The Case for Considering Quality of Life in Addiction Research and Clinical Practice

Substance use disorders are increasingly viewed as chronic conditions, and addiction treatment services are beginning to adopt models that were developed to address other chronic conditions. These models address the impact of disease and services on the patient's overall well-being. From this perspective, treatment for addiction aims for the broad goal of recovery, which is defined as abstinence plus improved quality of life. However, the addiction field has come late to the chronic disease perspective, and the concept of quality of life in addiction is relatively undeveloped. This article reviews the evidence for the relevance of quality of life in substance use disorder treatment and recovery and discusses the importance of incorporating quality-of-life indices into research and services.

Alexandre B. Laudet, Ph.D.

Center for the Study of Addictions and Recovery
National Development and Research Institutes
New York, New York

Substance use disorders (SUDs) are characterized as "maladaptive patterns of substance use leading to clinically severe impairment or distress" potentially affecting physical or psychological functioning; personal safety; social relations, roles, and obligations; work; and other areas (American Psychiatric Association, 1994). Substance abusers seek help quitting drugs not as an end in itself, but as a means to escape these negative consequences and to gain a better life. Accordingly, while substance abuse treatment seeks to promote abstinence or at least significant reductions in substance use, its ultimate aim is to improve the patient's quality of life (QOL). In this paper, I present current concepts of QOL and tools used to measure it, summarize recent paradigmatic shifts in the SUD field that are leading to an emerging interest in QOL, and review the evidence bearing on QOL in the treatment of addiction. Finally, I present the implications of incorporating QOL concepts into clinical practice and research.

CURRENT CONCEPTS OF QUALITY OF LIFE

QOL describes clients' experiences in aspects of functioning that are important to them but are not captured by traditional symptom assessments such as the Addiction Severity Index (ASI) (Donovan et al., 2005). To date, there is no universally accepted biomedical definition of QOL, but there is consensus that it incorporates the individual's subjective view of a broad range of clinical, functional, and personal variables (Bonomi et al., 2000a).

Researchers have conceptualized two types of QOL (Table 1). The first, health-related QOL (HRQOL), is a patient's perception of how his or her health

status affects physical, psychological, and social functioning and well-being (Leidy, Revicki, and Geneste, 1999). HRQOL is assessed using instruments such as the Short Form 36 Health Survey (SF-36) or the abbreviated SF-12, with questions such as "Does your health problem prevent you from walking one block?" (Stewart and Ware, 1989). In its focus on limitations caused by disease and treatment, HRQOL aligns with traditional pathology-focused care.

In contrast, generic or overall QOL (OQOL) encompasses the patient's satisfaction with life in general, not solely in relation to disease-related limitations on functioning. One influential definition of OQOL, drafted by the World Health Organization (WHO), is "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (WHOQOL Group, 1995). The gold standards for measuring OQOL are the World Health Organization Quality of Life (WHOQOL) instrument and its shorter version, the WHOQOL-BREF (WHOQOL Group, 1998), which assess the patient's perception of how he or she is functioning objectively (e.g., "how is your memory?") and how he or she feels about it (e.g., "how satisfied are you with your memory?"). These and other OQOL assessments cover not only the three domains of functioning included in HRQOL but also, for example, environment, safety, finances, access to transportation and health services, and opportunities for recreation and leisure. Reporting on the U.S. validation of the WHOQOL instrument, Bonomi and colleagues (2000b) noted that "these additional factors . . . have been found important to individuals, groups and society, and are integral in describing overall QOL."

THE WORLD HEALTH ORGANIZATION QUALITY OF LIFE BREF INSTRUMENT (WHOQOL-BREF)

The WHOQOL-BREF assesses individuals' quality of life overall, not only in relation to health problems. The scope of the inquiry may be suggested by the following questions, selected from among a total of 26. Patients are instructed to keep in mind their "standards, hopes, pleasures and concerns" as they respond to each with a rating of 1 to 5.

- To what extent do you feel your life to be meaningful?
- How well are you able to concentrate?
- Have you enough money to meet your needs?
- To what extent do you have the opportunity for leisure activities?
- How well are you able to get around?
- How satisfied are you with your capacity for work?
- How satisfied are you with your personal relationships?
- How satisfied are you with your access to health services?

The full WHOQOL-BREF is posted at *www.who.int/substance_abuse/research_tools/whoqolbref/en/*.

