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Quality of Life and Well-being following Inpatient and Partial Hospitalization Treatment for Opioid Use Disorder

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Abstract

Treatment of opioid use disorder often begins with brief intensive inpatient or outpatient programs. Given the high relapse rates following intensive treatment, it is important to determine factors that lead to success post-discharge. Incorporating assessment during and early post-discharge may help determine such factors. The current study evaluated changes in quality of life among individuals during and after discharge from inpatient and partial hospitalization opiate treatment programs. Participants (n=143) were recruited while in the programs and were reassessed one month later (n=113). Results found improvements in quality of life and reductions in rates of opiate use at follow-up. Individuals with greater improvements in Health, Substance Use, and Emotional Health domains were less likely to have relapsed. Treatment utilization post-discharge was not associated with relapse. Findings emphasize the importance of measurement-based care and suggest the need to assess indicators of treatment success beyond rates of relapse.

Keywords

inpatient detoxification; illicit opiates; treatment outcomes

Recent estimates indicate that, of the 20.5 million individuals in the United States who meet diagnostic criteria for a substance use disorder, approximately 2 million have a prescription opioid use disorder and close to 600,000 have a heroin use disorder (Substance Abuse and Mental Health Services Administration, 2016). Rates of opiate use are on the rise and deaths from opiate overdose have increased fourfold in the past two decades (Paulozzi, Jones, Mack, & Rudd, 2011). Although treatment-seeking for opiate use disorders has increased recently, only about 10% of opiate users seek treatment in a given year (Substance Abuse

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Conflict of Interest

No conflicts declared

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and Mental Health Services Administration, 2016). Treatment for opiate use disorder typically comes in the form of brief intensive treatment: inpatient detoxification or intensive outpatient/partial hospitalization day programs. Inpatient detoxification is a medically-assisted program involving physician oversight of withdrawal symptomatology and mainly focuses on the medical management of symptomatology. Intensive outpatient or partial hospitalization day programs provide medical management of symptomatology and psychotherapeutic services in an outpatient setting. Among those who seek treatment, relapse rates are high: approximately 90% of individuals will relapse in the 6 months following acute opiate detoxification, close to 60% of relapses will occur within the first week and 80% within the first month (Smyth, Barry, Keenan, & Ducray, 2010). Therefore, this early period of aftercare is critical for identifying factors that may have an overall clinical impact.

There has been a recent emphasis on the need for assessing outcomes in mental health via measurement-based care (MBC) (Fortney, Ph, Unützer, Wrenn, & Pyne, 2017; Harding, Rush, Arbuckle, Trivedi, & Pincus, 2011; Sajatovic, Velligan, Weiden, & Valenstein, 2010; Scott & Lewis, 2015). In addition to the assessment and treatment of symptoms, MBC for psychiatric and mental health focuses on overall level of functioning and quality of life according to treatment goals (Harding et al., 2011). If milestones are not met, then level of care can be adapted (e.g., referral to other services); this stepped-care approach is common in medical care (e.g., monitoring blood pressure over time, blood sugars). However, it is rare to routinely assess mental health outcomes, particularly after discontinuation of acute-level care. MBC often requires more time, effort, and resources on the part of the provider to establish a treatment follow-up system (Scott & Lewis, 2015), thus patient outcomes post-treatment are often unknown.

MBC could allow for the evaluations of early outcomes post-discharge on domains that extend beyond substance use. For example, substance use is associated with a host of physical and psychiatric problems that directly impact an individual's quality of life (Stein, Mulvey, & Samet, 1998). Research in substance use treatment has begun to focus on both abstinence and an individual's overall quality of life (Laudet, 2011; Maremmanni et al., 2007; Smith & Larson, 2003). There are several approaches to assessing quality of life that could be feasibly integrated in the context of existing treatment programs. Some measures include detailed descriptions on aspects of *emotional and physical health* (Ware & Sherbourne, 1992; Ware, Kosinski, & Keller, 1996). It is generally reported that perception of emotional and physical health is significantly lower among opiate and other illicit substance users than the general population (Calsyn et al., 2004; Millson et al., 2004). Results suggest that a reduction in substance use is also associated with improvement in other life domains (e.g., emotional and physical health) (Teesson et al., 2006), and such improvements can help sustain abstinence (Laudet et al., 2009). Another measure of quality of life, specifically among substance-using populations, has focused on the domains of *health, lifestyle, community, and substance use* (Ling, Farabee, Liepa, & Wu, 2012), which correspond with the Substance Abuse and Mental Health Service Administration's four domains of life that support recovery from substance use (Substance Abuse and Mental Health Services Administration, 2012). The benefits of this measure are its brevity, utility in real-world settings, and relevance for individuals in opiate treatment. Thus, these quality of life

