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Building abstinent networks is an important resource in improving quality of life

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ABSTRACT

Aims: To investigate changes in social network and quality of life of a substance use disorder cohort as they progressed through treatment.
Design: Multi-site, prospective, observational study of 338 adults entering substance use disorder treatment.
Setting: Patients at 21 facilities across Norway contributed baseline data when they initiated treatment, and follow-up data was collected from them one year later.
Methods: The cohort was divided into those who completed, dropped out, and remained in treatment one year after treatment initiation. For each treatment status group, general linear models with repeated measures analyzed global and social quality of life with the generic QOL10 instrument over time. The between-group factor was a change in social network variable from the EuropASI.
Findings: Those who gained an abstinent network reported the largest quality of life improvements. Improvements were smallest or negligible for the socially isolated and those who were no longer in contact with the treatment system.
Conclusions: Developing an abstinent network is particularly important to improve the quality of life of those in substance use disorder treatment. Social isolation is a risk factor for impaired quality of life throughout the treatment course.

1. Introduction

Substance use disorders (SUDs) significantly impair individuals' physical health, mental health, occupational engagement and economic security, and social relationships, in addition to impacting those close to them and their communities (Tiffany et al., 2012). As a chronic condition, SUDs require an approach towards an improvement in subjective functioning rather than solely disease cure, i.e., abstinence. Quality of life (QoL), "an individuals' perceptions 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" (The WHOQOL Group, 1996), is a standard patient-reported outcome of chronic disease treatments. QoL is particularly pertinent to SUD treatment because it captures many of the life dimensions that are negatively impacted (Laudet and Stanick, 2010), and includes in particular attention to social aspects which may be neglected when measuring strictly medical outcomes (De Maeyer et al., 2009; De Maeyer et al., 2011; Zubaran et al., 2012).

1.1. *Quality of life*

While SUD research increasingly measures QoL, the traditional preeminence of substance-related outcomes is reflected in the assumption that reduced substance use will be an important predictor of improved QoL. More research is needed, however, as the latest reviews report no clear relationship between QoL and addiction severity measures among treated opioid dependents (De Maeyer et al., 2010), or between QoL and length of abstinence among people with a SUD in general (Rudolf and Watts, 2002). Recent studies have highlighted how factors such as physical activity and social inclusion can improve QoL while in treatment (Best et al., 2013; Giesen et al., 2016; Muller and Clausen, 2015).

Patients' QoL impacts their treatment trajectory. Low QoL can be a strong impetus for treatment initiation, and improved QoL a concrete goal (Laudet et al., 2009; Weiss et al., 2014). Improved QoL by treatment completion can reinforce abstinence and other positive treatment outcomes (Best et al., 2013; Laudet et al., 2009; Laudet and Stanick, 2010; Vederhus et al., 2016), while low QoL at treatment completion partly predicted relapse in one sample (Laudet et al., 2006). Most

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studies report significant improvements in QoL after initiating treatment, but among the few studies able to follow up with drop-outs, evidence is mixed as to whether dropping out negatively impacts QoL when comparing drop-outs to either completers or those still in treatment (Giacomuzzi et al., 2005; Gonzales et al., 2009; Stallvik and Clausen, 2017).

1.2. SUD treatment approaches

SUD treatment settings, approaches, and timeframes differ, from residential to outpatient, with and without pharmacological strategies. Inpatient and residential programs are usually of shorter duration than outpatient treatment, often due to healthcare financing models, which McLellan and others argue inappropriately and ineffectively treats SUDs as acute diseases that should respond to small doses of treatment (McLellan et al., 2014). Opioid maintenance treatment (OMT) was the first modality with a chronic-disease approach and the first to advocate for sustained QoL improvements as an independent outcome. Opioid maintenance and other treatments administered in an outpatient setting are considered less intensive options than treatment requiring hospitalization or residence (Proctor and Herschman, 2014), yet patients in OMT are considered "harder to treat" and often present with higher burdens of polysubstance use, multimorbidities, and barriers to employment and social inclusion. In Norway, OMT is considered as a lifelong treatment; inpatient treatment is typically provided for 9–12 months, longer than in other countries.