TABLE 1. Summary of Prevalent Concepts and Measurements of Quality of Life

	HEALTH-RELATED QUALITY OF LIFE (HRQOL)	OVERALL QUALITY OF LIFE (OQOL)
Definition	An individual's perception of the effects of illness on the physical, mental, and social dimensions of his/her well-being	An individual's perception of his/her position in life in the context of the culture and value systems in which he/she lives and as related to his/her goals, expectations, standards, and concerns
Paradigm	Symptoms, pathology	Wellness
Instrument	SF-36, SF-12	WHOQOL-100, WHOQOL-BREF
Domains	Physical, mental, social health	Physical, mental (including spiritual), and social health, and living environment (e.g., housing, finances, safety, access to care)
What is assessed	Limitations in functioning due to disease	Objective functioning and satisfaction with functioning
Treatment focus	Symptom reduction	Maximized overall functioning and life satisfaction

Clinical Relevance

The subjective views elicited by QOL measures are important because they offer a complementary perspective to that of clinicians. Clinicians tend to focus on symptoms, whereas for clients, symptom management is a means to an end: optimal well-being ("recovery" in the substance abuse field). As a result, clinicians and clients often differ in their ratings of quality of care. In general, patients' views provide unique information and insights into both the humanity and the effectiveness of health care (Black and Jenkinson, 2009).

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QOL assessments serve as both evaluation and diagnostic tools (Rudolf and Watts, 2002). They coincide with the treatment goal of enhanced client functioning and predict treatment adherence (Smith and Larson, 2003). Moreover, some evidence suggests that QOL has prognostic value in treatment settings; for example, higher pretreatment QOL predicts better outcomes in inpatient psychiatric units, independent of baseline psychiatric status and other relevant factors (Smith and Larson, 2003). Finally, as will be discussed, QOL may influence the odds of symptom reduction.

QOL measures can greatly assist clinicians in selecting and assessing the effectiveness of a specific course of treatment. Their use is in keeping with a growing interest throughout the health field in models that engage patients as partners in their own care (Black and Jenkinson, 2009; Rudolf and Priebe, 2002). The WHO defines health as "a state of complete physical, mental, and social well-being, not merely the absence of disease" (World Health Organization, 1985). QOL takes on its full importance as a diagnostic and outcome measure when health is thought of in this way. Indications of a growing recognition of the critical value of patients' reports on their own health include the recent launch of the National Institutes of Health (NIH) Patient-Reported Outcomes Measurement Information System (PROMIS) initiative to "address the pressing need to better quantify clinically important patient-reported symptoms and aspects of health-related QOL across chronic conditions" and recent Food and Drug Administration (FDA) guidelines in which QOL outcomes count as key evidence to support claims in medical product labeling *(www.fda.gov/downloads/Drugs/GuidanceComplianceRegulatoryInformation/Guidances/UCM193282.pdf)*.

Increasing QOL and longevity were two of the goals of NIH's Healthy People 2010 (U.S. Department of Health and Human Services, 2000) and remain central goals in Healthy People 2020 *(www.healthypeople.gov/2020/default.aspx)*. Biomedical research is gradually shifting from the traditional paradigm of evaluating interventions by assessing disease-specific outcomes to a new paradigm that incorporates or is complemented by QOL outcomes. Large-scale biomedical clinical trials now routinely include QOL as, at least, a secondary endpoint and often as a primary outcome; more than 7,000 articles were listed in *Index Medicus* under the keyword "quality of life" in 2003 (Donovan et al., 2005). Whereas, in 1990, QOL could be called "the missing measurement in health" (Fallowfield, 1990), today virtually no area of medicine is without published studies on QOL.

RELEVANCE OF QUALITY OF LIFE IN SUBSTANCE ABUSE TREATMENT

The nature of SUD makes consideration of QOL, particularly OQOL, highly relevant. First, active substance abuse affects nearly all areas of functioning—vocational, social/familial, physical and mental health, residential status, and access to services (American Psychiatric Association, 1994). Commenting on findings from a study of individuals' reasons for seeking treatment for alcohol abuse, researchers noted that "the most striking aspect … was the sheer number of problems that people were experiencing" (Orford et al., 2006, p. 167).

Individuals want SUD services to address the full range of problems that prevent them from living fully and are more likely to drop out if such help is not forthcoming. When my colleagues and I examined polydrug abusers' reasons for dropping out of outpatient treatment, 33 percent said they might have stayed if the program had done something differently; of these, 54 percent cited unmet social service needs, especially vocational/educational and housing (Laudet, Stanick, and Sands, 2009).

The relevance of broad QOL domains, as measured by the WHOQOL instruments, to the recovery experience is bolstered by findings of a recent study of recovery priorities among community-based persons in recovery for periods ranging from 1 month to more than 10 years. We found that, in addition to concern about remaining abstinent, participants at all stages of recovery expressed concerns about multiple areas of functioning—most notably, employment, education and training, and housing (Laudet and White, 2009).

Widely used measures, such as the ASI, evaluate patients' experiences in key domains that are found to be problematic for many. However, QOL instruments are more comprehensive and are also likely more

relevant to persons in long-term recovery who are no longer receiving services but continue to struggle with addiction-related sequelae.