measures could potentially be utilized by nurses and other health professionals to track progress throughout the course of recovery and could be utilized as a warning sign for relapse. Although becoming more commonly used in research studies (e.g., Brown et al., 2014; Mooney et al., 2014), quality of life indicators are routinely measured in the weeks following discharge from brief intensive treatment settings (Laudet, 2011).

Additional MBC outcomes could include examinations of pharmacological and psychosocial treatment utilization outcomes. Treatment utilization following discharge from short-term intensive treatment settings is associated with treatment success: addiction medication treatment and psychosocial treatment have been found to predict lower rates of relapse (e.g., Gossop, Stewart, & Marsden, 2007; Mattick, Breen, Kimber, & Davoli, 2014; Smyth et al., 2010). However, given the lack of monitoring of patients leaving acute treatment, it is often unknown how many individuals engage in medical or psychological aftercare and, thus, if such engagement is related to outcomes in such populations.

The goal of the current study is to evaluate outcomes following hospitalization for opiate use disorder using a MBC approach. We evaluate improvement in quality of life domains among individuals one month after brief intensive treatment (inpatient detoxification or partial hospitalization) for opiate use disorder and to evaluate whether these quality of life improvements were associated with abstinence. Additionally, we evaluate the use of aftercare treatment utilization and associations with abstinence. We hypothesized that abstinence (no opioid use) would be associated with the greatest improvements in quality of life and with aftercare treatment utilization.

Methods

Participants and Procedures

Participants (n=143) were individuals seeking treatment for opiate use recruited from two settings within a New England hospital for a study on patient characteristics and treatment outcomes: the Alcohol and Drug Partial Hospitalization Program (ADP; n=75) and the Alcohol and Drug Inpatient Treatment Unit (ADI; n=68). Participants from the partial hospitalization program were recruited from October 2015 through December 2015 and participants from the inpatient unit were recruited from January 2016 to March 2016. The Alcohol and Drug Partial Hospitalization Program is a daily treatment program scheduled Monday through Friday from 9:00 am to 3:30 pm. Most patients are enrolled in the program for 5–10 days. This program provides group and individual psychotherapy, medication management (including buprenorphine or methadone), and case management. The Alcohol and Drug Inpatient Unit is a 5–7 day program that provides detoxification under medical supervision. While in ADI, patients attend group therapy and are assigned a case manager to establish counseling and medical care upon discharge. Many patients begin a medication protocol with buprenorphine while in treatment.

Research study staff in both ADI and ADP screened consecutive patients on their first day in the program, thus all patients who were admitted during that time were potentially eligible. Eligible patients were 18 years old or older and spoke English; exclusion criteria included the inability to provide consent (due to cognitive impairment, acute illness, or psychosis). A

total of 124 patients were screened in ADI, 52 refused and 4 were ineligible. Of the 84 screened in ADP, six refused and 3 were ineligible. In total, 68 participants were consented and enrolled from ADI and 75 from ADP.

Participants completed baseline measures during an interview with research staff. Approximately 30 days post-discharge, participants were again contacted via telephone to complete questionnaires. Participants were compensated \$5 via gift card at baseline, and were compensated with a \$30 gift card for the follow-up interview. All procedures were approved by the Institutional Review Board of the hospital.

