

# Quality of life, substance use disorders, and social lives

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Exploring one-year outcomes and intrinsic links

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Ley

## Abstract

**Background:** Substance use disorders are increasingly being recognized as chronic diseases, with important treatment implications: not only should a finite course of treatment not be expected to be curative, but outcomes of interest must be relevant to the patient and not limited to reduced substance use. While quality of life is a standard outcome measure among other chronic disease treatment, the substance use disorder treatment field has lagged behind in systematically evaluating it. Sustained contact with the treatment system lasting beyond intensive inpatient treatment appears best to maintain treatment's benefits long-term, therefore the social environments of patients – the larger contexts of their lives, including but not limited to treatment – must also be addressed.

**Aims:** The overall objective of this thesis was to examine changes in quality of life along with natural treatment progression and explore the relationship of these changes to under-researched social factors in order to inform the clinical approach to patients' social lives. The specific aims were to identify patterns in poor quality of life at entry to SUD treatment; to examine how quality of life changes along with social network developments through the treatment course; and to validate and confirm the utility of a new quality of life instrument.

**Materials and methods:** This thesis used data from The Norwegian Cohort of Patients in Opioid Maintenance Treatment and Other Drug Treatment study, an observational, prospective study of adults entering substance use disorder treatment in 21 facilities throughout Norway. 548 patients entering treatment enrolled at were administered a battery of questionnaires, such as the EuropASI, HSCL-25, and QOL10, through structured interviews by trained facility staff. One year later, regardless of treatment progression or drop out, participants answered the same questionnaires through interviews with research staff. 338 were included in the longitudinal analysis.

**Results:** The majority of the sample entered treatment with extremely impaired quality of life as measured through a single item, along with substance-using social networks, poor mental health, and polysubstance use. Depression was associated with the poorest quality of life among women, while physical inactivity, weight dissatisfaction, and eating alone were the most important factors for men. Opioid maintenance treatment medication was a protective factor for both genders.

After one year, 75% of participants were still receiving treatment, 9% had completed, and 15% had dropped out. More than half reported an abstinent social network (60.1%), while the same

amount as at study inclusion reported no network (17.5%). Global and social quality of life measured by the QOL10 improved for the entire sample, although global quality of life remained below population norms. The trend in each of the three treatment status groups, and statistically significant for those still in treatment, was for participants who gained or maintained an abstinent network to report the largest gains in quality of life, and for participants who gained a substance-using network or were socially isolated to report the smallest, or clinically negligible, improvements.

In a validation study of the QOL10, factor analysis revealed the QOL10 to measure two domains described as “global quality of life” and “social quality of life”. The global domain correlated negatively with symptoms of clinical anxiety, depression, and physical inactivity; the social domain was only weakly correlated to anxiety. Both domains had satisfactory internal validity, scores were easily calculated, and the QOL10 as a whole presented minimal administrative and participant burden.

Discussion and conclusion: At both treatment initiation and one year later, we found quality of life to correlate with lesser explored factors such as physical inactivity and social isolation. These vulnerabilities, along with mental health, should be evaluated immediately in the clinical setting and addressed through exercise and network interventions. Entering treatment without a social network may be a particular risk factor for both dropping out and failing to experience improved quality of life, and network interventions need to be further developed to explicit help isolated patients. Any contact with the treatment system appears to be beneficial to quality of life, but the combination of remaining in treatment after one year and building or maintaining an abstinent network resulted in the highest quality of life.

Quality of life is not a simple proxy for health or for disease or treatment progression, although undoubtedly influenced by these factors. To fully understand how best to support patients’ quality of life, network building, and treatment retention, and to understand the causal mechanisms in these relationships, repeated measurements and sustained contact with patients are needed.

## Sammendrag på norsk (Norwegian summary)

Bakgrunn: Ruslidelser anerkjennes i økende grad som kroniske sykdommer, som har viktige implikasjoner for behandling: et kortvarig behandlingsløp kan ikke forventes å være kurativt, og behandlingsutfall bør kunne oppleves relevant for pasientene og ikke begrenset til redusert rusbruk. Selv om livskvalitet er et standardutfallsmål blant andre kroniske sykdommer, evalueres det mindre systematisk i rusbehandling. Vedvarende kontakt med behandlingssystemet utover intensiv døgntilrettelagt behandling ser ut til å være det beste for å opprettholde behandlingsfordelene på lang sikt. Derfor må også pasientenes sosiale miljøer – de større kontekstene og rammene de lever i, inkludert men ikke begrenset til behandling – tas hensyn til.

Mål: Det overordnede målet med denne doktorgraden var å undersøke endringer i livskvalitet i lys av naturlig behandlingsprogresjon, samt å undersøke forholdet mellom disse endringene og tidligere lite utforskede sosiale faktorer, med mål om å fremme den kliniske tilnærmingen til pasientenes sosiale liv. De spesifikke målene var å identifisere mønstre i dårlig livskvalitet ved behandlingsoppstart, å undersøke hvordan livskvalitet endres i sammenheng med utviklinger i sosiale nettverk gjennom behandlingsforløpet, og å validere og bekrefte nytten av et nytt livskvalitetsinstrument.

Materialer og metoder: Denne oppgaven brukte data fra *Den norske kohort studien av pasienter i legemiddellassistert rehabilitering og annen rusbehandling*, en observasjonell, prospektiv studie av voksne som startet behandling på 21 tiltak i Norge. 548 pasienter svarte på et spørreskjema som inkluderte validerte instrumenter som f.eks. EuropASI, HSCL-25 og QOL10, gjennom strukturerte intervjuer. Ett år senere, uansett behandlingsprogresjon, ble deltakerne intervjuet igjen. 338 ble inkludert i den longitudinelle analysen.

Resultater: De fleste deltakerne hadde ekstremt lavt livskvalitet, målt ved ett enkelt spørsmål, i tillegg til rusbrukende sosiale nettverk, dårlig psykisk helse, og samtidig bruk av flere rusmidler ved behandlingens begynnelse. Depresjon var assosiert med den laveste livskvaliteten blant kvinner, mens fysisk inaktivitet, utilfredshet med egen vekt, og det å spise alene var de viktigste faktorene for menn. Bruk av langtidsvirkende opioide medikamenter (LAR medisiner) var en beskyttende faktor for begge kjønn.

Etter ett år var 75% av deltakerne fortsatt i behandling: 9% hadde fullført, og 15% hadde avbrutt behandlingen. Mer enn halvparten rapporterte et rusfritt sosialt nettverk (60,1%), mens andelen som ikke hadde noe nettverk var det samme som ved behandlingsoppstart

(17,5%). Både global og sosial livskvalitet, målt med QOL10, forbedret seg for alle deltakerne, selv om global livskvalitet forble under populasjonsnormer. Endringene i QOL10 for de tre behandlingsgruppene; (i behandling, fullført og avbrutt) viste seg å henge sammen med utvikling i sosiale relasjoner og nettverk; de som opprettholdt eller etablerte et rusfritt nettverk rapporterte de største forbedringene i livskvalitet, mens for deltagere som enten fikk et rusbrukende nettverk, eller var sosialt isolerte rapporterte minst eller klinisk ubetydelige forbedringer i livskvalitet.

I en valideringsstudie av QOL10, ble det vist via faktoranalyse at instrumentet måler to domener som er beskrevet som "global livskvalitet" og "sosial livskvalitet". Det globale domenet korrelerte negativt med symptomer på klinisk angst, depresjon og fysisk inaktivitet, det sosiale domenet var bare svakt korrelert til angst. Begge domenenene hadde tilfredsstillende intern validitet. Basert på verktøyet QOL10 var et enkelt å beregne skårer, og QOL10 som helhet ga minimal administrasjonsbyrde.

Diskusjon og konklusjon: Både ved behandlingsoppstart og ett år senere fant vi at livskvalitet korrelerte med lite utforskede faktorer som fysisk inaktivitet og sosial isolasjon. Disse sårbarhetene, sammen med psykisk helse, bør evalueres ved behandlingsoppstart i klinisk setting og følges opp gjennom trenings- og nettverksintervensjoner. Å starte rusbehandling uten et sosialt nettverk kan være en særlig risikofaktor for både å avbryte behandlingen samt ikke å oppleve forbedret livskvalitet, og nettverksintervensjoner bør videreutvikles for å hjelpe isolerte pasienter. Enhver kontakt med behandlingssystemet ser ut til å være positivt for livskvaliteten, men kombinasjonen av å fortsatt være i behandling etter ett år og å klare å bygge og/eller vedlikeholde et rusfritt nettverk resulterte i høyeste livskvalitet.

Livskvalitet er ikke en enkel proxy for helse eller for sykdom eller behandlingsprogresjon, men er utvilsomt påvirket av disse faktorene. For bedre å forstå hvordan man best kan støtte pasientene og fremme deres livskvalitet, sunne sosiale nettverk, og behandlingsløp, og å forstå kausalmekanismer blant disse faktorene, trenger vi gjentatte målinger av livskvalitet og pasientrelevante utfall og vedvarende kontakt med pasienter i et livsløpsperspektiv.



## Preface

From 2010 to 2012, I ran in my free time with a running club for homeless people in Boston. Homelessness is overwhelmingly a result of poverty in the United States, but this club recruited from a transitional housing program serving people with substance use disorders.

We met three times a week at 5:30 in the morning to give everyone time to shower before work. The jogs were easy, and we chatted while waking up; the rule was that no volunteer or participant would have to run by themselves. The club was the best way to guarantee that many of the volunteers and participants made time for physical activity during the week. But what seemed to me to be one of the club's greatest achievements was that it built a network of young, enthusiastic, and generally kind volunteers with no professional experience of substance use disorders or homelessness. Participants rarely volunteered information about their current situations and were never asked; the only common knowledge was that they were strapped for cash. So when we met at volunteers' cramped Boston apartments for pot-lucks and at Dunkin Donuts for coffee, it was an implicit agreement that volunteers would cover the costs. Aside from that, running was the great equalizer: volunteers and participants were equally as bleary-eyed at the beginning of each session and as sweaty at the end.

I looked forward to the club immensely, particularly because these two years were the first time in my running career that I lacked a team. I was fresh out of college, without the built-in contact of roommates and classmates, and with my friends (all teammates) dispersed to their various corners of the country. Without this club, I wondered how I would have so easily made new contacts as an adult. How much more difficult would it be for someone who had exhausted the resources of their networks to build an entirely new support system?

Intrigued by the idea that a social group completely separate from the treatment system could be beneficial, I tried to replicate this program as a part of my master's degree in Oslo. I recruited 35 participants from residential substance use disorder treatment programs and stressed that I was not a clinician and only wanted to exercise with them, not treat them.

Participants but not drop-outs reported gains in "physical health" and "mental health" domains of quality of life that were encouraging and novel. The "social relationships" domain of quality of life did not improve as a function of participation, contrary to my expectations; maybe Norwegians had stronger social networks to begin with? Maybe the program wasn't social enough to confer such benefits? I suspected I would have seen improvements had I measured my own quality of life before and after this program. As in Boston, I gained a

structure to look forward to through weekly sessions and a new network of kind, welcoming people who seemed pleased that I wanted to spend time with them.

These two experiences shaped my approach to this PhD. I applied with quality of life as my focus and an eye to social networks. While we have strong evidence of the health benefits of exercise among substance use disorder patients, we know less about how exercise is related to their quality of life, therefore Articles I and III tested for a relationship between these two. We also know little about social-related contributors to quality of life, so the focus on these in Articles I and II are an important contribution. Together, the results of these three articles show that there is a distinct social component of quality of life for people with substance use disorders. The importance of social contacts, relationships, and networks should be considered in a clinical setting and addressed in future research, as these factors have the potential to support recovery.

## List of articles

- I. Muller, Ashley Elizabeth, Svetlana Skurtveit and Thomas Clausen (2016). “Many correlates of poor quality of life among substance users entering treatment are not addiction-specific.” Health and Quality of Life Outcomes **14**(1): 1-10.
- II. Muller, Ashley Elizabeth, Svetlana Skurtveit and Thomas Clausen (submitted). “Building abstinent networks is an important resource in improving quality of life.”
- III. Muller, Ashley Elizabeth, Svetlana Skurtveit and Thomas Clausen (2016). “Validating the generic quality of life tool ‘QOL10’ in a substance use disorder treatment cohort exposes a unique social construct.” BMC Medical Research Methodology **16**(1): 1-8.

## Abbreviations and definitions

ANOVA: An *analysis of variance* is a statistical method which tests the differences in means between two or more groups.

DATOS: The *Drug Abuse Treatment Outcomes Study* was a long-term follow-up study of 10,000 patients entering a range of treatment modalities across the United States.

Exercise and physical activity: Physical activity is any body movement utilizing the musculoskeletal system that requires more energy than resting, while exercise is when such movement is planned, structured, and repetitive, with the intention of improving physical fitness.

FA: *Factor analysis* is a method of data reduction and derives a smaller set of factors to represent correlated variables.

GLM: A *General linear model* is a linear model that underlies the t-test, analyses of variance and covariance, regression analyses, and many other statistical models used in medical research.

HSCL-25: The *Hopkins Symptoms Checklist-25* measures symptoms of clinically concerning psychological distress, anxiety, and depression.

MCID: A patient can report a change on a scale that is statistically significant, but such a change may not be noticeable or clinically meaningful. The *minimal clinically important difference* is the change that must be exceeded for the patient to consider a treatment worthy of repeating.

NorComt: *The Norwegian Cohort of Patients in Opioid Maintenance Treatment and Other Drug Treatment Study* is a prospective, observational study involving 21 treatment facilities across Norway.

OMT: *Opioid maintenance treatment* is a physician-supervised, medication-assisted treatment for opioid dependency, with coordinated psychosocial services as well as treatment for co-occurring disorders.

PRO: A *patient-reported outcome* is reported by the patient, without clinician or researcher interpretation.