SUD is a chronic condition for most affected individuals, and QOL improvement is a particularly important goal in treating conditions that cannot be cured. QOL measurement in a chronic illness framework intends to capture the full impact of a medical condition and recommended treatment on an individual (WHOQOL Group, 1995). As a commonly used outcome measure in chronic illnesses, QOL provides an empirical assessment of how patients experience functioning and the burden of disease after treatment (Mendlowicz and Stein, 2000), which is useful information for public health evaluations and for service development and evaluation.

In accord with the growing medical recognition that patients require improved function in broad areas, the SUD field has been revising the concept of recovery. Although abstinence from drugs and alcohol was traditionally considered a proxy for good function in other areas, that assumption no longer holds (McLellan, Chalk, and Bartlett, 2007). To the contrary, abstinence rarely brings instant relief from all other problems in life (Vaillant, 1995), and it is common to see reductions in drug use without concurrent improvement elsewhere, especially early on (Dennis, Foss, and Scott, 2007). A consensus is emerging that recovery—the common goal of clinicians, clients and their families, funders, policymakers, and society at large—is best conceptualized as abstinence plus improvements in global functioning or, in other words, improved QOL. Thus, the Substance Abuse and Mental Health Services Administration (SAMHSA) defines recovery as "a process of change through which an individual achieves abstinence and improved health, wellness, and quality of life" (Center for Substance Abuse Treatment, 2006). Similarly, but more colloquially, former SAMHSA Director Charles Curie has said, "Recovery is when patients are not just free of symptoms—they have a life" (Curie, 2005). Consistent with this stance, QOL domains are central to SAMHSA's National Outcome Measures (NOMs) (Substance Abuse and Mental Health Services Administration, 2004), which are used to evaluate all publicly funded services *(integratedrecovery.org/wp-content/uploads/2010/08/SAMHSA-National-Outcome-Measures.pdf)* and are a key part of NIH's PROMIS initiative *(www.nihpromis.org/default.aspx)*.

These changes in the understanding of SUDs have given rise to a new service model that relies on patients' experiences, especially their reports of well-being or QOL, to guide and evaluate service provision. Called "recovery-oriented systems of care" (ROSC; *www.pfr.samhsa.gov/rosc.html)*, the model offers person-centered, strength-based continuity of care for individuals, families, and communities to take responsibility for their health, wellness, and recovery from alcohol and drug problems (Clark, 2008). In line with calls from the Institute of Medicine and leading addiction researchers for a shift in SUD treatment from the acute care model to one more akin to the model used in other chronic conditions (Institute of Medicine, 2005; McLellan et al., 2000; White et al., 2005), the recommended range of services is intended to respond to clients' changing needs across their lifespan. ROSC offers a comprehensive menu of services and supports that can be coordinated and integrated to meet the individual's needs and chosen path to improved function and a better life. Clients may receive help with education and job training, housing, child care, transportation to and from treatment and work, case management, as well as SUD-related services (e.g., relapse prevention, recovery support, SUD education for family members, peer-to-peer services and coaching, self-help, and support groups) (Kaplan, 2008).

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THE IMPACT OF SUBSTANCE ABUSE ON QUALITY OF LIFE

The addiction field lags far behind other mental health and biomedical disciplines in embracing QOL as an essential outcome, especially in the United States (Morgan et al., 2003). Systematic use of QOL indicators to monitor outcomes has been scarce, despite the wide-ranging effects of SUD on patients, families, and society (Dawson et al., 2009; Préau et al., 2007). Fewer than 100 studies of QOL among SUD populations have been published in English in the past 20 years (e.g., Donovan et al., 2005; Morgan et al., 2003; Rudolf and Watts, 2002; Smith and Larson, 2003), and almost all of them involve alcohol-dependent subjects. Most QOL studies of drug-abusing populations have been conducted outside of the United States and involved dually diagnosed persons (those with mental illness and SUD) and/or opiate abusers (Bizzarri et al., 2005; Millson et al., 2006; Puigdollers et al., 2004; Villeneuve et al., 2006). Aside from our own work, we found only one QOL study of crack/cocaine-dependent individuals (Havassy and Arns, 1998). Some studies have yielded information on QOL without using the term; for example, many have used the ASI, which assesses clients' level of functioning in

some QOL areas. Even so, only 38 percent of multigroup studies published between 1990 and 1998 reported on psychological functioning, the non-substance-abuse outcome most frequently examined. Moreover, studies focusing on QOL have almost all looked at HRQOL rather than OQOL, even though the latter relates more directly to recovery goals.

What follows is a summary of the current state of knowledge on well-being/QOL in substance-abusing populations. Because of the dearth of studies among drug-dependent populations, evidence among both alcohol- and drug-abusing individuals is reviewed.