Measures

Opiate Use—Opiate use (including heroin and opioids that were not prescribed or not taken as prescribed) were evaluated using the Addiction Severity Index (ASI) drug module (McLellan, Luborsky, Woody, & O'Brien, 1980). The ASI measure asks participants to state how many of the previous 30 days a particular substance was taken. The two variables of interest were illicit prescription opioid use and heroin use. Opiate use at follow-up was defined in two ways: as a dichotomous relapse variable based on any day of either heroin or opiate use and as days of use of illicit prescription opioids and heroin among individuals who relapsed. The ASI is not a calendar-based assessment, so it is impossible to know whether illicit opioids were ingested on the same day as heroin. Thus, days of use for each substance remained separate for analyses in this study. This questionnaire was included at the baseline and follow-up.

Quality of Life—Quality of life was measured in two ways.

Health, Lifestyle, Community, and Substance Use: The Treatment Effectiveness Assessment (TEA; Ling et al., 2012) is a 4-item scale designed to assess an individual's perception of progress in recovery and quality of life across four domains: (1) Health (e.g., physical and mental health, eating and sleeping habits, provider visits, physical activity), (2) Lifestyle/personal responsibility (e.g., living conditions, family situation, employment, relationships, financial issues, following through with commitments), (3) Community (e.g., obeying laws, meeting responsibilities to society, impacts on other people), and (4) Substance Use (e.g., alcohol and drug use, money spent on substances, craving, time with substance-using acquaintances). Each domain is rated on a scale of 1 (poor) to 10 (great) to create a domain score. Participants completed the TEA measure at both the baseline and follow-up time points.

Physical Health and Emotional Health: The Short-Form 12 (SF-12) (J. J. Ware et al., 1996) was used to assess for physical and emotional quality of life at the baseline and follow-up assessment points. The twelve items were combined and weighted based on national norms to form two subscales: Physical Health and Emotional Health.

Treatment Utilization

Participants were asked to report (yes/no) whether they participated in the following treatments in the month following hospital discharge: buprenorphine, methadone, Vivitrol,

residential treatment, outpatient counseling, self-help (AA/NA), or other substance use programs. These variables were also combined in the following ways: addiction treatment medication (buprenorphine, methadone, or Vivitrol) versus no medication, and psychosocial treatment (residential, outpatient, self-help, other substance use programs) versus no psychosocial treatment.

Analysis Plans

Descriptive statistics at baseline and follow-up are presented. Differences between participant characteristics among treatment unit were first explored in order to evaluate whether data could be condensed for further analyses. Results from paired samples t-tests are presented to evaluate change in opiate use, quality of life (including Health/Lifestyle/Community/Substance Use Domains and Physical/Emotional Health) over time. Logistic regression was utilized to evaluate if any baseline participant characteristic predicted study attrition. Then, differences in baseline levels of quality of life measures among individuals who relapsed and who did not relapse were evaluated. Given no baseline differences, change variables were computed for each quality of life variable and tested as multivariate predictors of relapse in logistic regression analyses. Chi-square analyses were conducted in order to examine the relationship between treatment utilization (as measured by each individual treatment option and combined for medication/no medication and psychosocial care/no psychosocial care) and relapse. Missing data was deleted listwise.

Results

Descriptive Statistics and Differences in Participants by Treatment Unit

There were no significant differences in patient demographic characteristics between hospital programs (ADP compared to ADI): age ($F(1, 142) = 0.94, p=0.33$), Hispanic/Latino ethnicity ($F(1, 142) = 2.71, p=0.10$), and gender ($F(1, 142) = 0.89, p = 0.35$). There were no differences in baseline days of illicit prescription opiate use ($F(1, 142) = 1.76, p = 0.19$), but there was a difference between sites in regards to days of heroin use at baseline such that patients in inpatient reported more days of heroin use ($F(1, 142) = 6.82, p = 0.01$). Given the lack of demographic differences between conditions and the fact that that relapse was defined as any day of either prescription opiate or heroin use at follow-up, the study samples were combined for further analyses.