Long-term studies of OMT patients have shown the longer the duration of treatment, the more stabilized a patient remains (Appel et al., 2001; Zippel-Schultz et al., 2016). For inpatients, the goal is to complete a distinct course of treatment. Dropping out of a long-term program such as OMT or before an anticipated completion date in inpatient or other treatment modalities increases the immediate risks of relapse and fatal overdose, and undermines other positive outcomes (Clausen, 2014; Simpson et al., 1997; Stark, 1992). Yet while immediate outcomes of those who completed short-term inpatient treatment may be better than outcomes after the same amount of time in those continuing in outpatient treatment, sustained care of former inpatients may be necessary to maintain such successes (Nordfjærn, 2010), hence the need for "continuing care" programs (McLellan et al., 2005; Proctor and Herschman, 2014).

1.3. The salience of social networks to SUD and treatment

Social networks can support or discourage treatment initiation and adherence. Among people with SUDs or in recovery, network support for abstinence is cross-sectionally associated with lower individual substance use (Day et al., 2013), both of which can be reinforced by mutual help groups (Litt et al., 2009). In longitudinal studies, having abstinent friends at treatment completion predicted abstinence, with no impact of family members or partners (Havassy et al., 1995), and adding people who are also in recovery to one's network improved abstinence rates (Jason et al., 2012; Polcin et al., 2010). Jason et al. additionally report that adding heavy users to one's network did not impact abstinence over time, while Zywiak et al. found networks remained unchanged among people who relapsed, but those who remained abstinent decreased their contact with substance-using network members and increased the number of abstinent members in their networks (Zywiak et al., 2009). Yet abstinent networks may be difficult for adults with a SUD to build, and substance-using networks are the norm by the time substance using persons enter treatment (Valente et al., 2004).

Little is known about how network composition affects the QoL of those with a SUD, and the impact of treatment maintenance, completion, or cessation on these factors, despite an abstinent network and improved QoL both providing important recovery capital (Best et al., 2013; Laudet and White, 2008). Additionally, most social network studies were conducted among single-substance users, despite the new global norm of polysubstance use (UNODC, 2016), and it is unknown whether their results can be generalized to polysubstance users. In this paper, we address these important knowledge gaps with the following aims:

1. Measure global QoL and social QoL changes according to natural treatment progression in a heterogeneous group of polysubstance users.
2. Examine changes in QoL in relation to social network changes.

2. Material and methods

2.1. Participants and setting

Participants for this analysis were drawn from a longitudinal, naturalistic, multi-site study, the Norwegian Cohort of Patients in Opioid Maintenance Treatment and Other Drug Treatment (NorComt) study (Muller et al., 2016a; Skjaervo et al., 2017). NorComt was designed to increase understanding of factors impacting treatment adherence and outcomes, for a diverse patient population, and across treatment modalities. Participants were consecutively enrolled in the study when beginning treatment at one of 21 participating facilities across Norway between 2012 and 2015, with no exclusion criteria. These facilities provided both OMT and medication-free inpatient treatment, and detoxification preceded enrollment. 548 individuals (74% of those eligible) enrolled and contributed baseline data (T0) through structured interviews with facility staff trained by the research group. As described in Muller et al. (2016a), the entire cohort was analyzed together because participants entering into the two treatment types were remarkably similar with regards to a high prevalence of polysubstance use, long histories of SUDs with previous medication-free outpatient and inpatient treatment experience, separation from the labor market, and physical and mental health problems.

All participants consented at T0 to being contacted to participate again one year later (T1) and provided contact information for themselves and family/friends for this purpose. Research staff spent up to six months attempting to contact participants at T1, and conducted similar structured interviews at locations of the participants' choosing, 11–18 months after T0. 62% (338) contributed useable data at T1. There were no differences in age, gender, substance use characteristics, treatment type, or QoL between the participants lost to follow-up and those who were interviewed at T1. However, participants lost to follow-up were slightly more likely to have been unemployed (93% compared to 86%).

The Norwegian Regional Ethics Committee approved NorComt, and all participants provided written, informed consent (ref: 2012/1131/REK).

2.2. Measures

2.2.1. QoL

The outcome of QoL was measured using the global and social subscales of the QOL10, a measure recently validated against the gold standard of the WHOQOL-BREF (Muller et al., 2016b). On a Likert-type scale of "very poor" to "very good", the five items in the global subscale elicit self-evaluations of a respondent's current physical health, mental health, working ability, and overall QoL, as well as how one feels about oneself, while the social subscale includes five items on social functioning, ability to love, relationships with friends and partners, and sexual functioning (Supplementary Fig. 1). The resulting scores are transformed to a 0–100 scale as per the WHOQOL Group's instructions (The WHOQOL Group, 1996), to enable comparison with other QoL tools.

2.2.2. Social network

At both T0 and T1, participants were asked a question from the