QOL Among Active Substance Abusers and Treatment Seekers

QOL is poorer among substance-dependent individuals and SUD treatment seekers than among cohorts without SUD (Donovan et al., 2005; Rudolf and Watts, 2002; Smith and Larson, 2003). This finding is consistent across comparisons with clinical and nonclinical cohorts, primary care patients, groups with chronic physical or mental health conditions, and healthy nonabusers (Foster, Peters, and Marshall, 2000; Kraemer et al., 2002; Smith and Larson, 2003). For example, on the SF-36 indices of physical and mental functioning, clients in SUD treatment score significantly lower than the general population, as low as or lower than patients with lung disease and diabetes, and significantly lower than patients awaiting cardiac surgery (Smith and Larson, 2003).

Greater number and severity of alcohol or drug problems each consistently associates with poorer functioning in nearly all QOL domains.

While the evidence is equivocal regarding negative impacts of SUD on physical functioning (Morgan et al., 2003; Stein et al., 1998), SUD is clearly associated with severe impairments across several other functional domains. Mental functioning is particularly affected (Preau et al., 2007; Smith and Larson, 2003; Volk et al., 1997), as are social and physical role function (daily activities, work), general health perception, employment, and leisure activities (Hubbard, Craddock, and Anderson, 2003; Smith and Larson, 2003).

A large study of methamphetamine-dependent patients enrolled in treatment found that at intake, participants' health status, as measured by the SF-36, was substantially lower than that of the normative U.S. population. Their lowest scores were in overall mental health and mental health subscales, including vitality, social functioning, and emotional well-being (Gonzales et al., 2009). They also reported poorer general health and more physical role limitations than the population as a whole, although there were no differences in overall physical health status.

Correlates of QOL in SUD Populations

Sociodemographic and clinical variables have been studied most as predictors of QOL in SUD populations. The findings are somewhat inconsistent and difficult to interpret because of differences in methodologies, instruments, domains, and populations (Morgan, Landron, and Lehert, 2004). Overall, however, younger age, higher education, male gender, and being employed are consistently associated with better functioning on all HRQOL dimensions, when other covariates are held constant (Donovan et al., 2005; Foster et al., 2000; Youssef, Moubarak, and Kamel, 2005). Comorbid psychiatric and physical conditions, including HIV and/or hepatitis C infection, are linked to greater impairment of functioning (Millson et al., 2006; Morgan et al., 2003; Puigdollers et al., 2004).

In general, the greater the number of chronic conditions a person has, the higher the risk for functional impairment in all QOL dimensions (Thommasen and Zhang, 2006). As expected, physical and mental comorbidity associate most strongly with impairments in physical and mental functioning, respectively (Gunther et al., 2007); however, either raises the odds of impairments in almost all life domains (Bizzarri et al., 2005; Fassino et al., 2004; Villeneuve et al., 2006). Nevertheless, across studies, the combined influence of known demographic and clinical variables has accounted for only 2 to 7 percent of the variance in HRQOL among SUD treatment seekers (Stein et al., 1998), suggesting that other factors are at play and additional research is needed.

An important question and an emerging area of research is the extent to which substance abuse affects QOL in itself, independently of other factors. Greater number and severity of alcohol or drug problems each consistently associates with poorer functioning in nearly all QOL domains (McKenna et al., 1996; Volk et al., 1997), but other commonly used dependence indices, such as age at onset of drug use, duration of dependence, drinking pattern, prior withdrawal distress, and number of prior treatments, are not reliably predictive of QOL (Millson et al., 2006). Drug abuse may impair functioning more than alcohol abuse (Smith and Larson, 2003), and this may be especially true of cocaine and polysubstance abuse (Havassy and Arns, 1998; Puigdollers et al., 2004).

SUD Symptom Remission and QOL

Intuitively, one might expect reduced SUD symptoms and abstinence to be accompanied by significant improvements in QOL, and there is evidence that QOL improves with abstinence and deteriorates in relapse (Kraemer et al., 2002; Villeneuve et al., 2006). Studies most consistently link reduced drug and alcohol abuse and abstinence with improved mental functioning (Foster et al., 2000). For example, the most methodologically sophisticated investigation of SUD's influence on QOL found that individuals in a general population sample whose drinking patterns fluctuated—between no drinking, controlled drinking, alcohol abuse, and alcohol dependence—during a 3-year followup were more likely to experience related changes in their mental than in their physical functioning (Dawson et al., 2009). Participants who developed an alcohol use disorder or progressed from abuse to dependence experienced substantial declines in mental functioning, whereas all forms of remission were independently associated with substantially improved mental functioning. Increases associated with abstinent and nonabstinent remission were about twice as large as those seen with partial remission (i.e., not meeting criteria for dependence but having one or more symptoms of abuse or dependence).