RRR: The *relative risk ratio* is the ratio of the risk of an event occurring in two groups. A RRR of 1 indicates the risk of an event is the same for two groups; a RRR of 3 for an exposure means that the exposed group has three times the risk of reporting the event than the unexposed group.

SUD: *Substance use disorder* refers to the constellation of physiological, psychological, social, legal, and other negative consequences of repeated use of psychoactive substances.

QoL: *Quality of life*, in the WHO's definition, is "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." While many authors use "QoL" and "health-related QoL" interchangeably, "QoL" refers specifically to overall QoL in this thesis, unless indicated otherwise. Within the text of the three published articles, however, "QoL" also includes "health-related QoL".

QOL10: A generic, ten-item measure of overall quality of life included in the NorComt study.

WHOQOL-100, WHOQOL-BREF: The unnamed, generic tools developed by the World Health Organization measuring overall quality of life in 100 and 26 items, respectively.

# 1 Introduction

## 1.1 Background

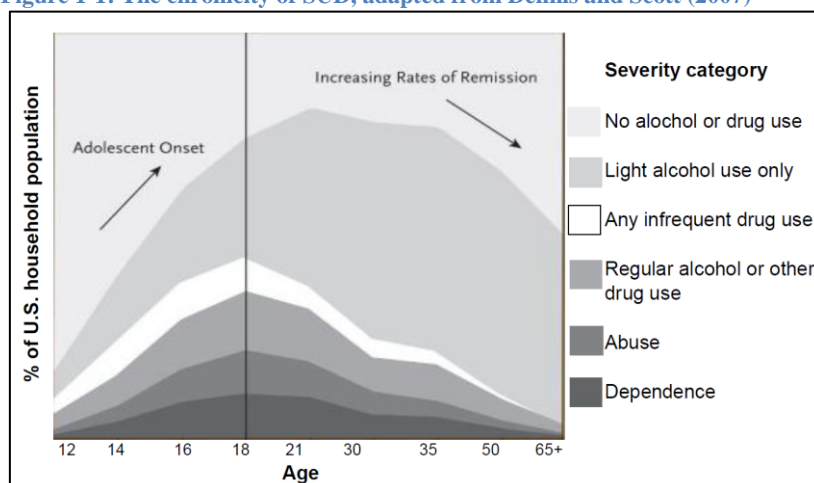
This thesis considers a heterogeneous group of adults entering the substance use disorder treatment system in Norway, and follows them for one year. It seeks to contribute to the knowledge gaps of non-substance related correlates of quality of life (QoL), such as social networks, and how both social factors and QoL change along with progression through the treatment system. In addition, we explore a new method to measure and conceptualize QoL.

## 1.2 Substance use disorders and treatment

Substance use disorder (SUD) is the term adopted by the latest version of the American Psychiatric Association's DSM-V to encompass two previous categories of substance abuse and substance dependence. Substances of primary use or importance are treated separately (e.g. opioid use disorder, alcohol use disorder) as in the World Health Organization's ICD-10, and diagnoses are graded based on severity. In high-income countries such as Norway, illicit substance use and alcohol use contribute equally to the disease burdens; globally, SUD account for an estimated 37 million disability-adjusted life years (Degenhardt and Hall 2012, Whiteford et al. 2013). Opioids are of particular international concern because they are implicated in most fatal overdoses (UNODC 2016), and account for the largest shares of SUD-related morbidity in total in Europe (EMCDDA 2010). Nearly 32,000 individuals received SUD treatment from the specialist health services in 2015 in Norway, and up to half of the 148,000 who receive psychiatric services are also estimated to have a SUD (Norwegian Ministry of Health 2015).

Substance use disorders 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), and these consequences often require years of assistance and treatment (Lauritzen et al. 2012). Epidemiologic data indicates that SUD typically follow a chronic course, most often developing around adolescence and lasting for several decades (McLellan et al. 2000, Hser et al. 2001, Dennis and Scott 2007). Figure 1-1 from Dennis and Scott depicts the changes in severities of alcohol and drug use by age (Dennis and Scott 2007):

Figure 1-1: The chronicity of SUD, adapted from Dennis and Scott (2007)



Trajectories of substance use in general are influenced by the life course, with increasing prevalence of substance use in adolescence being associated with experimental and explorative behavior, for example, and reductions in use in adulthood alongside increasing family and work responsibilities. What Figure 1-1 does not reveal, however, is the high mortality rate of SUD. Ten- to twenty-year mortality rates are between 20-50% (Termorshuizen et al. 2005, Roerecke and Rehm 2013, Chang et al. 2015, Hser et al. 2015).

In an earlier longitudinal study, Dennis et al. followed a heterogeneous group of 1,271 incoming SUD patients and reported that patients were in treatment for a median of nine years, with an average of three to four distinct treatment courses, and a median substance use career of 27 years (Dennis et al. 2005). Their findings of multiple relapses and treatment courses agreed with the sixteen long-term follow-up studies they reviewed.

Substance use disorders may therefore be best treated within a chronic disease framework as long-lasting disorders with varying intensities over time. Opioid maintenance treatment (OMT) was one of the first treatment modalities developed under this explicit chronic disease approach in the 1960's, and continues to challenge the narrow definition of treatment success as being substance-free (Dole et al. 1966). OMT serves patients dependent on potent, short-acting opioids or opiates by substituting longer-acting substitutes such as methadone or buprenorphine. Dole and Nyswander reported in 1965 that the administration of these substitutes could be continued beyond the withdrawal period; that is, patients could be "maintained" on a stable dose of a substitute in an outpatient setting, rather than tapered off as quickly as possible (Dole and Nyswander 1965). Opioid maintenance treatment should directly remove many of the health, legal, and social consequences of having to procure opioids illegally, and oral application is specifically intended to divert from injecting. The

medication portion of treatment is situated among services related to housing, education, employment, and other health care needs, although the provision of adjunct psychosocial services varies widely across settings. 7,498 patients currently receive OMT in Norway (Waal et al. 2016), and in Norway as internationally, retention in OMT significantly decreases the risk of all cause and overdose mortality (Clausen 2014, Sordo et al. 2017).

Opioid maintenance treatment is unique in its early adoption of a long-term duration and is but one modality; the treatment field is characterized by a diversity of approaches, goals, and timeframes. Inpatient and residential programs are usually of shorter duration than OMT treatment and medication-free outpatient treatment, although the trend in the United States has been for the vast majority of treatment to be provided on both a time-limited and outpatient basis due to healthcare financing models (McLellan et al. 2014). Opioid maintenance and other outpatient treatments are considered less intensive options than treatment requiring hospitalization or residence (Proctor and Herschman 2014). However, while short-term retention rates are higher for inpatient than outpatient treatment and while abstinence rates up to one year post-inpatient treatment are higher than post-outpatient treatment, former inpatients also tend to have subsequently higher rates of relapse (Hubbard et al. 1997, Hubbard et al. 2003). The acute benefits of time-limited, intensive services are often eroded if patients lack further formalized and planned contact with the treatment system.

A recent ten-year, observational study in Norway provides startlingly similar evidence (Lauritzen et al. 2012), despite the public financing of OMT and other SUD treatment and better treatment accessibility (Clausen 2014, Riksheim et al. 2014). In this study, 481 patients who had begun in OMT, inpatient, or other outpatient treatment in the Oslo area in 1998 were interviewed four times over ten years. During the course of this prospective study, OMT was a proxy for poorer functioning, as it was restricted to those with the largest health and psychosocial burdens who had not succeeded in previous treatment attempts (these restrictions were removed before this thesis' study began). The cohort which began in inpatient treatment was nine years younger at study start than the OMT cohort, had less physical and chronic health problems, and lower rates of heroin and injecting. Yet by the final follow-up ten years later, half of the original inpatients were enrolled in OMT, having declined to the requisite poor functioning and dropped out of medication-free programs enough times to qualify for what was, at the time, a treatment reserved for the worst-off.



To date evidence points to no finite course of intensive treatment that can be expected to “cure” a SUD. Yet the acute-disease model of SUD treatment endures, wherein SUD are expected to respond to finite treatment courses, and post-treatment substance use indicates treatment failure (McLellan et al. 2000, McLellan et al. 2005). McLellan and others argue that requiring medication, behavioral interventions, and clinician monitoring over time should indicate patient engagement, not treatment failure – the analogy to a diabetic patient’s need for insulin, first made in 1965 (Dole et al. 1966), is not yet fully accepted. In fact, sustained contact with the treatment system is necessary if treatment goals are to continually improve an individual’s current condition and reduce the severity of reoccurrences (McLellan et al. 2005, McLellan et al. 2014, DuPont et al. 2016). In a large prospective, observational study from the United States, the majority of patients across treatment modalities self-reported requiring further medical and psychosocial services after three months of treatment (Etheridge et al. 1995).

If SUD are expected to be re-occurring, the success of SUD treatment cannot be judged solely on abstinence from substances and the cessation of physiological symptoms, but also on improvements in health, functioning, social inclusion, and quality of life, all of which are impacted by cycles of substance use (Laudet 2011). Reduced substance use facilitates many of these improvements, but it is neither required nor sufficient (Rudolf and Watts 2002). Yet substance-related outcomes as well as so-called socially desirable outcomes – employment, reduced crime, reduced emergency services utilization; outcomes which reflect a desire to reduce the costs of SUD to the majority, non-SUD population, rather than to reduce the suffering of people with SUD – remain the preeminent measures of treatment success. The treatment field has benefited from enormous progress since the 1960’s, before which SUD were conceptualized as individual weaknesses and excluded from the health care system. However, the next step is to treat SUD in alignment with how they are recognized – as chronic diseases – and to systematically measure progress in the life areas relevant to the patient and beyond substance use.

### 1.3 Social environment of substance use disorders

Substance use disorders are initiated, maintained, and treated in social environments, the immediate physical and social settings in which an individual lives. The physical setting is of interest insofar as it represents a stressor, an access point for substance use, and a source of material support for substance use (Kadushin et al. 1998). It is the physical setting with which research into neighborhood disadvantage engages, with findings that areas of concentrated

poverty, low education and employment opportunities, and segregation may increase vulnerability to SUD (Galea et al. 2004, Dieter 2011, Lo and Cheng 2012, Reingle Gonzalez et al. 2016). The social setting includes one's social network, the web of all of those with whom an individual interacts, the specific relationships within, particularly with family and friends, the quality of those relationships, and the presence or depth of substance use or other substance-related behaviors or characteristics within one's network (Neaigus et al. 1994, Risser et al. 2010).

Substance use disorder treatment changes the environment of patients to varying extents. For inpatients, treatment removes them from their physical settings, which may have been actively facilitating the maintenance of their SUD. Exploring factors facilitative to continued substance use, such as substance-using friends, can be useful during discharge planning, as inpatients will soon re-enter what might be the exact same environment. Outpatients such as those receiving OMT are also exposed to new, recovery-associated individuals such as treatment providers, but their existing social environments are perhaps of paramount importance since they are likely to remain constant throughout treatment.

Importantly, merely describing social environments, particularly networks, does not give sufficient information as to their quality. *Network research* is interested in whom an individual has contact with and how to characterize those ties, e.g. number of network members, frequency of contact, extent of contact, and duration of ties. The quality of these ties and of the larger network, operationalized as support, is the purview of *social support research*. Despite early calls for conceptual clarification of network and support (e.g. (O'Reilly 1988, Berkman and Glass 2000)), the conflation of network with social support studies nevertheless continues, wherein certain characteristics of networks are a priori considered supportive (Smith and Christakis 2008). This conflation is visible in a common typology of social support: "functional support" is what is most readily understood as support, such as affirmational support, emotional care, material support, and informational support. "Structural support" is measured by structural characteristics that are considered to provide support without evaluation by the respondent needed. Common measures of structural support are marital status ("married" considered supportive, and "single" without support), amount of friends (higher amounts indicating more support), and frequency of interaction with friends (the more frequent, the more support received).

Yet how applicable are such assumptions to the SUD population?

For example, non-SUD meta-analyses and reviews report that having a network is preferable to being socially isolated, in terms of QoL, morbidity, and even mortality (Nicholson 2012, Holt-Lunstad et al. 2015). However, in ways that other chronic diseases such as chronic obstructive pulmonary disease or cancer must not grapple with, the disease status of network members is an extremely important consideration for those with SUD, as substance use in one's network likely leads to more individual use and vice versa (Bohnert et al. 2009, Becker and Curry 2014). Could isolation be preferable for those with SUD if the alternative is a substance-using network? In Article II, we specifically compared isolated participants to those having a substance-using network and an abstinent network.

Within networks, close links compared to distant links, e.g. a friend versus an acquaintance, have generally more positive effects on health among non-SUD populations (Hakulinen et al. 2016), and intimate/partner relationships are particularly protective (Kiecolt-Glaser and Newton 2001, Holt-Lunstad et al. 2010). (Important to note, first, is that these studies have primarily only examined heterosexual couples; and second, when gender is examined, marriage is more protective for men than women). Again, these studies have not needed to account for disease status by the network member. Having even one close network member who injects makes polysubstance users nine times more likely to engage in HIV-spreading and other risky behavior than those without such ties, for example, according to one study (Stein and Barrett-Connor 2002). Davey-Rothwell et al. reported that homeless, injecting drug users whose partners were also substance-using were more likely to remain homeless over time than those with substance-free partners, although having any partner compared to being single decreased this risk (Davey-Rothwell et al. 2011). Hser, Anglin, and Eldred's early research into gender differences have shown that women with SUD are more negatively influenced by their male substance-using partners than men are by their female partners (Eldred and Washington 1976, Anglin et al. 1987, Anglin et al. 1987, Hser et al. 1987, Hser et al. 2009, Hser et al. 2009).

