Published in final edited form as:

Addict Behav. 2013 December ; 38(12): . doi:10.1016/j.addbeh.2013.08.002.

Days of heroin use predict poor self-reported health in hospitalized heroin users

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Abstract

This study examined associations between substance use behaviors and self-reported health among hospitalized heroin users. Of the 112 participants, 53 (47%) reported good or better health. In multivariable logistic regression models, each day of heroin use in the last month was associated with an 8% lower odds of reporting health as good or better (OR=.92; 95% CI 0.87, 0.97, $p < .05$). Cocaine, cannabis, cigarettes, alcohol use, unintentional overdose, nor injection drug use were associated with health status.

Keywords

Heroin addiction; health status; HRQOL; overdose

Prior studies suggest that poor health status is one factor that motivates substance users to seek addiction treatment (O'Toole, Pollini, Ford, & Bigelow, 2006; Pollini, O'Toole, Ford, & Bigelow, 2006). However, there is little research on health status perception among heroin users who are not seeking substance abuse treatment. Although substance use disorders are increasingly recognized as chronic illnesses with major health risks by the medical

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Author contributions: All authors contributed in a significant way to the manuscript. Authors Meshesha, Tsui, Liebschutz and Stein contributed to study concept and design. Author Anderson conducted statistical analyses; all authors (Meshesha, Tsui, Liebschutz, Crooks, Anderson, Herman and Stein) contributed to interpretation of the data. Authors Meshesha and Tsui were responsible for the first draft of the manuscript and all authors contributed and have approved the final manuscript.

Conflict of Interest: The authors have no conflicts of interest to report.

This study was funded by the National Institute on Drug Abuse DA026223, Clinical Trial NCT# 00987961. Dr. Stein is a recipient of a NIDA Mid-Career Award DA 000512.

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community (Dennis, Scott, Funk, & Foss, 2005; McLellan, Lewis, O'Brien, & Kleber, 2000), it is unknown how persons with opioid dependence weigh their substance use behaviors in health self-assessment. Without an understanding of how heroin users judge the relationship of health and risky substance use behaviors, clinicians will have difficulty motivating users to seek treatment.

This study explores how specific substance use behaviors relate to perceived general health status among a cohort of opioid dependent active heroin users not engaged in substance abuse treatment, admitted to a medical or surgical service of an urban hospital. We hypothesized that measures of substance use behaviors (cigarette use, alcohol abuse, cocaine and cannabis use, injection drug use, and unintentional overdose) would be associated with lower reported health status.

2. Materials and method

2.1. Study design

This study used baseline data from a randomized clinical trial testing whether linkage to office-based buprenorphine treatment is effective in reducing HIV risk behaviors among patients admitted to medical and surgical services of an urban, academic hospital.

2.2. Participants

Patients identified as using illicit opioids by referring physicians, nursing staff, and daily reviews of electronic medical records were assessed for study eligibility. Eligibility criteria included English-speaking, age 18 years or older, current opioid dependence, not currently enrolled in substance abuse treatment, no active alcohol withdrawal or daily alcohol use, no benzodiazepine dependence, no suicidal ideation, no pending surgical procedures, no pain condition requiring chronic opioid treatment, no current or pending incarceration, willingness to receive primary care at recruitment hospital, and no pregnancy (in females). Study eligible patients who declined buprenorphine were offered enrollment into a third, observational, study arm.

A total of 586 patients were approached, 144 were eligible, of whom 130 (90.3%) enrolled (112 in the randomized trial; 18 in the observational arm) and completed a baseline interview while inpatient. Of these 130, 15 used prescription opioids only (no heroin) and were excluded and 3 had missing data for the health status measure; therefore, a total of 112 participants were included in this analysis.

2.3. Data collection

After obtaining informed consent and enrolling patients in the study, research assistants interviewed participants using standardized measures of substance use, diagnoses of drug and alcohol disorders, health related quality of life, and demographics. Boston University Medical Center and Butler Hospital Institutional Review Boards approved the study. A Certificate of Confidentiality was obtained from the National Institutes of Health.

2.4. Outcome/dependent variables

The primary outcome, self-rated health status, was determined by response to a single question from the SF-12, a measure designed to assess health-related quality of life (HRQL) (Ware, Kosinski, & Keller, 1996). The question asked, "In general would you say your health is: excellent, very good, good, fair or poor?" Responses of excellent, very good and good were compared to responses of fair or poor health (Freyer-Adam, Gaertner, Tobschall, & John, 2011; Mantyselka, Turunen, Ahonen, & Kumpusalo, 2003; Newbold, 2005). Results from the single question survey have yielded significant correlations with the total score of

the multiple-item HRQL measure (Cunney & Perri, 1991; de Boer et al., 2004). The single-item self-rated health was used to target patients' general perceived subjective health.