Consistent with the view that reduced substance abuse is not in itself an adequate criterion for recovery, its impact on mental functioning appears to be small. For example, Morgan and colleagues (2003) studied 252 adults in an outpatient randomized clinical trial and estimated that reduced drug abuse accounted for 4.8 percent of variance in mental functioning at the 3-month followup. Moreover, studies have not consistently shown that reducing substance abuse affects domains of QOL other than mental functioning. For example, among dually diagnosed clients, researchers found no correlation between the extent of reduction in substance abuse 3 years post-intake and changes in general life satisfaction, social and family contact, or satisfaction with contacts (McHugo et al., 1999).

As with other positive treatment outcomes, a critical question is whether gains in QOL resulting from reductions in substance abuse endure. Very little research has addressed this issue, and the relationship between duration of abstinence and QOL remains unclear (Rudolf and Watts, 2002). Mann and colleagues followed a cohort of alcoholics for 6 years; at the final assessment, 65 percent of the group had been abstinent for 4 years or more, and these individuals had markedly superior physical, psychological, social, and everyday life functioning compared with those still drinking (Mann, Morlock, and Mezger, 1997). The positive relationship between abstinence duration and QOL has been described as linear in short-term studies (McKenna et al., 1996); however, a handful of cross-sectional studies suggest that QOL increases may peak after 1 or 2 years of abstinence (Amodeo, Kurtz, and Cutter, 1992). In one, for example, participants with 12 to 42 months of abstinence scored better on QOL assessments than participants with either 3 to 12 months or 43 to 108 months of abstinence, and scores tailed off as the length of abstinence increased (Chaturvedi, Kirthana, and Desai, 1997).

TABLE 2. Quality-of-Life Satisfaction as a Function of Abstinence Duration

Abstinence Duration at Baseline	Mean QOL	Standard Deviation	*N*
Less than 6 months	6.75	1.97	99
6 to 18 months	7.51	2.05	92
18 to 36 months	8.13	1.64	71
More than 36 months	8.05	1.79	92

Participants (*N* = 354) responded to the question: Overall, how satisfied are you with your life? 0 = not at all; 10 = completely (Laudet, Morgen, and White, 2006).

My colleagues and I examined the association between abstinence duration and QOL satisfaction in two studies with formerly polydrug-dependent persons (Table 2) (Laudet, Morgen, and White, 2006; Laudet and White, 2008). At recruitment, participants were abstinent for 1 month to more than 10 years. In cross-sectional analyses, overall QOL satisfaction increased gradually from about 6 months to more than 3 years of abstinence—the latter a duration that is often considered stable remission. Abstinence duration correlated significantly and positively with QOL satisfaction over the entire cohort and accounted for 9 percent of the variance in QOL satisfaction. In prospective analyses, after controlling for baseline levels of QOL satisfaction, longer abstinence duration at baseline significantly predicted higher levels of QOL satisfaction 1 year later. We also recently reported that the level of QOL satisfaction at the end of outpatient treatment is a significant predictor of commitment to abstinence, which in turn is a strong predictor of sustained abstinence (Laudet and Stanick, 2010).

There is evidence that QOL improves with abstinence and deteriorates in relapse .

The longest study of QOL components among individuals with SUD reassessed alcoholics 2 and 10 years after their initial treatment episode (Moos, Finney, and Cronkite, 1990). At both followups, participants whose drinking remitted (49 percent at 2 years and 57 percent at 10 years) had significantly higher levels of physical, mental, social, and occupational functioning than did the relapsed group. Moreover, compared with a matched community-based sample with no dependence history, the stably remitted group exhibited few deficits at the 2-year followup in physical and mental health and functioned equally well at the 10-year followup.

SUD Treatment and QOL

Whereas SUD treatment primarily targets substance abuse, it also provides services and referrals aimed at alleviating SUD-related problems in areas such as education, employment, physical and mental health, family functioning, and housing. A growing number of studies are examining the impact of treatment per se on QOL, including but not limited to any impact on substance abuse itself. The investigations completed to date have reported treatment-related improvements in most or all key QOL areas of functioning, including occupational status, overall life satisfaction, employment, and psychosocial functioning, among both alcohol- and drug-dependent samples (Fassino et al., 2004; Foster, Marshall, and Peters, 2000; Hubbard et al., 2003; Morgan et al., 2003; Villeneuve et al., 2006).

Does an addicted individual's QOL satisfaction predict his or her chances for remission?