Social support and stress-buffering are two major hypothesized mechanisms by which close links result in health benefits (Cohen and Wills 1985). Yet for people with SUD, whose relationships include more people with a SUD than normal, many relationships may be stressors themselves (Hater et al. 1984). They may provide emotional support while directly supporting substance use, and these dual functions are particularly seen among partners and ex-partners (Falkin and Strauss 2003, Rhule-Louie and McMahon 2007, Tracy et al. 2010). Support may have to be abstinence-specific in order to positively influence substance

outcomes (Wasserman et al. 2001, Stevens et al. 2015). Mason et al. additionally propose that the physical setting modifies network influences; in their cross-sectional study, an abstinent network was not associated with the expected protective effects if the setting was deemed risky by individuals (Mason et al. 2010).

The few studies that have nuanced social support by quality evaluations have reported exciting findings: among the general population, Fleming et al. found that higher relationship quality was reported as long as there was concordance between an individual and partner's level of alcohol and marijuana use (Fleming et al. 2010), and Homish et al. reported a similar longitudinal relationship between marital satisfaction and concordance of pairs' alcohol and tobacco use (Homish et al. 2009). McCollum et al. considered partnered women in SUD treatment, and found that women's assessments of their relationship quality alone did not predict substance-related outcomes at follow-up (McCollum et al. 2005). However, poorer outcomes were predicted when women rated their relationships poorly, but their partners were satisfied. Finally, McCrady et al. looked at men in alcohol use disorder treatment, and reported that higher quality relationships upon treatment initiation and completion, along with the men's drinking patterns during treatment, predicted better drinking outcomes at follow-up (McCrady et al. 2006).

Through utilizing patient-reported quality measures, research among SUD populations has the opportunity to highlight that measures of "structural support" reflect network characteristics that should not be considered to have inherent quality. Such critical research can present an important challenge to many of the assumptions made when describing the social environments of healthy or other chronic disease patients, namely, that networks are preferable to isolation, that more frequent and varied social contact is positive, and that certain types of relationships, such as with partners, are most supportive.

#### 1.4 Quality of life as treatment goal

As patient-evaluated quality of relationships yields more pertinent information than objective measures of partner status or network size, so too does *quality of life* (QoL) give more information about a patient's current life situation than measures of symptoms or other indicators of disease status. Given that improved medical therapies and technologies have increased life expectancies and prognoses, diagnoses of chronic and treatable diseases, rather than terminal, have increased, and morbidity and mortality are no longer sufficient outcomes for treatment evaluation.

Quality of life, “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,” is the most common patient-reported outcome and standard among chronic disease treatments (WHOQOL Group 1996). Quality of life attempts to capture an individual’s satisfaction with multiple domains of their life, such as health, contact with family and friends, autonomy, safety, and material security. *Health-related QoL*, in comparison, has a more narrow health focus on mobility, pain, and energy. Health-related QoL has unfortunately been used interchangeably with both health status and with overall QoL (Moons 2004). These indistinctions have recently led some to call for dropping the entire concept of health-related QoL in favor of separately measuring QoL and health status, which are readily understood as distinct concepts (Apers et al. 2013, Karimi and Brazier 2016). Health is but one aspect of QoL, and the focus of this thesis is on QoL as a whole.

The SUD field has lagged behind other clinical research in adopting QoL as a standard treatment outcome (Rudolf and Watts 2002, Zubaran and Foresti 2009, De Maeyer et al. 2010, Tiffany et al. 2012). This delayed interest may reflect the continued expectation that SUD is a curable disorder that should respond to acute treatment. A more critical explanation is that patients with SUD are seen as more culpable for their disease and its consequences, and therefore less worthy and less capable of evaluating treatment outcomes (De Maeyer et al. 2009, De Maeyer et al. 2010). Collecting QoL within the SUD treatment field is an important way of privileging SUD patients as having an expertise of their own lives and the ability to assess treatment consequences equal to other chronic disease patients – and, importantly, it acknowledges that improved wellbeing is more than reduced substance use. Indeed, while most cross-sectional studies point to substance use being related to poorer QoL, qualitative studies report that improved QoL, not reduced use per se, is the impetus behind treatment initiation (Laudet et al. 2009, Weiss et al. 2014).

It also acknowledges that measures of treatment success as determined by researchers, clinicians, and society at large are not necessarily measures of patients’ well-being. For example, employment is often used as an indicator of chronic disease treatment success, but an early pension or a disability pension may be the more preferred and appropriate situation for people with SUD with serious physical or mental multimorbidities. Similarly, other treatments wish to reduce medical services utilization, yet the recurrent, chronic nature of SUDs warrant continued treatment and regular and increased treatment utilization may

therefore be a positive outcome. OMT is in particular intended to be long-term, and being in treatment provides stability and the health care continuity that is needed for a chronic disease.

The impetus behind treatment retention efforts is to maintain the benefits accrued. Asking patients for their priorities and evaluations of non-medical outcomes, through collecting patient-reported outcomes such as QoL that query patients' satisfaction with work, living situations, transportation, relationships, and health, can focus clinical attention towards the areas that patients need or want more attention on or assistance with. Laudet et al. conducted qualitative interviews with 250 patients who dropped out of outpatient treatment. When asked how treatment could have retained them, the most common reason given was having further social service needs met (Laudet et al. 2009). QoL can thus also serve as a treatment quality indicator, and if vulnerabilities raised can be subsequently addressed, retention could improve.

### 1.5 Factors impacting quality of life

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

Consistent predictors of QoL change among people with SUD are few. Reduced substance use is most often assumed to be the main component of improved QoL. However, the latest reviews report no clear relationship between QoL and length of abstinence among people with SUD in general (Rudolf and Watts 2002) and alcohol dependents in particular (Foster et al. 1999, Dawson et al. 2009), and mixed results between QoL and addiction severity measures among treated opioid dependents (De Maeyer et al. 2010) and (in a single study) polysubstance-using inpatients (Colpaert et al. 2013). Reduced substance use did not improve health-related QoL among out-of-treatment stimulant users in Borders et al.'s study, which the authors suggest was due to the longer-lasting burden of physical health problems (Borders et al. 2009).

Most studies report significant improvements in QoL after initiating treatment (Donovan et al. 2005, De Maeyer et al. 2010, Feelemyer et al. 2014, Pasareanu et al. 2015, Vederhus et al. 2016). Among the few studies able to engage drop-outs, however, evidence is again mixed as

to whether dropping out negatively impacts QoL or health-related 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). In Article II, we compare the QoL changes of each of these three groups.

Among non-SUD groups, improved mental health is the most consistent predictor of improved QoL (Huppert and Smith 2001, Björkman and Hansson 2002, Fitzgerald et al. 2003, Ruggeri et al. 2005, Hansson and Bjorkman 2007, Heider et al. 2007, Ritsner et al. 2012, Fleury et al. 2013), supporting a focus on reducing psychiatric symptom burden in SUD treatment. These studies additionally found improvements in social network or social integration (Björkman and Hansson 2002, Hansson and Bjorkman 2007, Fleury et al. 2013), reduced substance use (Fleury et al. 2013), and financial resources (Heider et al. 2007) to improve QoL, with inconsistent results as to the effects of age, gender, and other sociodemographic factors.

The effects of time-varying independent variables on QoL in SUD research – i.e. changes, rather than baseline values – is still catching up. Recent studies have suggested that novel changes such as beginning to exercise can improve QoL among those in treatment (Roessler 2010, Muller and Clausen 2015). Such positive effects of exercise have also been found in studies among other groups with other mental and chronic illnesses (Schuch et al. 2011, Vancampfort et al. 2012, Dauwan et al. 2016, Cai et al. 2017), adolescents (Quaresma et al. 2014), and the elderly (Netuveli et al. 2006). These studies have hypothesized that exercise improves QoL directly and indirectly via improvements in self-esteem, self-efficacy, sleep quality, coping and affect regulation; reductions in psychological distress, fatigue and pain, and stress reactivity; and when implemented socially, by facilitating social contact and support. Improved social inclusion may improve QoL for those in SUD treatment (Best et al. 2013), again mirroring results among groups with other mental illness (Hansson and Bjorkman 2007) and adolescents (Quaresma et al. 2014). In Articles I and III, we included a range of under-explored factors, such as social isolation and exercise, in our analyses of correlates of QoL at treatment initiation and follow-up, and in Article II, we specifically examined changes in social network.

## 1.6 The assessment of quality of life

Minimum standards for QoL assessment have been set forth by the International Society for Quality of Life Research (Reeve et al. 2013). QoL instruments should be patient-reported,

rather than based on clinician or other external assessment. Instruments may be global/unidimensional, measuring a respondent's overall evaluation of their QoL, or multi-dimensional, considering separate domains of a respondent's life as separate facets of QoL. The domains measured should be deemed important by the responding population, which requires respondent input in questionnaire formation. The World Health Organization's WHOQOL tools are considered gold standards because of their methodologically rigorous development. At 25 culturally diverse field centers internationally and involving 15,000 healthy and clinical participants, experts developed a working definition of QoL, focus groups contributed domains and questions, questionnaires were piloted and refined, and reliability and validity were confirmed. The 100-item WHOQOL-100 contains six domains (physical, psychological, social relationships, environment, level of independence, and spirituality/religion/personal beliefs), while the 26-item WHOQOL-BREF reduces respondent and administrator burden by including only the first four domains.

In addition to classifying instruments as measuring either overall QoL or health-related QoL, instruments can be further typified by their intended respondents, as displayed in Table 1-a. A *generic* QoL instrument captures domains that are relevant to both healthy and disease populations, and provides measurements that are then comparable across groups. For example, the impact of exercise programs on QoL can be compared when implemented among persons with depression and those with SUD. Given that SUD are not yet consistently treated or evaluated as chronic disorders, the importance of cross-disease measures is even more important. Most generic instruments include mental health, physical health, and social domains. Two studies suggest that the domains important to people with SUD are similar to those resulting from the WHOQOL-100's development: first, social, health, and self-determination domains were emphasized by opioid dependents as relevant to their QoL (De Maeyer et al. 2010). Second, social and health items were again selected as most important in a validation study, while two out of three substance-specific items were among the least important (Zubaran et al. 2012).

A drawback to generic instruments may be that they are less responsive than *disease-specific instruments* developed specifically to measure the health-related QoL of that group (Wiebe et al. 2003, Ware et al. 2016). Responsiveness has not yet been compared between generic and disease-specific overall QoL instruments.



Table 1-a: QoL instrument typology and relevant example tools and items		
	QoL construct measured	
Intended population	Overall QoL	Health-related QoL
Generic	<ul style="list-style-type: none"> <li>• WHOQOL-100, WHOQOL-BREF</li> </ul> “To what extent do you have the opportunity for leisure activities?”	<ul style="list-style-type: none"> <li>• Short Form Health Survey</li> </ul> “Does your health limit you in climbing several flights of stairs?”
Disease-specific	<ul style="list-style-type: none"> <li>• WHOQOL-HIV</li> </ul> “To what extent are you bothered by people blaming you for your HIV status?”	<ul style="list-style-type: none"> <li>• Medical Outcomes Study HIV Health Survey</li> </ul> “How often during the last 4 weeks did you feel despair over your health problems?”

## 1.7 Objectives

The overall objective of this thesis was to examine changes in quality of life along with natural treatment progression and explore the relationship of these changes to under-researched social factors, in order to inform the clinical approach to patients’ social lives.

The specific aims were:

1. To identify patterns in poor quality of life at entry to SUD treatment, to aid in the identification of particularly vulnerable subgroups (Article I)
2. To examine how quality of life changes along with social network developments through the treatment course (Article II)
3. To validate and confirm the utility of a new quality of life instrument (Article III)

## 2 Material and methods

### 2.1 Study design: NorComt

This thesis draws data from the larger Norwegian Cohort of Patients in Opioid Maintenance Treatment and Other Drug Treatment (NorComt) study, a prospective, observational study involving 21 treatment facilities across Norway. NorComt was designed to increase understanding of factors impacting treatment adherence and outcomes, for a diverse patient population, and was developed from an earlier cost-effectiveness study with a similarly sized national sample (Melberg et al. 2003, Lauritzen et al. 2012). The information NorComt has collected from participants over time is extensive and much is novel: treatment interruptions and treatment goals; exposure to criminality as both victim and perpetrator; pets and social networks; and health-related behaviors such as exercise, smoking, and nutrition. Evaluations of treatment, experience with the treatment system as a whole, quality of life, and self-assessed changes in a range of life areas are also important components.

Study inclusion began in late 2012 and concluded in 2015. The first data collection point, T0, was at treatment start. Within an average of three weeks after treatment initiation, facility staff conducted 90-minute structured interviews with participants using the T0 questionnaire (Appendix I) after obtaining signed, informed consent and clarifying that non-participation and/or later withdrawal from NorComt would not impact treatment in any way. The NorComt research group had trained facility staff in interview procedures through a series of in-person trainings and training guides, and maintained a “frequently asked questions” section of the project website for interviewers. Participants consented to being contacted again at T1 (although were free to decline participation at T1 or to withdraw from the entire study at any time) and provided contact information for up to three persons who interviewers could later contact if they needed to reach participants.

The second data collection point, T1, was one year later; this phase began in 2013 and concluded in 2016. T1 interviews were conducted by NorComt project staff, comprised of myself, two other doctoral students, and two experienced and trained interviewers. Interviewers began initiating contact 11 months after T0 and spent up to six months attempting to schedule T1 interviews. If initial contact attempts failed, or if the participant or one of their contacts confirmed that the participant was in an active substance-using phase, interviewers waited a number of weeks before trying again. Interviewers travelled to participants in order to prevent being well enough to travel or meet from becoming a de facto criterion for participation at T1. Interviewers were flexible to last-minute changes and cancellations, whether they were due to social anxiety or a forgotten scheduling conflict, and continued trying to re-schedule even if a participant missed an interview. Finally, the follow-up interviews could, theoretically, have been completed online or by paper. But such strategies require access to a computer or a stable address, respectively, which we did not want to assume for a population often experiencing enhanced social and physical mobility and instability (Scott 2004). Participants were interviewed between 11-18 months after T0. The T1 questionnaire, attached as Appendix II, was similar to that used at T0. Continued participation was not dependent upon active treatment status or having completed a treatment course, participants were interviewed in locations of their choosing, including institutional settings, at home, and in public spaces.