2.5. Predictor/independent variables

Primary predictors of interest were past month frequency of heroin use (range 1-30 days), past six-month unintentional overdose, recent use of cocaine or cannabis, recent injection drug use, alcohol (AUDIT-C Score) (Bush, Kivlahan, McDonell, Fihn, & Bradley, 1998), and past three-month daily quantity of cigarette smoking (0, 10 or less, 11-20, 31 or more). These substance use behaviors were selected a priori for their risk of adverse health outcomes. The Addiction Severity Index (McLellan et al., 1992) was used to assess injection drug use and the frequency of heroin and cocaine use. Additional covariates included: age, gender, ethnicity, homelessness, number of chronic disease co-morbidities, and current pain severity. These covariates were selected as prior studies have shown group differences in reporting health status due to being older, female, a minority, homeless, or having chronic illnesses (Benyamini, Blumstein, Lusky, & Modan, 2003; Idler & Benyamini, 1997; White, Tulskey, Dawson, Zolopa, & Moss, 1997; Wu et al., 2013). Homelessness was classified as any night spent on the street or in shelter in the past 90 days. Chronic co-morbidities were captured using hospital ICD-9 code diagnoses and included: cardiovascular disease, chronic respiratory conditions, diabetes, viral hepatitis (B or C), HIV or cancer. Patients who had one or more co-morbidities were categorized as having a chronic disease. Current pain severity was measured using self-report ratings of current bodily pain on a 0-10 scale.

2.6. Data analysis

Descriptive statistics are presented to summarize the characteristics of the cohort. We used multivariate logistic regression models to estimate associations between measures of substance use behaviors and reported health status, adjusting for covariates (age, gender, race/ethnicity, homelessness, number of chronic co-morbidities, and current pain severity). Associations are summarized as adjusted effects on the odds ratios of self-reported health status of good, very good or excellent. All analyses were run using Stata 10.1 (StataCorp, 2010).

3. Results

Participants averaged 40 (± 12.0) years of age, 81 (72%) were male, 50 (44%) were non-Hispanic Caucasian, 34 (30%) were African-American, 22 (19%) were Hispanic, and 9 (7%) were of other racial/ethnic origins. Chronic diseases included diabetes ($n = 8$), cardiovascular disease ($n = 30$), respiratory disease ($n = 26$), viral hepatitis ($n = 50$), HIV ($n = 10$), cancer ($n = 2$), and other ($n = 5$). The median chronic disease burden was 1.0 ($SD \pm 1.0$) and 1.0 (range 0-5). Seventy-six (68%) participants were diagnosed with 1 or more chronic diseases. The top five hospital discharge diagnoses were as follows: cellulitis 38 (34%), drug overdose/withdrawal 14 (13%), pneumonia 8 (7%), endocarditis/sepsis 7 (6%), and HIV disease 7 (6%). Patients self-reported on lifetime psychiatric diagnoses with 46 (41%) endorsing major depressive disorder, 39 (35%) anxiety disorder, 27 (24%) bipolar or manic depression, 26 (23%) panic attacks, and 23 (21%) PTSD. On average, participants reported using heroin on 20.4 days (± 9.2) of the 30 days prior to baseline. Only 14 (13%) participants did not report cigarette use in the past month. Seventy (63%) reported recent (past month) cocaine use, 41 (37%) reported recent cannabis use, and 96 (86%) reported recent injection drug use. Twenty-one (19%) reported an overdose (all accidental, no suicide attempts) in the past 6 months.

Fifty-three (47%) participants reported good, very good or excellent health status. Adjusting for other covariates in the model, each additional day of heroin use was associated with an

8% lower relative odds of reporting health status as good or better (OR=.92; 95%CI 0.87, 0.97, $p < .01$) (Table 1). In the full model, self-reported health status was not associated significantly with overdose, injection drug use, cocaine use, marijuana use, frequency of cigarette smoking, or alcohol abuse (Table 1).

4. Discussion

In this study of non-treatment seeking hospitalized heroin users, we observed that more frequent heroin use predicted poorer perceived health, however, there was no significant association between health status and cocaine, cannabis, cigarettes, alcohol use, injection drug use, or recent overdose. This study also found that 47% of these heroin dependent hospitalized patients believed they had good or better health status, underlining a disconnect between addiction and perceived health status.

Prior research has found patients with opioid dependence report lower health-related quality of life than the general population (Fischer et al., 2005; Millson et al., 2006; Ryan & White, 1996; Stein Mulvey, Plough, & Samet, 1998), and perceived health status and health related quality of life improve over time for patients treated with opioid substitution therapy with methadone or buprenorphine (Korthuis et al., 2011; Morgan, Morgenstern, Blanchard, Labouvie, & Bux, 2003; Padaiga, Subata, & Vanagas, 2007; Torrens et al., 1997). This suggests that the deleterious effect of illicit opioid use on health status can be improved with treatment (Korthuis et al., 2011; Morgan et al., 2003). Our study adds to this body of literature demonstrating that there is a graded effect between number of days using heroin and health status. However, this study also suggests that patients with opiate addiction may not recognize other risky drug use behaviors as being important to their health.