Recently, Gonzalez and colleagues (2009) measured changes in HRQOL as a function of treatment completion and continued service exposure over a 1-year period among methamphetamine abusers. Significant improvements in mental and, to a lesser degree, physical health status were observed at followup relative to baseline. To explore the role of treatment and aftercare on QOL, the researchers modeled the change trajectories in SF-36 scores in four groups of patients: (1) treatment completers who engaged in some type of continuing care for SUD problems, (2) treatment completers who did not engage in continuing care, (3) noncompleters who engaged in continuing care, and (4) noncompleters who did not engage in continuing care. After controlling for other relevant variables, the researchers found that clients who received the greatest number of services (those in group 1) during the followup year experienced the most improvement in mental health functioning (gains of 9.6 points, based on normative calculation from the U.S. general population ranging from 0 [worst possible health status], to 100 [best possible health status]), whereas those who got the fewest services experienced the least improvement (2.2 points). The authors noted that "this 7.4 point difference is substantial, showing the importance of both successful treatment adherence (i.e., treatment completion) and subsequent continued care." There was no association between levels of service utilization and physical health status.

QOL as a Promoter of SUD Symptom Reduction

Research on QOL among those with chronic conditions has focused thus far on the unidirectional effect of symptom management on QOL—that is, whether symptom reduction leads to improved QOL. Another potentially important question is whether the relationship between SUD symptoms and QOL may be bidirectional so that improvement or deterioration of either can cause a similar change in the other. A few researchers have suggested that this is the case in chronic diseases other than SUD. For example, one group noted that "uncontrolled blood pressure alters hypertensive patients' QOL through anxiety and depressive reactions, and poor QOL hampers blood pressure control even with a therapeutic regimen" (Youssef et al., 2005). By extension, one may ask: Does an addicted individual's QOL satisfaction predict his or her subsequent remission?

Behavioral economics and behavior choice theory provide useful concepts for framing this question. Drug dependence can be understood as a choice, and behaviorists ask the question: What factors result in the choice of drug over other reinforcers (Bickel and DeGrandpre, 1996)? A relevant basic principle of choice theory is demand law, whereby consumption decreases as "price" increases (Allison, 1983). For a former drug abuser, the prospect of losing QOL improvements and positive experiences that accumulate in drug-free periods raises the price of reverting to drug use and reinforces motivation for continued abstinence. In this context, Blomqvist noted that among remitted substance abusers, "stability/improvements in several life areas contributed to sustaining … [their] resolution [to remain abstinent]" (Blomqvist, 2002). Among alcoholic women, higher satisfaction with life at treatment intake predicted higher subsequent abstinence rates (Rudolf and Priebe, 2002). Conversely, low QOL heightened the risk of relapse (Foster, Marshall, and Peters, 1998).

Based on demand law, we tested the hypotheses that QOL predicts sustained abstinence and that motivational constructs mediate the association (Laudet et al.,

2009). We found that, in a prospective cohort study of formerly polysubstance-dependent individuals abstinent for 1 month to more than 10 years, controlling for other relevant variables, baseline QOL satisfaction predicted continuous abstinence (biologically corroborated) 1 and 2 years later. As we had hypothesized, the association was partially mediated by a measure of motivation: commitment to abstinence.

IMPLICATIONS FOR CLINICAL PRACTICE AND RESEARCH

We have argued that QOL is highly relevant to SUD and recovery and that emerging changes in the SUD service field will require the incorporation of QOL indices in service development and research. Although the knowledge base is small and suffers from several methodological limitations, available evidence suggests that QOL is generally poor among active substance abusers and treatment seekers, and that reductions in substance abuse, including abstinence and participation in professional treatment, are associated with QOL improvements. To date, only physical and psychological health outcomes have been examined systematically, and little is known about other important domains of functioning. Here we present some suggestions for promoting QOL in SUD clinical practice and research questions that will need to be addressed to inform SUD service development, monitoring, and evaluation.

Implications for Clinical Practice

As discussed above, improvements in the functioning domains that constitute QOL are critical components of recovery, and thus impairments in these areas must be considered in clinical practice. As noted by McLellan and colleagues (2005), "Typically, the immediate goal of reducing alcohol and drug use is necessary but rarely sufficient for the achievement of the longer-term goals of improved personal health and social function and reduced threats to public health and safety—i.e., recovery."

In terms of service development and funding, the ideal scenario is the adoption of an integrated, multisystem, recovery-oriented model that meets all service needs. The emerging ROSC model, an example of such an approach, appears to have great potential to address not only substance abuse issues but also related service needs, and to possibly improve QOL in areas where impairments develop, and often endure, after abstinence has been achieved. Although the current fiscal austerity affecting most States may delay widespread adoption of ROSC, some states (e.g., New York) are moving forward, while other States and cities, most notably Connecticut (White, 2008b) and Philadelphia (White, 2008a), have well-established recovery-oriented systems.

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The current model of SUD services also harbors opportunities to consider and promote QOL. Treatment programs routinely assess clients' functioning in QOL-related areas such as housing, employment, and family functioning using SAMHSA's Government Performance and Results Act (GPRA) Client Outcome Measures. As well, many programs offer non-SUD services onsite or refer patients to outside agencies for needed services.