NorComt has ethical and participant permission to link project data with various national health and welfare registries. These registries can provide additional longitudinal information about further treatment, income and employment, welfare benefits, and mortality.

## 2.2 Study population and subgroups

During the T0 data collection phase, 1,415 consecutively enrolled adults were identified as potentially relevant for this study when they began treatment in participating facilities. 670 were not considered for eligibility, primarily due to insufficient facility staff capacity to screen and other logistical problems, 129 declined, and 68 either did not respond or did not meet for the interview. 548 participants (74% of those eligible) enrolled in total.

62% (341) contributed data at T1. There were no differences in age, gender, substance use or treatment characteristics, 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%) prior to treatment initiation.

Figure 2-1 NorComt participant flow

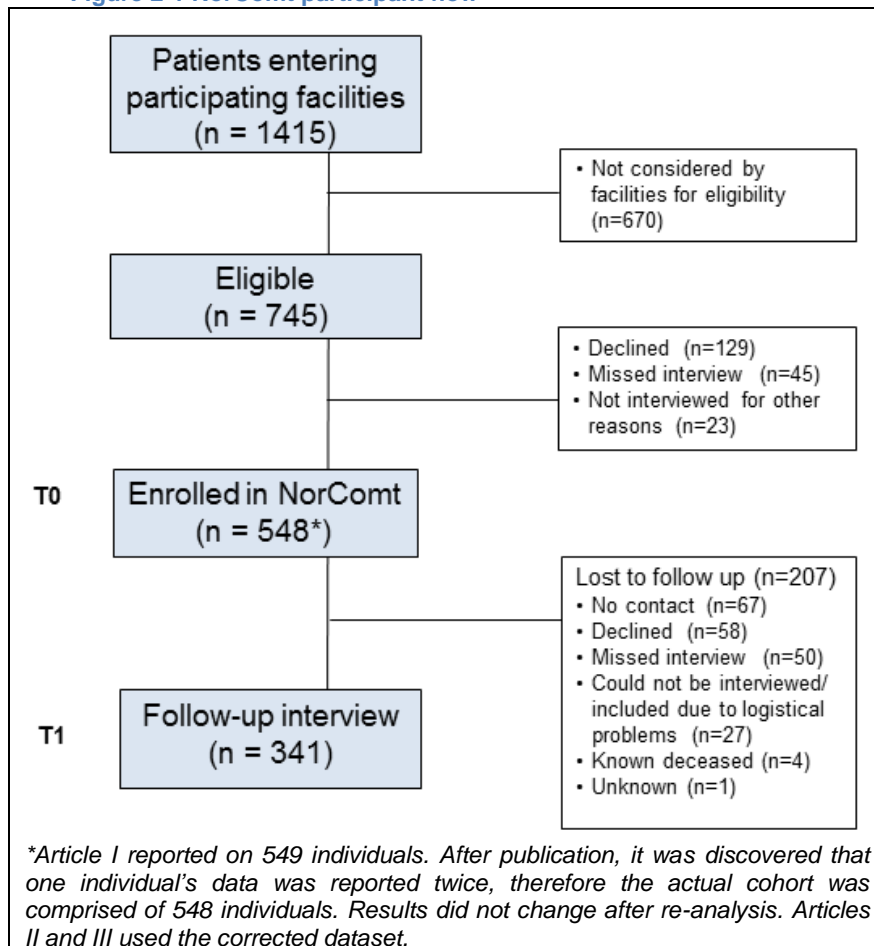


Table 2-a displays the study populations. Article I reports on the entire study population (n=548), and stratifies by gender. The cohort was also stratified by treatment type at inclusion (OMT or inpatient). The results were the same and therefore not reported in the paper.

Article II includes all participants who contributed data at both time points, and stratified by current treatment status. Three participants who were interviewed at T1 had to be excluded from the analysis due to missing treatment status at T1, leading to Article II including 338 participants. A subgroup analysis of gender was also conducted in Article II, but results did not change, and were not presented in the paper. A second subgroup analysis of treatment type (OMT or inpatient) at inclusion was also conducted.

Article III reports on a subsample of participants at T1. Ethical approval for a project amendment was granted to add a gold standard QoL measure to a sample of participants at follow-up so as to validate the embedded QoL tool, and 107 consecutively interviewed participants were administered this gold standard at the end of the normal follow-up interview.

	<b>Article I</b>	<b>Article II</b>	<b>Article III</b>
<b>N</b>	548	338	107
<b>Mean age (SD)</b>	33.7 (9.9)	T1: 35.1 (10.0)	T1: 35.7 (9.7)
<b>Female</b>	156 (28.4%)	99 (29.5%)	36 (33.6%)
<b>Period of observation</b>	T0	T0 & T1	T1

### 2.3 Measurements

An interview questionnaire was developed by NorComt project leaders, and based off of the standard Norwegian “patient intake form”; see Appendices I and II. This thesis used included measures of quality of life, social network and contact, mental and physical health, and substance use. Social network and contact were measured by two questions. The first came from the EuropASI, the European adaptation of the Addiction Severity Index: “With whom do you spend most of your free time?” and had five possible responses: alone (indicating social isolation), with substance-using family, with substance-using friends, with abstinent family, or with abstinent friends (Lauritzen and Ravndal 2004). In Articles I and II, responses were recoded into alone, substance-using network, or abstinent network. Article I additionally used the question, “with whom do you eat most of your meals?” and dichotomized into “alone” or, if patients selected friends, families, or others, “with others”.

Health variables included the Hopkins Symptoms Checklist-25, which produces subscores of anxiety and depression symptoms on a 0-4 scale (Article I), a cut-off over 1.0 that divides respondents into those with clinically concerning amounts of anxiety or depression symptoms (Article III), and an overall score of psychological distress on a 0-4 scale (Article II) (Ravndal and Lauritzen 2004). Physical activity was defined as more than twice weekly over the past six months, and the presence of additional chronic somatic diseases such as chronic

obstructive pulmonary disease, diabetes, HIV, and Hepatitis C was self-reported. Participants were also asked whether they evaluated their weight to be too low, too high, or appropriate.

Substance variables were also collected from the EuropASI. Participants reported their top four most commonly consumed substances/medications in the preceding six months. Their most commonly consumed was reported in Article I, while the presence of any substance among their top four were reported in Articles II and III.

The main QoL instrument measuring was the QOL10, embedded in the questionnaires at both start and follow-up. This tool originated from a single-item measure named the QOL1 (“how would you rate your quality of life?”), which was then developed into a five-item measure named the QOL5, and thereafter into the QOL10 (Lindholt et al. 2002, Ventegodt et al. 2009). Items were developed to apply to the general population, thus a generic instrument, and health was but one hypothesized domain (see Table 2-b), and so QOL10 was expected to measure overall QoL and not health-related QoL. The original two instruments had been validated as generic measures of overall QoL in psychiatric populations.

As the QOL10 had not been validated when baseline data was available, Article I used as an outcome the single-item measure that is identical to the overall measure of QoL included in the WHOQOL tools: “How would you rate your quality of life?”

In Article III, we explored the factor structure of the QOL10 and validated it against the gold standard of the WHOQOL-BREF (the English version is attached as Appendix III). The QOL10’s authors conceptualized it as containing three dimensions with two to four items each, as displayed in Table 2-b.

	<b>Domains</b>		
	Health	Overall QoL	Ability
<b>Items</b>	<ul style="list-style-type: none"> <li>• Physical health</li> <li>• Mental health</li> </ul>	<ul style="list-style-type: none"> <li>• Overall QoL</li> <li>• Feel about yourself</li> <li>• Relationship with friends</li> <li>• Relationship with partner</li> </ul>	<ul style="list-style-type: none"> <li>• Ability to love</li> <li>• Sexual functioning</li> <li>• Social functioning</li> <li>• Working ability</li> </ul>

Items in QOL10 are similar to those in the WHOQOL-BREF, displayed in Table 2-c, although domain structures differ. Both instruments utilize a 1-5 Likert-type scale.

Table 2-c: WHOQOL-BREF validated domain structure				
Domains				
	Physical	Psychological	Social relationships	Environment
<b>Items</b>	<ul style="list-style-type: none"> <li>• Activities of daily living</li> <li>• Dependence on medicinal substances and medical aids</li> <li>• Energy and fatigue</li> <li>• Mobility</li> <li>• Pain and discomfort</li> <li>• Sleep and rest</li> <li>• Work capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Bodily image and appearance</li> <li>• Negative feelings</li> <li>• Positive feelings</li> <li>• Self-esteem</li> <li>• Spirituality / Religion / Personal beliefs</li> <li>• Thinking, learning, memory and concentration</li> </ul>	<ul style="list-style-type: none"> <li>• Personal relationships</li> <li>• Social support</li> <li>• Sexual activity</li> </ul>	<ul style="list-style-type: none"> <li>• Financial resources</li> <li>• Freedom, physical safety and security</li> <li>• Health and social care: accessibility and quality</li> <li>• Home environment</li> <li>• Opportunities for acquiring new information and skills</li> <li>• Participation in and opportunities for recreation / leisure activities</li> <li>• Physical environment (pollution, noise, traffic, climate)</li> <li>• Transport</li> </ul>
	<i>Non-domain items:</i> <ul style="list-style-type: none"> <li>• Overall QoL</li> <li>• Overall health</li> </ul>			

Article II’s outcome measures were the two subscales of the QOL10 resulting from Article III’s analysis, calculated using the WHOQOL tools’ methodology.

Participants reported current treatment status at T1. If they were receiving any treatment, regardless of whether it was different from the type they began at T0 and if they had dropped out and subsequently re-entered, they were classified as “in treatment”; otherwise they reported having “completed” according to plan or having “dropped out”. For the remainder of this thesis, “drop-outs” refer to treatment drop-outs, not those lost to follow-up in the study itself.

In the final segment of the interview at T1, participants were shown a sheet with five stacked timelines, developed for a previous prospective, observational study (Melberg et al. 2003). The timelines were labeled “substance use”, “treatment”, “activities/work”, “housing”, and other “important life occurrences”, similar to the four outcome domains McLellan identifies as traditionally relevant to patients as well as society (substance use, health, social functioning, and public health and safety) (McLellan et al. 2005). Interviewers asked participants to help them fill in the details of these timelines from T0 to T1, with the broad instructions of identifying any events the participants felt had been important since they began treatment. Participants’ descriptions were often copied verbatim onto the timelines.

## 2.4 Data analysis

The three articles practiced different statistical methods, displayed in Table 2-d. SPSS versions 22-24 were used for all analyses.

<b>Table 2-d: Statistical analyses</b>			
	Article I	Article II	Article III
Multinomial logistic regression	X		
Student's t-tests (or Mann-U Whitney tests)	X		
Chi-square tests	X	X	
Analysis of variance		X	
General linear models with repeated measures		X	
Pearson's correlation coefficient		X	X
Factor analysis			X
Cronbach's alpha			X
Standard error of the mean			X
Point biserial correlation			X

In Article I, we wished to characterize incoming patients with the most impaired QoL by finding out which variables were associated with “very poor” QoL. The single-item QoL variable we used as the outcome had five ordered responses and could have been treated as an ordinal variable with five categories, preserving the maximum amount of data and allowing an ordinal logistic regression. However, responses were not distributed normally and therefore did not meet the stringent requirements of ordinal logistic regression. We collapsed the three highest, and smallest, categories (“neutral/good/very good”) into one and treated this as the reference category, against which “very poor” and “poor” were analyzed in a multinomial logistic regression, appropriate when response categories are not strictly ordinal. The relative risk ratios we present from the models show the likelihood of reporting “poor/very poor QoL” for those who had a risk factor (a predictor variable) compared to those who did not have that risk factor.

In Article II, we used the factor structure resulting from Article III, explained below, to calculate QoL scores at T0 and T1. We modeled these scores using general linear models (GLM) with repeated measures. This analysis is similar conceptually to running an analysis of variance (ANOVA) – hence the misnomer “repeated measures ANOVA” – which tests the equality of means between three or more groups, but an ANOVA requires measurements to be independent. In the case of this thesis, each participant’s QoL score at baseline was necessarily correlated to their QoL score at follow-up. A GLM with repeated measures accounts for such within-subject variation (i.e. individual QoL differences over time) while testing between-subject variation (i.e. differences in QoL change between groups). The between-subject variable was treatment group status in the first models and social network change in the second models. A statistically significant main effect of *time* indicates QoL changed between baseline and follow-up. For the first models, a significant interaction effect of *time* and *treatment group* indicates such QoL changes were of different magnitude for the different treatment status groups. In the second set of models, a significant interaction effect

of *time* and *social network* indicates these changes were different for the different network groups. Most simply, this analysis is testing the similarity of the slopes of the lines plotting each treatment group's QoL over time, and graphs provide helpful visualizations of main effects and interaction effects.

Article III used cross-sectional data from a sample of the first 107 participants interviewed at T1. In order to be able to say anything meaningful about changes in QoL over time, we needed to ensure that our tool, the QOL10, actually measured QoL (validity), and that it was free from measurement error (reliability). When working with a unidimensional scale, Cronbach's alpha can be interpreted as a confidence measure of the likelihood that the scale's items measure the same underlying construct. When a scale is multidimensional, however, as was hypothesized of the QOL10, Cronbach's alpha cannot be used. We conducted an exploratory factor analysis to explore the possible domain structure of the QOL10.

Factor analysis attempts to uncover a latent, i.e. unmeasured, variable called a *factor*, which explains the correlation between multiple observed variables, such as the items in a questionnaire. Factor analysis clusters, or "loads", items that correlate the most with each other onto a common factor, and the factor loading scores represent in turn the correlation of each item to that factor. Visualizing these clusters of items may uncover patterns, and a researcher could consider removing items with low loading scores ( $< 0.3$ ), allowing for the reduction of the questionnaire's items and burden on participants.