In our sample, experiencing an overdose had little perceived impact on health status. We found that 62% of participants who had experienced a recent overdose rated their health as good or better. Although the dangers of a non-fatal opioid overdose are substantial – i.e. cognitive impairment, falls, burns, assault, pneumonia (Morgan et al., 2003) – patients may not recognize these potential consequences. Furthermore, individuals who survive an overdose have an increased chance of dying from a subsequent overdose (Stoove, Dietze, & Jolley, 2009). Study participants may have a sense of immortality or lack of vulnerability after having survived a near death experience (Stoove et al., 2009).

Because all the study participants were hospitalized for medical or surgical issues, the high proportion of participants who rated their health as good, very good or excellent is an unexpected finding. This suggests that perceptions of health status may not actually reflect physical health but a different construct altogether. A qualitative study assessing drug users' perspective on quality of life substantiates a disconnect between physical health and perceived quality of life (De Maeyer, Vanderplasschen, & Broekaert, 2009). Most participants prioritized the impact of personal relationships and social issues over physical health on HRQOL (De Maeyer et al., 2009). Another potential explanation for the unexpectedly positive health status self-rating may be that participants compare themselves to peers with HIV or other chronic medical illness they do not have themselves; our cohort was relatively young and few were infected with HIV. Alternatively, this cohort has a different notion of health altogether; they may interpret good health as the absence of withdrawal symptoms. Therefore it may be seen that using heroin frequently is a way of alleviating health problems.

Our study had several limitations. First, we used a single question to define self-perceived health status. However, results from this single question survey have yielded significant correlations with the total score of the multiple-item HRQOL measure (Cunney & Perri, 1991; de Boer et al., 2004; Miilunpalo, Vuori, Oja, Pasanen, & Urponen, 1997).

Additionally, this single question may reflect individualized perceptions of health status because the question is broad and allows respondents to provide a subjective answer of their health status, including physical, psychological or social health. Secondly, all the participants were hospitalized at the time of the interview, limiting the generalizability of our results to heroin users in the community or to other non-heroin opioid dependent persons. Finally, neurocognitive deficits due to drug use may contribute to impaired self-awareness (Goldstein et al., 2009) including self-rated health. However, the current study did not collect data on neurocognitive processes; future studies might consider incorporating neurocognitive assessments.

4.1. Conclusions

In this study of hospitalized opioid dependent heroin users, frequent heroin use predicted poorer perceived health, however, there was no association between health status and cocaine, cannabis, cigarettes or alcohol use, recent overdose, or injection drug use. Poor health status has been shown to be an important motivator for patients to engage in substance treatment (O'Toole et al., 2006; Pollini et al., 2006). The finding of good self-reported health status in almost half of this cohort of hospitalized opioid dependent heroin users suggests that a perception of good health may be a barrier to engaging in substance use treatment. Providers may need to help patients reframe addictions and risky behaviors as important components of overall health. Future prevention and intervention efforts could stress education and improving insight on the severity of health risk of heroin use for patients in treatment.

Acknowledgments

The authors wish to thank Shernaz Dossabhoj for her help with manuscript preparation.

Role of Funding Sources: Funding for this study was provided by the National Institute on Drug Abuse DA026223, Clinical Trial NCT# 00987961. Dr. Stein is a recipient of a NIDA Mid-Career Award DA 000512. The study funding source had no role in the study design, collection, analysis or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication.

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Highlights

- We examined self-reported health status of hospitalized heroin users.
- Nearly half (47%) reported good or better health.
- Days of heroin use in the past month were associated with poorer reported health.

Table 1

Relative odds of reporting good, very good, or excellent health status associated with substance use behaviors, results from logistic regression[†] (n=112).

Predictor	aOR (95% CI) [†]
Days of Heroin Use in Past Month	0.92* (0.87; 0.97)
Past 6 Months Unintentional Overdose	2.00 (0.64; 6.22)
Past Month Injection Drug Use (Yes)	0.51 (0.13; 2.01)
Past Month Cocaine Use (Yes)	1.89 (0.751; 4.75)
Past Month Cannabis Use (Yes)	1.59 (0.84; 1.07)
Past 3 Months Cigarette Smoking Quantity	0.70 (0.43; 1.13)
AUDIT-C Score (Alcohol use)	0.98 (0.93; 1.05)

* p < .01.

[†] Estimated odds adjusted for age, gender, ethnicity, homelessness, chronic disease burden, and severity of current pain.