Regrettably, the outcome measurement model that currently prevails is ill-suited to monitor the impact of services on client functioning or identify QOL-related service needs. For example, for adult clients, SAMHSA

requires that the GPRA be administered at intake, discharge, and 6 months after intake. With this schedule, in contrast to standard practice with other chronic conditions, most assessments of patient functioning occur after services have ended. McLellan and colleagues (2005) have proposed an alternative model, concurrent recovery monitoring (CRM), to help clinicians pinpoint areas of impairment and newly arising issues on an ongoing basis throughout treatment. In CRM, clinicians would monitor substance abuse, personal health, social function, and behaviors that constitute threats to public health and safety at regular intervals during treatment (McLellan et al., 2005). A suggested CRM frequency would be weekly in intensive outpatient settings and monthly in standard outpatient settings, with each data collection requiring no more than 5 minutes per patient.

Clinical and recovery-oriented services must include improvements in key QOL domains among the goals of treatment.

If CRM were to be adopted, it might be useful to include a single OQOL item in CRM assessments, such as one taken from the OQOL subscale of the WHOQOL: "Overall, how satisfied are you with your life?" Although of limited usefulness for research purposes, a response to this question is considered an adequate and reliable indicator of how a person feels (U.S. Department of Health and Human Services, 2000); it has been found useful for identifying persons at increased risk for adverse health outcomes (Ried et al., 2006); and it predicts subsequent sustained abstinence among substance abusers (Laudet, Becker, and White, 2009). Adding this question to CRM assessments would not substantially add to clinicians' time burden and would promote a dialogue with individual clients to identify unmet service needs.

We hold that QOL is critical to the goal of recovery, and clinical and recovery-oriented services must include improvements in key QOL domains among the goals of treatment. The ideal service model for addressing QOL is likely to be one that integrates a variety of services and provides a continuum of care.

Key Research Questions

The preceding sections indicate that there are many more questions than answers with regard to QOL in the addictions. Therefore the first implication of this review for researchers is the urgent need to broaden the scope of outcome evaluations to include standardized QOL measures (Cisler et al., 2005). QOL must be embraced as a bona fide outcome in SUD research in the same way it is in other areas of the mental health and biomedical fields. Second, as is often the case in an emerging field, the QOL knowledge base suffers from several limitations that restrict the generalizability of findings (Cisler et al., 2005; Dawson et al., 2009; Donovan et al., 2005; Laudet et al., 2009). Future studies need to overcome key limitations pertaining to the following methods:

- *Sampling:* Most QOL studies have used samples of convenience, typically treatment-enrolled individuals, precluding generalization to the active abusers who are out of treatment and persons in recovery who are no longer enrolled in services. Moreover, most QOL studies have examined abuse or dependence on alcohol, but not other drugs. Given the emerging evidence that abuse of other drugs may impair QOL more severely than alcohol, more research among current and former drug abusers is critically needed;
- *Design:* The majority of QOL studies of SUD populations are cross-sectional, especially those conducted in the United States, precluding causal inference. Prospective studies have used very short followups (3 months to 1 year) that are inadequate to capture the full scope of change in either substance abuse or QOL or the longitudinal association between the two domains;
- *Measurement:* Overall, there has been a lack of uniformity in the instruments used to measure QOL and in the way scores are reported, making cross-study comparisons difficult. More importantly, studies have almost exclusively used indices of HRQOL, principally the SF-series instruments, that fail to capture functioning in domains—especially social functioning and living environment—that are important to SUD-affected populations and to the recovery experience. The WHOQOL instruments offer a very promising alternative (Betty Ford Institute Consensus Panel, 2007), yielding scores in physical, psychological, and social functioning; living environment; and an overall satisfaction score. The 26-item WHOQOL-BREF is used increasingly in biomedical research and practice worldwide and is slowly being adopted by SUD researchers abroad (Bizzarri et al., 2005; Gunther et al., 2007) and in the United States—for example, in the multisite COMBINE trial funded by the National Institute on Alcohol Abuse and Alcoholism (Cisler et al., 2005).