Finally, we selected three timelines from participants we interviewed at T1 who emphasized social networks or other social factors. We attempted to refrain from adding our own analysis of what had been important to their recovery. Rather, we used these timelines and direct quotes, QoL items and scores, and social network and substance variables to write short case reports illustrating the social contextualization of their QoL changes over the past year. Names were fictionalized and details that may have identified the participant or treatment facility were omitted or altered.

## 2.5 Ethics

This study was observational and did not provide or affect treatment. Written informed consent was collected and participants were informed at both study start and follow-up that their withdrawal from the study was possible and would not impact their treatment. Participant privacy was maintained through appropriate security measures in handling their personal information. A website was maintained with updates on the journal articles and



conference presentations created with NorComt data, and participants were given a business card with the website so that they could be informed of such research arising from their participation. Ethics approval was granted by the Norwegian regional ethics committee (REK 2012/1131).

Participants were understood to be, in general, members of a marginalized group that were often disempowered in medical research settings (Lloyd 2010). An additional commitment to participant respect and empowerment informed the methodology of follow-up data collection. This commitment was operationalized in the course of scheduling interviews, by interviewers explicitly telling participants that their voices and knowledge were necessary to research, and so important that the interviewers were traveling to them; in the course of interviews, by acknowledging and thanking participants for being willing to share such personal information; and by working to make the interview a positive experience and in a positive environment, through paying for coffees and sending personalized, positive thank-you messages, so that participants were better off after being interviewed.

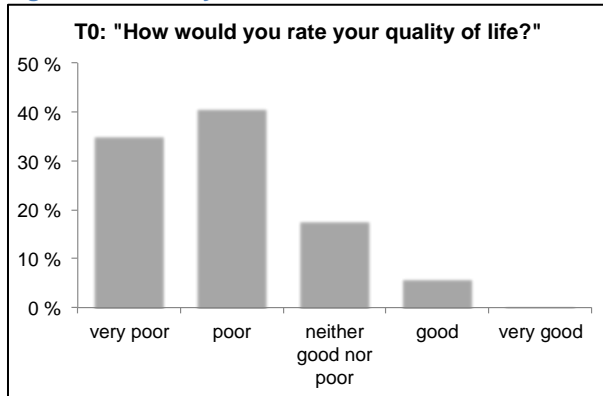
### 3 Results

#### 3.1 Aim 1: Quality of life and its correlates at treatment initiation

This exploratory analysis aimed at investigating the correlates of the poorest QoL at treatment entry, with attention to under-researched variables. Identifying a subgroup of patients with low QoL at treatment entry proved to be difficult, as the majority reported remarkably low QoL. Using a single item to measure overall QoL, 75.8% (414) reported their QoL as “very poor” or “poor”, 17.8% (97) as neutral, and 6% (33) as “good”, and only 0.4% (2) as “very good”; see Figure 3-1.

Most of variables tested for had insignificant bivariate relationships to QoL: partnered status, education, unemployment, recent injecting behavior, amount of previous SUD treatment, living situation, as well as heroin, cannabis, benzodiazepines, stimulants, or alcohol among one’s most commonly used substances in the six months prior to treatment entry.

**Figure 3-1: Quality of life at T0**



The subgroup analysis by gender proved fruitful. Although the distribution of QoL by gender did not differ significantly, the correlates of poor QoL were different for men than for women.

For men, physical inactivity was associated with very poor QoL (risk ratio [RRR] 2.0, 95% confidence interval [CI] 1.1–3.7), as

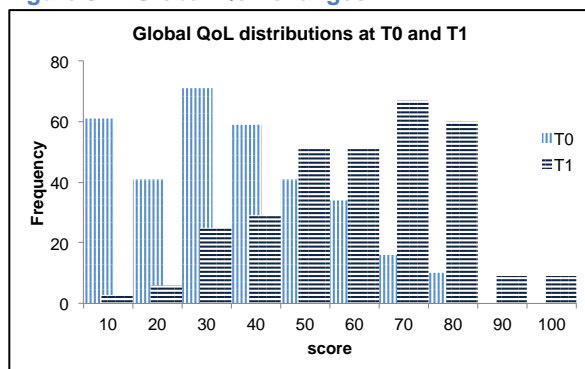
was reporting eating most meals alone (RRR 2.6, 1.4–4.8). Evaluating one’s weight as too low was also associated with poor QoL (RRR 2.0, 1.0–3.9) and very poor QoL (RRR 2.0, 1.1–3.7). Among women, in contrast, depression showed a strong association with poor QoL (RRR 3.3, 1.0–10.3) and very poor QoL (RRR 3.8, 1.2–11.8) Reporting OMT medications among one’s most-used substances/medications was protective for men reporting poor QoL (RRR 0.5, 0.3–0.9) and very poor QoL (RRR 0.4, 0.2–0.9), as well as for women reporting very poor QoL (RRR 0.2, 0.0–0.6).

### 3.2 Aim 2: Quality of life and social network changes throughout treatment

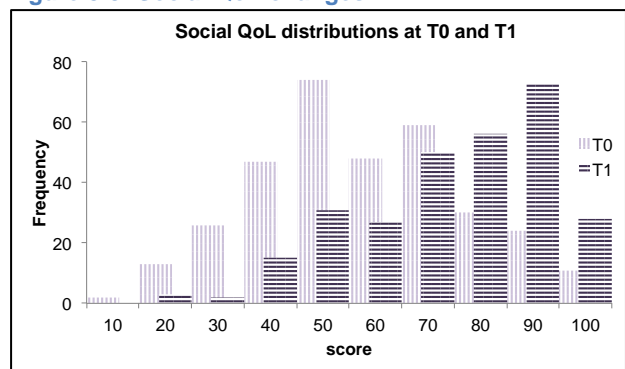
Both global and social QoL improved over the course of one year, with statistical and clinical significance (global QoL:  $F(1, 318)=327, p<0.001$ ; social QoL:  $F(1, 318)=327, p<0.001$ ).

Figure 3-2 and Figure 3-3 display the overlaid distributions of scores at both time points.

**Figure 3-2: Global QoL changes**



**Figure 3-3: Social QoL changes**



Along with QoL, social environments changed for many participants (see Supplementary Table 1 in Article II). Nearly all reported a stable housing situation (94.3%), and 36.3% were employed or studying. The average level of psychological distress remained above the cut-off for clinical concern. All substances were used by fewer participants with the exception of alcohol, reported by 27% of participants at both T0 and T1.

75% of participants were still receiving treatment at T1, while 15% had dropped out and 9% had completed treatment (all of the latter group represented those in inpatient treatment). At T1, nearly all completers reported an abstinent network (90.3%), compared to 61.4% of those in treatment and less than half of drop-outs (45.3%). Table 3-a was the basis for Figures 3a-f in Article II. Most notably, three-quarters of completers were able to build a new abstinent network over the past year, more than double the proportion of drop-outs (41.5%) and those remaining in treatment (35.6%). Drop-outs were more likely to report the same or a new substance using network (22.6% and 13.2%, respectively) than the other groups, while no completers reported a substance-using network at both T0 and T1.

	Current treatment status at T1					
	In treatment		Completed		Dropped out	
	N	%	N	%	N	%
Social network change**						
Gained abstinent network	90	35.6%	23	74.2%	22	41.5%
Maintained abstinent network	65	25.7%	5	16.1%	2	3.8%
Maintained substance-using network	35	13.8%	0	0.0%	12	22.6%
Gained substance-using network	16	6.3%	1	3.2%	7	13.2%
No network	47	18.6%	2	6.5%	10	18.9%

\* p<0.05, \*\*p<0.01, \*\*\*p<0.001

Given the emergence of social factors in Aim I's exploration of QoL correlates, we wished to investigate changes in social network along with changes in QoL between T0 and T1. We stratified the sample by current treatment status (remaining in treatment, completed, or dropped out), anticipating that treatment progression may impact both social network development and QoL.

Each treatment status group had begun the study with similarly low QoL. Each group also reported improvements of a similar magnitude (non-significant interaction effects of *time* and *treatment group* for global QoL:  $F(2, 316)=1, p=0.319$ ; and for social QoL:  $F(2, 313)=2, p=0.126$ ).

We then sought to rank the effects of social network changes on QoL, for each of these treatment status groups. The trend in each of treatment group, and statistically significant for those still in treatment (interaction of *time* and *social network change*:  $F(4, 231)=4, p=0.004$ ), was for participants who gained or maintained an abstinent network to report the largest gains in both types of QoL, and for participants who gained a substance-using network or were socially isolated to report the smallest, or clinically negligible, improvements.

These trends were also seen in subgroup analyses of women and men and of participants who began in OMT versus inpatient treatment. The exception was among those who had dropped out of OMT: social QoL did not improve as a function of time, but only for those who remained in treatment (interaction effect of *time* and *treatment group*:  $F(1, 158)=9, p=0.004$ ). Among drop-outs, social QoL did not improve over time, regardless of abstinent network development (Interaction effect of *time* and *social network*:  $F(3, 8)=0.4, p=0.779$ ). The most precipitous decline was reported by those who had dropped out of OMT and maintained a substance-using network.

### 3.3 Aim 3: The utility of a new quality of life tool

The included QoL tool, the generic QOL10, needed to be validated to ensure its usefulness in measuring QoL over time for Article III. We administered a gold standard QoL measure, the WHOQOL-BREF, to the first 107 participants who provided follow-up data, and validated the QOL10, as well as the embedded QOL5 and QOL1, against the WHOQOL-BREF. We also tested correlations with the QOL10's domains scores to groups previously reported to have differential QoL.

Rather than the hypothesized three-domain structure of overall QoL, health, and ability, our factor analysis suggested a two-domain structure that we described as *global QoL* and *social QoL*, as displayed in Table 3-b. We scored these domains to make their scores comparable to the WHOQOL tools, and we suggest using these domain scores rather than an overall QOL10 score.

Table 3-b: QOL10 domain structure after factor analysis		
	Domains	
	Global QoL	Social QoL
Items	<ul style="list-style-type: none"> <li>• Physical health</li> <li>• Mental health</li> <li>• Working ability</li> <li>• Feel about yourself</li> <li>• Overall QoL</li> </ul>	<ul style="list-style-type: none"> <li>• Ability to love</li> <li>• Sexual functioning</li> <li>• Social functioning</li> <li>• Relationship with friends</li> <li>• Relationship with partner</li> </ul>

Each of the QOL10 domains exhibited satisfactory content validity, internal validity, and construct validity. The social QoL domain had higher internal consistency ( $\alpha=0.771$ ) than the WHOQOL-BREF's social relationships domain ( $\alpha=0.541$ ). Both QOL10 domains were highly correlated with the WHOQOL-BREF domains, and in expected manners; for example, the QOL10 social domain had the highest correlation with the WHOQOL-BREF social relationships domain ( $r=0.680$ ). However, while the global domain, the QOL1, and the QOL5

all correlated negatively with symptoms of clinical anxiety, depression, and physical inactivity, the social domain was only weakly correlated to anxiety.

### 3.4 Case illustrations

The following illustrations are of three participants who highlighted changes in their social environments between when they entered treatment at T0 and when they were interviewed again at T1. To various extents and with both positive and negative influences, the participants discussed jobs, families, friends, activities, and their physical settings.

#### Case 1: Øyvind (31 yrs.)

Øyvind entered medication-free residential treatment when he had “nothing to show for being over 30 years old”: he had lost his apartment, lost his job, had no money, and had nothing to do. He did have a long-term girlfriend, though, with whom he spent most of his time, and he was one of the few participants who reported high social QoL at both time points. Having activities and people around him were the most significant additions to his life over the past year. He reported positively that treatment kept him extremely busy, with daily work, exercise, and group therapy (“the best part of treatment”) structuring nearly all of his time. Nine months after beginning treatment, he and his girlfriend began discussing moving in together. Her emotional support as well as simply her presence – someone waiting for him to visit over the weekend; a voice at the other end of the phone – had been vital. Øyvind and his treatment team agreed on a shortened treatment course so he could focus on organizing practicalities, many of them apartment-related, and after eleven months of treatment, he moved into a new apartment with his girlfriend. He has tried to maintain some of the old structure of treatment by exercising regularly, seeing a psychologist once a week, and working part-time. The exercise is also to combat the weight he gained during treatment, and he is less satisfied with his physical health than one year ago. But his self-esteem overall is higher, and his global QoL score has improved significantly.

#### Case 2: Matias (38 yrs.)

Before entering OMT, Matias had worked full-time, lived with his partner, had joint custody of his child from a previous relationship, and only within the past year had developed a heroin dependency that originated from prescription pain medications. When he lost custody, he took sick leave from his job and began isolating himself, but he also applied for OMT as a “long-term solution” to stabilize himself. Treatment

went as planned for the first four months, although he remained on sick leave. He entered inpatient treatment to receive more intensive services and after one week, relapsed; a five-day stint beginning on a Friday night with a dangerous amount of heroin. “I should have had to go back to detox, but the psychologist at the hospital let me come right back as an inpatient. I wouldn’t otherwise have been able to make myself start up [treatment] again. That flexibility was a life-saver.” Matias is still in inpatient treatment receiving OMT. His global QoL has improved, although it remains extremely low: he is still not able to work and unsure of his living situation when he leaves the hospital, as his partner was recently evicted because of financial problems. He reports more symptoms of clinical depression now than before treatment. His motivation, however, remains to regain custody of his child, and he has been entirely substance-free for ten months.