Participants were predominantly male ($n=91, 63.6\%$) and had a mean age of 36.2 ($SD=11.57$). The sample was primarily Caucasian ($n=116, 81.1\%$) and non-Hispanic ($n=130, 90.9\%$). Heroin use was reported by 67.8% of the sample, while prescription opioid use was reported by 44.1%. The majority of individuals received some form of treatment post-discharge: 73.2% reported being prescribed addiction treatment medication and 73.2% reported attending at least one session/group of psychosocial treatment.

Attrition

Of the 143 participants enrolled in the study, 113 were reached for follow-up (79.0%). Evaluation of follow-up rates by participant characteristics revealed no difference in the baseline Physical Health ($F=0.40, p=0.53$) and Emotional Health ($F=0.86, p=0.35$) scales

and no significant differences in TEA Health domain ($F=1.63$, $p=0.20$) among individuals who did and did not complete follow-up. However, there were significant differences in attrition by the Lifestyle/Personal Responsibility ($F=10.63$, $p<.01$), Community ($F=5.62$, $p=.02$), and Substance Use ($F=9.85$, $p<.01$) scales: results indicated that individuals with a lower rating on those scales were less likely to complete follow-up assessments.

Outcomes

Changes in Use and Quality of Life—Among the 113 who completed follow-up assessments, 69 participants reported at least one day of opiate use over the past 30 (61.1%). Among individuals who reported at least one day of use at follow-up, days of heroin use and illicit prescription opiate use significantly decreased from baseline to follow-up (Table 1). Health and Substance Use TEA scores significantly improved over time, as did the Emotional Health scores. Lifestyle/Personal Responsibility and Community scores trended towards significance, fell short of statistical significance by conventional cut-offs ($ps=0.09$ and 0.06 , respectively). The Physical Health scale did not significantly change over time.

Associations with Relapse—No differences were found between baseline measures among individuals who relapsed and those who did not: Health ($F=0.20$, $p=0.79$), Lifestyle/Personal Responsibility ($F=2.47$, $p=0.12$), Community ($F=0.30$, $p=0.58$), Substance Use ($F=1.93$, $p=0.17$), SF-12 Physical ($F=0.01$, $p=0.93$), and Emotional Health ($F=0.90$, $p=0.35$). However, change in the TEA Health score and, as would be expected, change in the Substance Use score were significantly associated with relapse such that individuals with more change (i.e., higher quality of life ratings) in these domains were less likely to relapse (Table 2). Additionally, improvements in Emotional Health scores were significantly associated with a reduced likelihood of relapse. Treatment utilization variables, as measured by each individual medication option and each individual psychosocial option (not shown) and dichotomously by medication/psychosocial category (yes/no) (Table 2), were not associated with relapse.

Discussion

This measurement-based care study for individuals who completed detoxification or partial hospitalization treatment for opioid use disorder provides quantification of quality of life changes in the 30 days following intensive treatment. We found that approximately 40% of the sample reported remaining completely abstinent one month post-discharge. Among individuals who returned to substance use, they did so at a significantly lower rate than pre-treatment levels. Overall, participants reported improvements in Emotional Health and overall Health and Substance Use domains. Indeed, there was a trend towards improvements in Community and Lifestyle domains, as well. These improvements were modest, approximately 5–15% across domains. Importantly, changes in overall Health, Emotional Health, and Substance Use domains were significantly associated with abstinence.

These findings are consistent with previous research that suggests that quality of life measures can predict subsequent outcomes in opiate treatment. Indeed, results of several longitudinal studies suggest that quality of life at baseline (pre-treatment) predicts outcomes even 1–2 years into recovery (Laudet et al., 2009) and self-reported quality of life improves

throughout the course of treatment (Maremmanni et al., 2007; Mitchell et al., 2015). Overall, our results suggest a reciprocal relationship among substance-related and non-substance-related outcomes. Previous research has also established that quality of life among substance users is lower than non-substance users (O'Brien et al., 2015; Smith & Larson, 2003), which is consistent with our findings: for example, the reported Emotional and Physical health quality of life scores in our sample (as measured by the SF-12) was well below healthy non-clinical national norms.