The full list of research questions to be addressed regarding QOL is beyond the scope of this paper. Key areas where investigation is critically needed to guide service development and policy, and to augment our knowledge of the full impact of addiction and full benefits of recovery, include the following:

- Identification of all the functional domains that are impaired by active SUD and where improvements occur as a function of remission. This research is likely to benefit from the inclusion of qualitative methods.
- Thorough assessment of the extent of impairments in all key areas of functioning among all segments of the SUD-affected population, including out-of-treatment active abusers, clients in treatment, and persons in successive stages of recovery. This knowledge will help pinpoint service and funding needs in primary care, specialty care, and recovery-oriented services. It will also inform prevention and education efforts.
- Elucidation of longitudinal changes in each QOL domain as a function of service and recovery supports as well as changes in substance abuse. These studies will require long-term followups, similar to that recently published by Dawson and colleagues (2009). The results will inform service development and funding decisions.
- Specification of correlates and predictors of patterns of QOL change beyond fixed characteristics, such as demographics and clinical variables, that explain but a fraction of the variance in QOL outcomes. For instance, research needs to determine the role of positive and negative recovery capital (Cloud and Granfield, 2008), participation in self-help support groups, and other forms of recovery support.
- Exploration of the possibility that QOL prospectively influences the odds of abstinence.
- Consideration of possible subgroup differences, such as gender, ethnicity/culture, age, and primary substances abused.

In sum, the investigation of QOL in the addiction field is in its infancy. Much remains to be done to inform service development and policy, guide clinical practice, and give substance abusers and all other stakeholder groups realistic, empirically based expectations. Fortunately, researchers studying QOL in SUD can draw questions and methodologies from a large body of work that has been conducted in the mental health and other biomedical fields. Together with the many researchers and clinicians who have contributed to developing the QOL concept and instruments, I hope that QOL will become a bona fide outcome in SUD clinical practice and research. Its current relative absence from the field represents a notable gap in the knowledge needed to promote stable recovery.

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CORRESPONDENCE

Alexandre Laudet, Center for the Study of Addictions and Recovery, National Development and Research Institutes, Inc., 71 West 23rd Street, 8th floor, New York, NY 10010; e-mail: alexandrelaudet@gmail.com.

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Response: toward better lives

Danny Hall, Ph.D., Dave Ross, Ph.D., and Lucy Zammarelli, M.A., N.C.A.C. II, C.A.D.C. III

Lucy Zammarelli: I like the way the article pulls substance abuse treatment into a standardized medical perspective. Quality of life is typically a goal in treating many diseases other than substance abuse. In the drug abuse field, it provides a broader, more encompassing gauge of success than just whether the client used a drug or how much.

Dave Ross: The issue is extremely important. Quality of life doesn't mean just that somebody is now sober. It's much more than that, and it takes a multidimensional program with some longevity to truly address it.

Zammarelli: The quality-of-life concept gives us a way to talk to patients about their situation that doesn't play into the shame that surrounds this disease. Instead of pathologizing their behavior, we can say, "Our goal is to help you succeed in your life."

Danny Hall: I practice patient-centered care. My perspective is that if you're truly doing patient-centered care, your outcome is quality of life. And if you're doing a good job, quality of life will improve.

Instruments and relationships

Zammarelli: I would like to become more familiar with the WHOQOL form that's mentioned in the article. We don't use anything like that in our program.

Hall: In our program at the VA, we don't objectively measure quality of life. We use an assessment called the Brief Addiction Measure, which covers quality-of-life issues very broadly with questions about mental and physical health; cravings; work, school and volunteer activities; and religion and spirituality. I think that ultimately it will be a very useful instrument, but so far we don't have norms on it.

Ross: At Catholic Charities, we give patients a form that has check-off boxes for mental and addiction issues, general and sexual health, chronic medical problems, food, clothing, shelter, and so on. Patients fill it out at intake and again when they exit the program to measure their progress. Most importantly, we use it as a clinical tool.

Interestingly, we initially designed the form using seven-point Likert scales, but that turned out to be too complex for some folks at intake. We shortened the form to three-point scales, and that has been much more successful.

Zammarelli: Our field has much to gain from adopting standardized instruments like the WHOQOL. We have such eclectic working methods; it'll be good for everyone when we can develop a standardized vocabulary. Quantifiable empirical data on quality of life will also be very useful.

Hall: Right. Our program just had a visit from a tracer for the Joint Committee on the Accreditation of Healthcare Organizations (JCAHO). She told us that we're going to have to show JCAHO that we are using data to guide our decisions about changes to the program. They won't be satisfied with us just telling them why we thought something was a good idea. We're going to have to show them the data that we generated to help us choose between option A and option B.

Zammarelli: A broadly used instrument like the WHOQOL can also relieve stigma. We can say to patients, "We're going to give you a screener that's like one that's used in heart disease and diabetes to help us determine our goals in treatment."

Ross: In my experience, much of the quality-of-life material that researchers develop tends to be top-down. The instruments assess what researchers think counts toward quality of life. So there will be items on food, clothing, shelter, abstinence, and so on. At Catholic Charities, we think it's also important to ask clients about quality of life in their own frame of reference. For example, have they reconnected with their friends, taken up a hobby or a sport or something else that they used to do?

Zammarelli: Relationships are a key aspect of quality of life. Many, many clients have had a terrible lack of caring, loving relationships in their lives. Their empathic