### Case 3: Ingrid (22 yrs.)

Ingrid reported clinically significant improvements in both global and social QoL between the time she entered medication-free inpatient treatment to when she was interviewed 13 months later. After her original plan of seven months’ treatment, she applied for and received an additional two months. Nothing in the rest of her life was ready for her to return – no job, no house, and no schedule – and she was thriving in treatment<sup>1</sup>; in addition, she had a one-month prison sentence to serve when she was finished. Prison was “very, very tough”, but if it taught her one thing, it was that she needed different people around her. Ingrid was 21 years old when she entered treatment and she had used a combination of pills, alcohol, and cannabis since she was eleven, and spent most of her time with friends who did the same. Not only did treatment provide some distance from this environment, but what she remembers spending the most time on during these nine months was working on her relationship with her older sister, who raised her. The combination of the work she did in treatment and the motivation she got from prison paid off: when she goes out for a drink now, she does so with a different group of friends. And while she has her own subsidized apartment, she spends half of her time at her sister’s house, where she allows herself to feel cared for (and receives better dinners than she could make herself). She has not

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<sup>1</sup> Ingrid’s wording in Norwegian, “fordi jeg trivdes så godt der”, lacks a corresponding English translation, although the literal translation of the verb “trives” is “to thrive”. This verb indicates that the subject (Ingrid) likes a setting (treatment), and that the setting is good for the subject.

yet repaired contact with her father, but the support she receives from her sister and her sister's family has been "more important than treatment itself".

## **4 Methodological considerations**

Studies aim to come as close as possible to the true value of a phenomenon, without error, or deviation from this value (Thelle 2015). Such errors are random when they deviate in equal distributions around the true value, but introduce systematic bias when they deviate in a certain direction. This section reviews the methodological weaknesses of NorComt's study design, the biases to which it is liable, and how these biases may have impacted our results. The first biases discussed relate to the study's internal validity, or how close measurements came to describing the sample's characteristics and changes, and thereby how valid the conclusions about the relationships found between QoL, treatment, and network variables are. This section concludes with reflections on external validity, the extent to which these results may be applicable to other populations and/or in different settings.

### **4.1 Study design**

NorComt did not implement the treatment given to participants, but observed participants who initiated various types of SUD treatment. Observational studies, unlike experimental designs, collect data from participants in settings that have not been manipulated by the study or researchers. Data may therefore be closer to "reality" of non-study settings, compared to data collected under conditions controlled by an experiment, and results may be more directly applicable to clinical practice. This point is discussed further in 4.5. The drawback of observational studies as non-experimental is that no group representing the counterfactual exists – QoL changes in a similar population that did not receive treatment were not measured. Non-experimental designs also preclude randomization, a technique in which errors should be distributed randomly between the group receiving the treatment and the group not, therefore by definition not confounders, which are variables related to the treatment (discussed in 4.4). Non-experimental designs must take particular care to address and reflect on potential selection and information biases.

### **4.2 Selection bias**

Selection bias describes when the study population, not randomly drawn from the target population, differs from the target population, is therefore not representative, and this difference at least partially explains the association between the treatment and outcome. All incoming patients were eligible for NorComt, specifically in an effort to maximize

representativeness (see Figure 2-1). However, 47.3% (670) out of all the participants who initiated treatment during the enrollment period were not given a chance to accept or decline participation, due to insufficient staff capacity to screen in time at the participating facilities. When planning large clinical studies in the future, a feasibility study should first be conducted to evaluate each facility's capacity to participate.

Self-selection bias, or volunteer bias, is another threat to internal validity. The 74% of patients who were presented with the project and agreed to participate may have differed from the 129 who declined, the 45 who agreed but did not meet for the interview, and the 23 for whom reasons are missing. Similarly, while the follow-up rate at T1 of 62% was acceptable for this population, those followed up with may differ from those who were lost to follow-up, which would indicate follow-up bias. There were no differences in baseline demographics, substance use, treatment characteristics, or QoL, although (unmeasured) events occurring between T0 and T1 or unmeasured characteristics could have led to some certain participants being available at T1 and others not.

The study design attempted to prevent interviewing only the “best-off” through several mechanisms, as discussed in section 2.1. Yet study participants lost to follow up are typically in poorer situations than those who maintain study participation, although both groups are heterogeneous and with mixes of successful and less successful outcomes. Interviewers obtained general evaluations of life situations of 84 of the 207 participants lost to follow up, either from participants themselves or their provided contacts, which were positive for 48% and negative for 52%. In contrast, most of those followed up with reported improved conditions such as less psychological distress and less substance use. The largest threat to internal validity foreseen, therefore, is that those lost to follow-up were in poorer situations, such as having dropped out of treatment, than those included at T1. Had more treatment drop-outs been included T1, a stronger relationship between dropping out and poor QoL may have been seen.

#### 4.3 Information bias

Information bias arises from the methods of data collection and measurement, which for NorComt were self-report data mainly through structured interviews using validated measures.

Interviews as data collection methods introduce the possibility of the interviewer eliciting inaccurate information from the participant, whether or not either party is conscious of this (Gail 2005). Recall bias, when a participant answers a question incorrectly based on memory,



is a common pitfall of self-reports contra biological samples, register data, or facility data. Recall bias can stem from the recall period being too long, or from certain events being more easily remembered than others. Random errors in memory are difficult to avoid, but only become bias if, for example, certain subgroups of participants were systematically more likely to recall something inaccurately than others. Cognitive impairment has been discussed with increasing frequency as an often unmeasured but potentially vital patient characteristic to address within SUD treatment. In their systematic review of risk factors for treatment drop-out, Brorsen et al. go so far as to suggest, “a reconceptualization of the patient group as *cognitively impaired patients with co-occurring substance abuse* rather than *substance users* might better reflect their treatment needs” ((Brorson et al. 2013), pg. 1017, original emphasis). Participants with cognitive impairments may have found the length of the interviews difficult, and the QoL tools burdensome due to their placement. QoL using the QOL10 was assessed in the second half of the interviews and the WHOQOL-BREF was administered at the end; if a portion of participants had stopped reflecting over their answers in order to hurry completion of the interview, it is likely their answers would have been random or tending towards a neutral response. The QoL of a cognitively impaired participant subgroup, which could be expected according to Brorsen et al. to have worse functioning and have dropped out of treatment at higher rates, may have therefore been over-reported. If this subgroup fell primarily into the drop-out group, the relationship between marginal QoL improvements and drop-out would in reality be stronger than observed.

Social desirability is of particular concern in interview situations and in self-reports in general, and refers to when participants answer a question falsely because of perceived pressure to present themselves or their answers in a particular way (Fadnes et al. 2009). Some participants may have wanted to show they had managed to distance themselves from their substance-using friend groups or networks in general, and answered at T1 that they had an abstinent network when they did not; Groh et al. reported this in a sample of residential patients on whom the pressure to avoid substance-using contacts was high (Groh et al. 2009). At the same time, Groh et al. and Latkin et al. reported that SUD patients demonstrating high social desirability reported smaller networks than those demonstrating low social desirability (Groh et al. 2009, Latkin et al. 2017), potentially because they did not count substance-using members. The small proportion of our sample who reported maintaining their substance-using network at T1, 14%, may have been an under-report, and participants who in fact maintained a substance-using network may have fell into the “new abstinent network” or “no network”

groups and thereby have been misclassified. Both of these studies found low effect sizes, and in our study, the false heterogeneity of the network change groups would have diluted any relationship to QoL, therefore the observed relationships are considered robust findings.

While underreporting substance use out of fear their answers will be made public or desire to avoid the judgement of the interviewer is common in the general population, several studies suggest it is less of an issue in the SUD population (Adair et al. 1996, Secades-Villa and Fernandez-Hermida 2003). One check conducted was the convergence at T1 between the substance use profile at the beginning of the interview, asking for the top four most commonly used substance in the past six months, and one of the final questions of the interview, asking participants to compare their substance use now in comparison with before they entered treatment, 11-18 months prior. When a participant indicated that they no longer used a substance, the substance profile was checked for the presence of that substance over the past six months, and the agreement between these two questions was 83% for opioids, 79% for cannabis, 71% for benzodiazepines, and 72% for alcohol. These questions are not only sources of both recall and social desirability bias, but also of different magnitudes of these biases – when asked to evaluate their current substance use in relation to previous, for example, participants may have been motivated to display progress, which they may not have felt when answering the earlier substance use profile unless they remembered their answers from a year ago. If a participant had stopped using a substance within the past six months, they would have answered that they no longer used it but it would likely have been reported in their substance use profile. Given these opportunities for discrepancy, the agreement between the two questions is encouraging, and an indicator of low levels of biased responses.

#### 4.4 Confounding

Confounding refers to when the relationship between the explanatory factor, such as a treatment or exposure, and outcome of interest is due to the presence of another variable (Thelle 2015). Confounding can distort the relationship between exposure and outcome and thereby inflate or deflate effect sizes, and when hypothesized confounders are measured, they can be addressed in statistical analyses through stratification or adjustment. Utilizing the precise terminology of directed acyclic graphs, a confounder variable affects both exposure and outcome and cannot be caused by the exposure or the outcome. This does not exclude situations where one variable causes the other, but a discreet time component must be chosen so that the graph does not display a cycle. A variable that is an intermediate step between the

two – caused by the exposure and in turn affecting the outcome – is identified as a mediator (Shrier and Platt 2008).

Given the correlations found between depression and anxiety and poor QoL in Article I, we tested for a correlation between psychological distress and QoL in Article II, and found that psychological distress was highly correlated with global QoL at T1. Distress scores were added as covariates in all global QoL repeated measures analyses in order to model global QoL as if all participants had the same amount of distress (Figure 4-2). QoL changes were magnified in the unadjusted models, with completers – the only treatment status group to report reduced psychological distress – showing greater gains in global QoL than drop-outs and those remaining in treatment (Figure 4-1). Psychological distress is thus a modifier that was appropriately addressed through adjustment in our analyses (Figure 4-3).

Figure 4-1 Global QoL over time, unadjusted

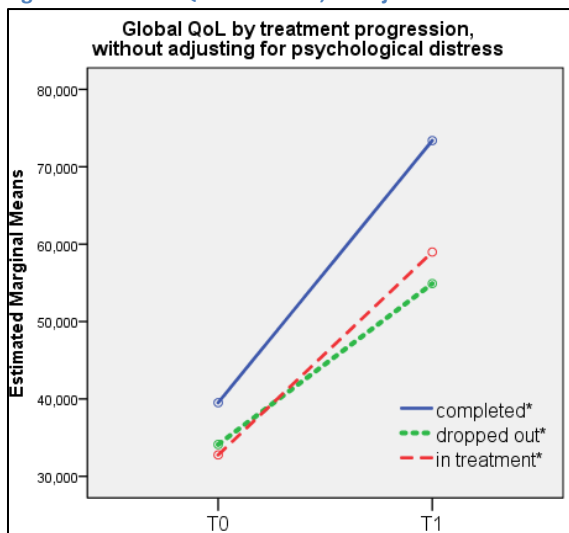
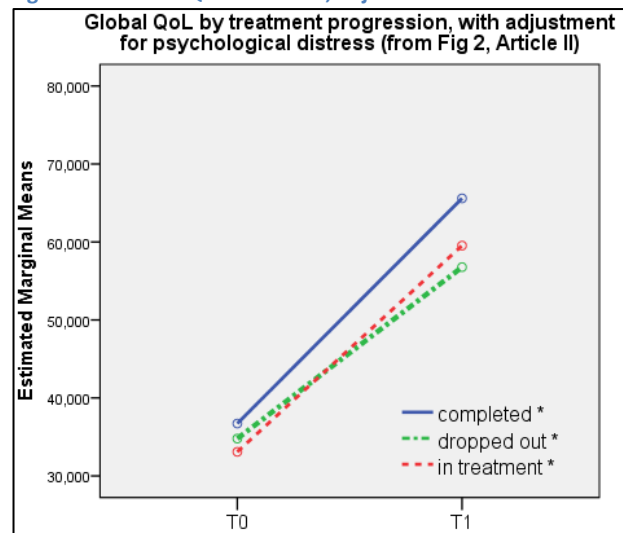


Figure 4-2 Global QoL over time, adjusted



In Article II, we suggested that developing an abstinent network may have led to clinically significant improvements in QoL. Cognitive impairment is a potential confounder of this relationship, as displayed in Figure 4-4. Participants with greater impairment may have been less able to connect to new networks, making them more likely to remain in substance-using networks or be isolated, and cognitive deficits may have impeded improvements in working ability or ability to adhere to a therapeutic treatment regime (Brorson et al. 2013), leading to smaller QoL improvements. This means the magnitude of the relationship observed between abstinent networks and improved QoL is likely larger than in reality, because a portion may be due to better cognitive functioning.

Figure 4-3 Directed acyclic graph with modifier

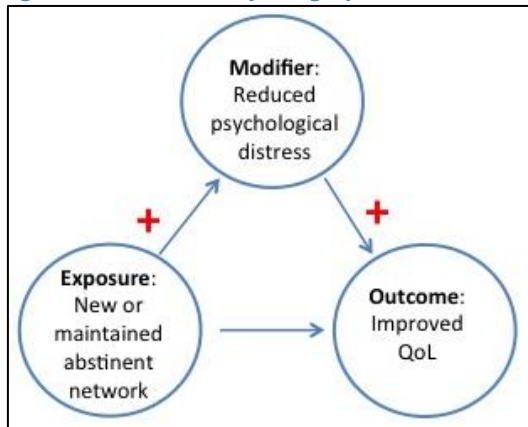
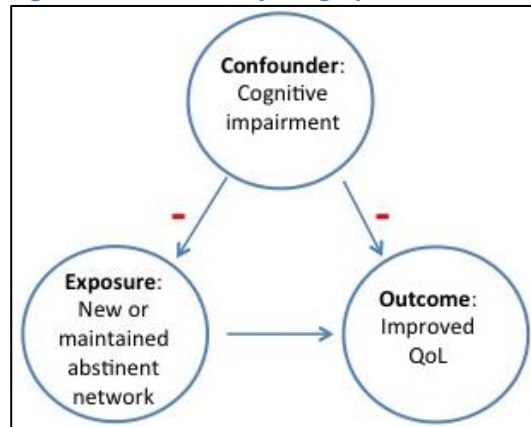


Figure 4-4 Directed acyclic graph with confounder



#### 4.5 External validity

A study with high external validity offers results that may be generalizable to other groups, such as the larger population from which the sample was drawn, or populations with similar characteristics in different settings. NorComt attempted to enroll a sample of patients at treatment initiation that were as representative of the larger SUD patient population in Norway as possible, primarily by not utilizing exclusion criteria. The facilities themselves, on the other hand, were a convenience sample, and those with greater staff capacity or research interest may have self-selected into NorComt. Nevertheless, similarities at baseline to Lauritzen et al’s longitudinal study of a heterogeneous treatment-seeking cohort (Lauritzen et al. 2012), a 19,000-person mental health services report from municipalities (Håland et al. 2015), and the most recent national OMT report suggest the NorComt sample can be generalizable to the larger SUD patient population in Norway (Waal et al. 2016).

By spending a large amount of resources on following up participants, and by not requiring adherence to treatment or even abstinence, NorComt attempted to make those followed up with again representative of the larger Norwegian SUD patient population one year after treatment. The 15% treatment drop-out rate among participants followed up with falls between the 10% one-year national attrition rate from OMT according to the national OMT Status Report (Waal et al. 2016) and to the 20% 18-month rate found by a registry study using data from 1997-2003 (Bukten et al. 2014). However, the majority of the treatment drop-outs available at follow-up had begun in inpatient treatment, and our drop-out rate was far below a previous study’s 59% three-year attrition rate from inpatient treatment (Melberg et al. 2003). (The latter defined drop out strictly as from the institution of treatment initiation, whereas drop out in Article II was defined as a lack of re-engagement with any other type of treatment,

lending us a lower rate.) It is still likely that a portion of treatment drop-outs in our study were also lost to follow-up, so the treatment drop-outs reported on may not be representative of all drop-outs in Norway

The characteristics reported in Article I, such as the high burdens of anxiety and depression, low levels of employment and secondary education compared to the general population, physical inactivity, norm of polysubstance use, and history of previous treatment experiences, have been reported among SUD populations in other international reviews and epidemiologic studies (Read et al. 2001, Galea et al. 2004, Grant et al. 2004, Dennis and Scott 2007, Abrantes et al. 2011, Grant et al. 2012, Mathiesen et al. 2012, UNODC 2016). Comparing treatment drop-out rates internationally is difficult, because the Norwegian treatment system offers longer treatment courses than other countries. The inpatient courses in NorComt were intended for 9-12 months, while the most comprehensive examination of duration by treatment modality to date, the Drug Abuse Treatment Outcomes Study (DATOS) in the United States, expected six months of long-term residential and one month of short-term inpatient treatment (Hubbard et al. 2003). The DATOS study reported a 14% one-year drop-out rate from OMT and 47% six-month drop-out rate from long-term residential treatment (Hubbard et al. 1997). Again, the treatment drop-outs available at T1 with may not be representative of all treatment drop-outs. This would not affect the generalizability of our findings related to QoL and network changes among the other two treatment status groups – completers and those in treatment – to other SUD populations internationally with similar characteristics.

The associations between treatment retention, abstinent networks, and improved QoL presented in this thesis are considered relatively robust, as the overall impression is that no major known mechanisms of selection bias, information bias, or confounding have severely impacted the results, although this cannot be ruled out.

## **5 Discussion of results**

This thesis explored the QoL and its correlates of incoming substance use disorder patients, and measured changes in QoL after one year, with attention to social network development and natural treatment progression. An interest in the impact of the social environment – the immediate physical and social settings in which one lives – on QoL predicated the selection of social and treatment variables.

### 5.1 Quality of life and its correlates at treatment initiation

The panel of physical and mental problems, precarious living situations, and separation from the labor market at treatment initiation, in addition to polysubstance use, daily use, and injecting, helps illuminate the severity of situations that many incoming patients find themselves in.

These vulnerabilities have been reported in similar proportions among heterogeneous treatment-seekers internationally (Dennis et al. 2005, Havinga et al. 2014, UNODC 2016). The sociodemographics, unemployment, and homelessness rates in our sample closely mirrored those reported by a 2015 report of 19,000 people identified by their municipalities in Norway as having substance issues (Håland et al. 2015). Social network composition in our sample was nearly identical to Lauritzen et al.'s Norwegian study from 1998: half of their sample 48% had a substance-using network and 23% had no network, compared to 50% and 17% of ours, respectively (Lauritzen et al. 2012).

Three-quarters of our sample reported poor or very poor QoL at treatment initiation, a lower average rating than reported by a sample of OMT patients in Malaysia (Lua and Talib 2012) and a polysubstance-using inpatient sample in Belgium (Colpaert et al. 2013). The associations found between mental health and poor QoL are commonly reported among SUD samples in Norway (Vederhus et al. 2016) and internationally (Bizzarri et al. 2005, Colpaert et al. 2013). Among both genders, OMT medication was a protective factor against poor QoL. This was the only substance-specific correlate: a reminder that, while substance-related behavior may be considered the most relevant by clinicians, many patients enter with other burdens that should be specifically addressed as a part of treatment. These burdens could involve nutrition, weight, and physical activity, which have been reported in both Norwegian and American SUD samples (Cowan and Devine 2008, Warren et al. 2013, Nøkleby et al. 2014), but the Norwegian treatment system lacks a coordinated strategy to address these issues.

Fewer studies have explored QoL in connection to physical well-being measures. In our sample, weight dissatisfaction and physical inactivity were more associated with men's poorer QoL than addiction severity measures or typical demographic factors such as unemployment. One measure of social isolation was also clearly related to the worst QoL among men. This cross-sectional analysis cannot speak to causality, yet causal relationships between these factors and poorer QoL have been reported among other populations: social exclusion among

psychiatric patients (Fleury et al. 2013), experimentally induced physical inactivity among young, healthy adults (Edwards and Loprinzi 2017), and symptom severity among those with depression (Pan et al. 2012). Associations between dissatisfaction with one's body and weight and poorer QoL among both genders have also been reported (Cash and Fleming 2002, Mond et al. 2013).

Correspondingly, interventions to increase physical activity, address weight concerns, alleviate depressive symptoms, and increase social contact can and should be borrowed and adapted from other fields and integrated into SUD treatment, and the transferability of network interventions specifically are discussed in section 5.2 below. Exercise interventions provide the clearest opportunities. The most recent reviews and meta-analyses have reported that exercise interventions improve QoL directly and indirectly among people with other chronic diseases such as depression (Schuch et al. 2016), diabetes mellitus (Cai et al. 2017), and schizophrenia (Dauwan et al. 2016), and two small studies have shown the same among SUD patients (Roessler 2010, Muller and Clausen 2015). The latter two studies emphasized the feasibility of exercise to even highly burdened patients within the treatment setting, perhaps contrary to clinical expectations.

The needs for social contact, exercise, and positive body image are not unique to SUD patients or even to people with other chronic diseases. Perhaps because SUD-specific health needs are prioritized, fewer evaluations of these factors have been conducted among SUD patients. Systematically collecting QoL and other patient-reported measures at treatment intake and throughout the treatment course is a way to allow patients to prioritize their own needs, and activities addressing these concerns can be included or developed for the clinical setting.

## 5.2 Quality of life and social network changes through treatment

At follow-up, global and social QoL had improved significantly for the entire cohort, although global QoL remained under population norms at T1 (Hanestad et al. 2004), as reported by other longitudinal studies (Karow et al. 2011, Baharom et al. 2012, Tracy et al. 2012, Feelemyer et al. 2014). And while substance use within one's network had not been related to baseline QoL, network composition became more important as time progressed. Both global and social QoL were the highest for participants who gained or maintained an abstinent network since beginning treatment, and completers were far more able to do this than those who dropped out or those who were still in treatment.

Regarding changes in the larger social environment, the employment/studying rate of 36% at T1 was higher than the approximately 17% reported after one year in Lauritzen et al's ten-year Norwegian study (Lauritzen et al. 2012), but similar to other one-year employment rates from other heterogeneous samples in the United States (Hubbard et al. 2003, Morgenstern et al. 2009). More of our sample reported a substance-free network after one year (60%) than Lauritzen et al's after one year (48%). Our 18% isolation rate was nearly identical to Lauritzen et al. (23%) and to Güttinger et al's OMT sample after six years (20%) (Güttinger et al. 2003). It is concerning that these three samples reported the same rates of isolation at both treatment initiation and follow-up.

Lacking a network must flag attention at treatment entry. In our baseline analysis in Article I, one measure of a lack of social contact (eating most meals alone) was correlated with the poorest QoL among men. By T1, completers were half as likely to have reported social isolation at T0, although QoL itself at T0 did not predict treatment progression at T1. Entering treatment without any network might deprive one of important support for both QoL and treatment adherence. More qualitative than longitudinal studies have been conducted on the particular risks of social isolation among people with SUD. One qualitative study among older people with SUD reported, "loss of key relationships and social networks may have been an amplified and accelerated feature of ageing for participants as a consequence of their drug use over the life course", and suggested these losses increased isolation and further reduced recovery capital ((Roe et al. 2010), p.1974). Loneliness was identified as a trigger for relapse equally important as craving by Laudet et al's polysubstance user sample with co-occurring disorders (Laudet et al. 2004), and more important than craving by Newton et al's sample of methamphetamine users (Newton et al. 2009). Social isolation – even if self-induced, such as to distance oneself from substance-using network members, a technique described by Brown and Tracy (Brown et al. 2015) – and substance use may reinforce each other. Encouraging patients to separate themselves from people and places who support their substance use could be destructive if patients are not able to replace these networks.

At follow-up, those who were outside of the treatment system and who were isolated or with a new substance-using network represented a particularly vulnerable situation, with these participants reporting the smallest, or clinically insignificant, QoL changes. Ultimately, having any network at all does not appear good enough in terms of QoL improvement, if these networks are predominantly substance using. In our sample, completers were more likely than



drop-outs and those remaining in treatment to have entered with substance-using networks, yet they were far more likely to have diversified their substance-using networks into substance-free ones by follow-up. This could be through by excluding substance-using members, and/or including more abstinent members, either new or previously known. This was not the norm, however; less than half of our cohort was able to build an abstinent network since initiating treatment, and considering that those lost to follow-up were also likely to have been treatment drop-outs, building an abstinent network was probably not common among those lost to follow-up. Similarly, Min et al. examined primarily polysubstance-using women one year after entering various treatment modalities and reported that less than half were able to add abstinent members and exclude substance-using members (Min et al. 2013). Litt et al. followed alcohol use disorder patients for two years after treatment completion, and participants reported no increase in the amount of or contact with abstinent members of their networks (Litt et al. 2016).

Existing network interventions could be more universally included in treatment. Network Therapy recruits existing network members, from family to colleagues, to provide accountability and contact with the participant and as part of the therapeutic team (Galanter 2014). It appears important for those involved to be abstinent, however; Mason et al. reported that Peer Network Counseling among substance-using adolescents (without SUD diagnoses) resulted in positive substance outcomes only for the adolescents who entered counseling with abstinent networks (Mason et al. 2015). Motivated Stepped Care for OMT patients requires participants to include at least one abstinent network member who can help them further develop their abstinent network (Brooner and Kidorf 2002). Social Behavioral and Network Therapy adds to Stepped Care by thereafter working on reducing contact with substance-supporting network members, and is adapted to participants who lack a network (Copello 2002).

Without a specific network intervention, simply building a new abstinent network is understandably difficult for adults. Employment could be one avenue for accessing a new network. Best et al. reported that gaining work/studies was more related to improvements in each QoL domain of the WHOQOL-BREF than abstinence (Best et al. 2013). Less than half of our sample reported completing secondary school, however, so entry into the labor market cannot be expected over a short period of time. Other sources for new abstinent networks could be religious communities, mutual-help groups, or even sports clubs, but the ability and

willingness of adults to seek out and access these new sources without encouragement or guidance should not be taken for granted.

Evidence-based network interventions from other fields may also be of value. Multisystemic Therapy addresses individual, family, peer group, and community risk factors as multi-determinants of antisocial youth behavior (e.g. juvenile offenders and juvenile sexual offenders) (Henggeler 2012). This therapy first attempts to improve the immediate social environment of the family by strengthening parenting skills, positing that familial influences will then facilitate positive changes in a youth's peer group, school, and community, which will in turn "surround the youth with a context that better supports prosocial behavior" ((Henggeler 2012), p. 182). While most adults in our sample did not enter treatment embedded in a family context, mutual-help groups such as Narcotics Anonymous or Alcoholics Anonymous could provide equivalent sources of dedicated, abstinence-oriented support, whose members could then introduce individuals to their own abstinent social networks as well as support the individual's efforts to build their own.

While it may be hypothesized that new or maintained abstinent networks included social support and reflected healthier, recovery-oriented environments, the collection of which contributed to improved QoL, causal statements cannot be made because changes in social networks and QoL occurred during the same one-year period and could not be ordered temporally. This weakness bolsters McLellan et al. and others' argument for "concurrent recovery monitoring", in which patient-reported, patient-centered measures are collected not only at treatment initiation, completion, and post-treatment, but at regular intervals *throughout* treatment and post-treatment, including at intervals triggered by pre-specified behavioral changes (McLellan et al. 2005, DuPont et al. 2016). The benefits of this technique overlap for various stakeholders, but utility can be simplified thusly: for researchers, such repeated measures would allow for better determinations of directionality. Repeated measures could support Laudet's hypothesis that treatment-driven QoL improvements can provoke a positive feedback loop, wherein the opportunity cost that improved QoL represents provides further deterrence from substance use (Laudet et al. 2009). For clinicians, progress enables performance monitoring and uncovering unmet needs, and informs treatment direction and strategy. And for patients, if each measurement is immediately compared to the last, progress can be reviewed and can form the basis for conversations about positive or negative developments. Scott et al. have provided a replicable model of maintaining follow-up contact

and argue that the benefits of sustained contact make the resources spent necessary, and will “provide an ongoing opportunity to learn about factors that facilitate and prevent recovery”, rather than “a snapshot of the chronic nature” of SUD ((Scott 2004), p. 33).

McLellan suggests information can be collected by the clinician and ideally electronically, so that changes are graphically or otherwise available immediately for examination (McLellan et al. 2005). The benefit of short, easily administered tools with interpretable scores is clear. Many tools exist that are pertinent to the topics discussed here, such as the Social Support for Recovery Scale (Laudet et al. 2000) and the Important People Drug and Alcohol Interview (Zywiak et al. 2009) to chart network composition, social contact, and recovery-oriented support, and the QOL10 and WHOQOL tools to measure QoL. The advent of internet and application-based tools could allow for even more frequent administration outside of an office setting, as long as the patient has reliable access to a smart phone, tablet, or computer. Tools can be self-administered and scores calculated automatically and available to patients as well as sent to clinicians.

### 5.3 The utility of a new quality of life tool and methodological suggestions

The QOL10 provides short, clinically useful measures of social QoL and global QoL via two subscales. A particularly interesting finding from this validation study was that a social construct emerged out of a tool hypothesized to measure overall QoL. Social factors appear to make a unique contribution to QoL, supporting a conception of QoL beyond health status or satisfaction with health. I therefore agree with Apers, Karimi, and colleagues that because QoL is distinct from health, “health-related QoL” should more properly be entitled “satisfaction with health” (Apers et al. 2013, Karimi and Brazier 2016).

The QOL10 is presented as a generic instrument measuring overall QOL. Some researchers have called for the development of a disease-specific instrument measuring overall QoL among the SUD population, rather than other generic, overall instruments such as the widely used WHOQOL tools (Hubley and Palepu 2007, De Maeyer et al. 2010). Hubley et al, for example, assert that injecting drug users’ “distinct environment characterized by a high prevalence of infectious disease, crime, violence, and lack of stable housing” constitutes a different culture and setting to which QoL instruments developed among healthy populations are not sensitive ((Hubley and Palepu 2007), pg. 2). However, while the WHOQOL tools were not originally validated among SUD patients, they were validated among clinical populations and in settings of relative poverty and deprivation, e.g. in Harare, Zimbabwe,

with 32% of households under the poverty line (UNICEF 2015). Calls for SUD-specific instruments may more reflect the pushback against health-related QoL measures that purport to measure overall QoL but in truth measure health, rather than QoL being differently constituted for people with and without SUD. Separating the measurement of health status from QoL through dropping the misnomer of “health-related QoL” could re-focus the universal applicability of QoL across disease status. The more often generic instruments are used in different groups and after different interventions, the more comparable QoL outcomes will be.

While Article III concluded that the QOL10 had clinical utility, and the global domain performed as well as a single-item measure of overall QoL, adding items to the social domain may increase sensitivity. This could explain why social QoL was less sensitive to change in social network development than expected in Article II. Rather than the WHOQOL-BREF, however, whose social relationships domain has two fewer items and lower internal consistency, instruments with more items, and which ask about more than relationships, are recommended to better capture the complexity of social lives. The WHOQOL-100 has twelve items divided into three social-related domains (relationships, support, and sexuality), each of which has stronger internal consistency than the BREF’s social relationships domain (The WHOQOL Group 1998, Skevington et al. 2004); these three domains could be administered as one social QoL tool. Factor analysis could again be used to reduce the amount of items, as it is important for patient acceptability that short instruments be administered in clinical practice.

At the same time, there may have been a lack of statistical relationship between social QoL and social network change because participants’ social lives required more than one year to change. Re-gaining lost custody of a child, being hired by a former employer, trying to make amends with a family member whose financial and emotional support has been exhausted, and perhaps in general, building a new abstinent network take time. Rather than suggesting improvement in social networks and social QoL should not be expected in discrete time periods, a better conclusion is that continued care and continued monitoring are necessary to relay sustained benefits (McLellan 2002, McLellan et al. 2005, DuPont et al. 2016). The use of a short, easily interpretable tool such as the QOL10, or the three domains of the WHOQOL-100 as proposed earlier, present minimum respondent and administrator burden, which is particularly important if routinely administered in clinical practice. Further

psychometric testing of the QOL10 is recommended as per the International Society for Quality of Life Research's minimum standards, particularly test-retest reliability, social desirability bias, and confirmation of the minimal clinically important difference (Reeve et al. 2013).

#### 5.4 Reflections on case illustrations

The timelines that formed the basis for the case illustrations were a post-hoc method of tracking progress, and provide examples of the potential utility of concurrent recovery monitoring. The priorities that participants bring to treatment could guide the collaborative creation of a schedule for regularly checking in with clinicians and measuring QoL, social networks, health, and other recovery capital. Øyvind, for example, identified gains in activities and progress in an existing relationship as clear markers of recovery. Each step towards re-adding a desired activity in his life, such as meeting with an employment counselor or submitting at least three job applications, could trigger meetings with his clinician in which they review his progress and set future goals. A decline in desired exercise as indicated through a simple exercise self-report could trigger a referral to an exercise contact program or a subsidized gym membership (Baug 2010).

Work was also a priority for Matias, but more difficult to obtain. Answering the QOL10 to rate his working ability several times could either provide him evidence of progress that may not be formally reflected in gained employment, or could prompt discussions of what adjunct occupational services he may benefit from. He mentioned that losing his job led him to isolate himself, and his amount of social contact could also be regularly evaluated: if he begins to report more isolation after transitioning from inpatient to outpatient treatment, for example, he may benefit from increasing attendance to a mutual-help group or from reviewing with his clinician other potential sources of recovery-oriented support.

Regularly monitoring these factors could also provide continual feedback about changes that should be made or maintained. In Ingrid's case, treatment physically removed her from a substance-using friend network, and the treatment environment as well as the prison environment helped her gain insight as to the positive and negative roles of the people around her to her recovery. Treatment also gave her the tools to repair an important family relationship that formed the basis for a substance-free family network. None of these changes may have been priorities at treatment initiation. But rating her satisfaction with her social relationships before each group therapy session, for example, could have helped her enter the

group thinking about how support from her sister was increasing, and perhaps how less contact with her friends was having positive consequences.

The stories of Øyvind, Matias, and Ingrid are examples to illustrate the connections that some participants explicated between QoL and social environments, including networks, relationships, and activities. They are not necessarily representative of the entire cohort or of participants who had completed or remained in treatment at T1.

## **6 Clinical implications**

QoL measured at treatment initiation can reveal patient vulnerabilities that are less typically considered in a clinical setting. This thesis has suggested several novel contributors to SUD patients' QoL at treatment initiation and one year later, such as social contact, physical activity, and satisfaction with one's physical self, in addition to established factors of mental health. Each of these elements should be addressed in treatment alongside substance use itself in order to improve QoL, which requires an initial evaluation by the patient.

Knowing the variables that influence QoL can help focus treatment on patient-identified goals, and such orientation may improve treatment engagement and retention. Improved QoL should continue to be a systematic goal throughout treatment and follow-up, and can also serve as a treatment quality indicator. Overall QoL measures more than health, and the concept of health-related QoL reflects health status/satisfaction more than QoL itself.

One evidence-based intervention to improve QoL among other chronic disease groups is exercise. Numerous exercise interventions have already been developed among the SUD population that should be offered as adjunct treatments more often, and these along with nutrition counseling can form the basis for comprehensive lifestyle interventions. While the evidence base is strengthened for existing social network interventions developed for SUD patients, successful interventions from other fields could be adapted; any intervention must take care to address those without any network and adapt to those whose networks are primarily substance-using.

Measuring progress in each of these areas through comparing evaluations at treatment completion to those at treatment initiation may not suffice. Just as how the interventions mentioned above should be available in outpatient and community settings after inpatient or residential programs, i.e. as ongoing care rather than discrete interventions, corresponding measurements should also be repeated regularly. Monitoring could utilize internet and

application-based technology to allow for more frequent measurements without unnecessary clinical visits.

Social environments in particular deserve attention over time, as an abstinent network may support both treatment adherence and contribute to better QoL. Tools to chart network composition, social contact, and support can be administered regularly to help alert clinicians and patients to positive or negative developments. Clinicians must remember that patients may not be able to, and perhaps should not be encouraged to, separate themselves from their substance-using networks if the result would be a lack of any network, and a more appropriate focus may be on increasing the amount of abstinent members.

The gradient in QoL, abstinence in social networks, and individual substance use by the three treatment status groups provides further support for retention efforts. The low percentage of amount of drop-outs from OMT was encouraging, as this treatment is intended to be longer term, but more retention efforts must be given to inpatients. Assessing cognitive impairment may be one way to identify patients who are at risk for drop-out because they struggle with the communication and learning skills required during treatment.

## **7 Future research**

Routine measurement of QoL along with social outcomes and traditional treatment outcomes can answer outstanding knowledge gaps of how best to improve and maintain QoL among people with SUD. It remains to be explored whether improved QoL before substance use itself is reduced can lead to less substance use, for example, but the repeated, concurrent administration of QoL *and* substance use measurements could answer this question. Following up with participants once is only the first step. NorComt should continue to collect data, and at the minimum registry data that can provide health, employment, and treatment information. New studies should build in resources for sustained follow-up and explore electronic methods of monitoring recovery trajectories.

More knowledge is needed about how best to develop an abstinent network, particularly for those who have no existing contact with abstinent members. Research should begin with qualitative inquiries into patients' network-building ideas and the assistance they would like to receive. It is vital to pay attention to why some patients find it difficult to remove themselves from substance-using networks, such as how women's traditionally weaker economic situations often encourage maintaining relationships with substance users.

To answer the question posed in the introduction about the applicability of non-SUD social network and support research to the SUD population, I suggest that when thinking about ways to improve QoL in a treatment setting, SUD research need simply to look at other chronic disease groups: social environments matter. SUD research can in turn contribute to the larger social support and network research fields by eliciting evaluations of the *quality* of social environment characteristics. Participant-evaluated quality can challenge the assumptions made by the non-SUD field that certain environment characteristics, such as partner status or the presence of a network, are equivalent to support or quality indicators. “Objective”, researcher-defined quality measures should be critically reexamined, and ultimately defined by participants.



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## **Appendix II**

### **NorComt T1 Questionnaire**

Tiltaksnr

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Løpenr

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## Norsk oppfølgingsstudie av opioid-avhengige i behandling (NorComt)

1. oppfølgingsintervju  
for døgn- og LAR klienter

Inklusjonskriterier: 12 måneder etter første intervju.  
(ikke «veteraner»)

## Intervjuskjema

Samarbeid mellom SERAF, regionale LAR-sentre og  
rusbehandlingsinstitusjoner

SERAF 2014

**Kontaktpersoner:**

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## Hvis i LAR

LAR-medisiner i dag	
	Dose mg/dag
Subutex / buprenorfin	.....
Subuxone	.....
Metadon	.....
Annet	.....

Utleveringsordning LAR-medisin	
LAR-senter	<input type="checkbox"/>
Apotek	<input type="checkbox"/>
Fastlege	<input type="checkbox"/>
Hjemmesykepleier	<input type="checkbox"/>
Annet: .....	<input type="checkbox"/>

Henteordning for LAR-medisin	
	Antall dager per uke
Observervert inntak	.....
Ta med hjem-dosering	.....

Kontrolltiltak mht rusmiddelinntak	
	Antall ganger per uke
Urinprøvekontroller	.....
Spyttprøvekontroller	.....
Sporadiske spytt/urinprøvekontroller	<input type="checkbox"/> Nei
	<input type="checkbox"/> Ja

### Fødselsnummer

### Kjønn

 1 = Mann  
2 = Kvinne

### Dato for start kartlegging (NPR)

 dag     måned     år

### Behov for tolk

 1 = Ja  
2 = Nei

### Sivilstatus, per i dag

 0 = Ikke oppgitt  
1 = Aldri gift  
2 = Gift  
3 = Enke / enkemann  
4 = Separert  
5 = Skilt  
6 = Registrert partner (samboer)  
7 = Separert partner  
8 = Skilt partner  
9 = Gjenlevende partner

### Høyeste fullførte utdanning, per i dag

 1 = Ikke avsluttet grunnskole  
2 = Grunnskole  
3 = Videregående skole/gymnas/yrkesskoleutdanninger  
4 = Faglig yrkesutdanning  
5 = Treårig høyskole/universitet  
6 = Mer enn treårig høyskole/universitet  
9 = Ukjent

### Yrkesstatus, per i dag

 1 = Utenfor arbeidsmarkedet og ikke under utdanning  
2 = Heltidsjobb  
3 = Deltidsjobb  
4 = Under utdanning  
5 = Deltidsjobb og under utdanning  
9 = Ukjent

### Viktigste inntekt siste 4 uker

 1 = Lønnet arbeid  
2 = Forsørget  
3 = Arbeidsledighetstrygd  
4 = Syke-/rehabiliteringspenger  
5 = Atføringspenger  
6 = Uførepensjon  
7 = Alderspensjon  
8 = Sosial stønad  
9 = Annet  
10 = Ukjent  
11 = Studielån/stipend  
12 = Stønad til enslig forsørger

### Bor sammen med (NPR), per i dag (flere valg mulig)

 1 = Bor alene  
 2 = Bor i parforhold  
 3 = Bor sammen med venner  
 4 = Bor sammen med foreldre  
 5 = Bor sammen med barn under 18 år  
 6 = Bor sammen med barn over 18 år  
 7 = Bor sammen med andre  
 9 = Ukjent

### Boligforhold siste 4 uker (NPR)

 1 = Ingen bolig  
2 = Hospits/hybelhus/hotell  
3 = Institusjon  
4 = Egen privat bolig  
5 = Privat bolig eid av annen  
6 = Annet

### Hatt en stabil bosituasjon siste 4 uker

 1 = Ja  
2 = Nei  
9 = Ukjent

## