to identify possible mediators between acute health events and substance use changes.

Our findings suggest that physical health plays an important role in substance use and depression changes during treatment for these co-occurring disorders. In sum, it appears that acute health events are an important catalyst for positive changes in substance use whereas chronic health difficulties are risk factors for continued depression during treatment. Given the documented high rates of comorbidity between physical health problems, depression, and substance dependence, clinicians and researchers will benefit from understanding and addressing the role of physical health problems during treatment.

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Figure 1. Percentage of participants who remained abstinent during treatment with and without pre-treatment acute health events and chronic health difficulties. * $p < .05$.

Figure 2. Mean percentage of days abstinent during initial 12 weeks and second 12 weeks of treatment for participants with and without pre-treatment acute health events and chronic health difficulties. * $p < .05$.

Figure 3. Hamilton Depression Rating Scale Mean Scores for participants with and without chronic health difficulties and with and without severe chronic health difficulties. * $p < .05$.

Table 1

Types of Acute Health Events and Chronic Health Difficulties Experienced in 90 Days Prior to Treatment Entry ($N = 154$)

Health category	Acute health events ($n = 30$)	Chronic health difficulties ($n = 147$)	Severe chronic health difficulties ^a ($n = 60$)
Cardiovascular	6	50	26
Pulmonary	3	27	14
Gastrointestinal	4	36	14
Genitourinary/gynecology	4	17	10
Musculoskeletal	3	101	43
Eye, ear, nose & throat	0	14	5
Trauma	6	3	1
Dermatology	0	5	3
Neurology	1	20	10
Diabetes	2	26	17
Dental	1	5	1
Cancer	0	2	2
HIV	0	3	3
Other	0	1	0
Total	30	310 ^b	149 ^c

^aSevere chronic health difficulties impacted at least one area of life functioning (e.g. work, social, finances) in a severe manner whereas chronic health difficulties included health problems with light impact on life functioning.

^bTotal of 310 chronic health difficulties reported by 147 participants ($M = 2.1$ categories per person, $SD = 1.1$).

^cTotal of 149 severe chronic health difficulties reported by 60 participants ($M = 2.5$ categories per person, $SD = 1.2$).