Unexpectedly, we did not find that treatment utilization during the month of aftercare was associated with abstinence. Various forms of psychosocial and medication treatment utilization were assessed in a dichotomous fashion (yes/no). As such, it is uncertain whether there was a dose-response effect of utilization (i.e., attending more treatment leading to a decreased risk of relapse). Additionally, treatment utilization variables were self-reported. Thus, for example, it is uncertain as to whether participants actually took medications as prescribed and at what doses. Since the majority of individuals reported utilization some form of aftercare treatment, it is possible that our sample lacked the variability to detect an effect.

Several limitations should be noted. First, Given that our results come from a population of individuals in brief intensive treatment settings, it is unknown whether our results would generalize to other populations, such as individuals in office-based opiate treatment. Given that we compensated participants, albeit modestly, generalizability is also uncertain. Second, because we attempted to integrate aspects of measurement-based care into existing brief intensive treatment programs, and our sample size was small, we were unable to disentangle which specific aspects of the brief intensive therapy programs or aftercare treatment (i.e., medication management of withdrawal symptoms, increased social support) might have contributed to treatment success. Attrition and relapse rates following acute care were high in our sample; however, they were similar to rates found in other studies (Smyth et al., 2010). Third, opiate use outcomes were based on self-report; we have no toxicological validation for persons who report 30 day abstinence. We remain uncertain as to whether the small, albeit statistically significant changes post-treatment in these quality of life measures were clinically meaningful.

Our results provide a fuller description of improvements in the lives of individuals who attend treatment for opioid use disorder and highlight the importance of following patients post-discharge. This study points to the potential feasibility of integrating measurement-based care into practice, following patients after discharge from brief intensive opiate treatment. Patient interviews were administered in person while the individual was in inpatient detoxification or partial hospitalization treatment and briefly via telephone 30 days post-discharge. Measurement-based care could also be administered in an online format, reducing the burden of resources on the provider. As such, MBC could be integrated into the clinical practice of intensive treatment programs that want to track their discharged patients into the community.

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Highlights

- Participants reported improvements in quality of life domains post-treatment
- Approximately 40% of participants remained completely abstinent from opiates
- Improvements in certain quality of life domains corresponded with abstinence

Table 1

Descriptive Statistics and Change in Opiate Use and Various Quality of Life Domains

Measure	Baseline (n=143)		Follow-Up (n=113 ^a)		t	p
	Mean	SD	Mean	SD		
<u>Opiate Use Measure</u>						
Any Opiate Relapse (0/1)	--	--	0.62	0.49		
Days of Illicit Prescription Opiate Use ^a	9.63	10.88	3.41	7.78	-2.36	=.02
Days of Heroin Use ^a	13.97	11.82	8.68	10.96	-4.40	<.01
<u>Treatment Effectiveness Assessment (TEA) Domains</u>						
Health	5.93	2.24	6.27	2.18	2.59	=.01
Lifestyle/Personal Responsibility	5.83	2.69	6.05	2.57	1.69	=.09
Community	6.71	2.71	7.00	2.31	1.90	=.06
Substance Use	5.46	3.16	6.29	3.23	3.54	<.01
<u>Short-Form Domains</u>						
Physical Health	45.35	11.42	45.77	10.95	0.76	=.44
Emotional Health	27.53	11.73	30.46	13.40	4.60	<.01

^aFollow-up rates of nonprescription opiate use and heroin use are only reported for individuals who reported any use (i.e., who relapsed)

Note: values in bold represent statistically-significant findings

Table 2**Risk of Relapse at Follow-Up**

	Relapse	
	OR or χ^2	CI or p
<u>Treatment Effectiveness Assessment (TEA) Domains</u>		
Health Change	0.72	0.53/0.97
Lifestyle/Personal Responsibility Change	0.84	0.63/1.12
Community Change	0.91	0.72/1.15
Substance Use Change	0.83	0.71/0.99
<u>Short-Form Domains</u>		
Physical Health Change	0.99	0.93/1.06
Emotional Health Change	0.91	0.85/0.97
<u>Treatment Utilization Measures</u>		
Any Addiction Treatment Medication	0.52	0.50
Any Psychosocial Treatment	0.69	0.33

Note: Significant values are represented in bold.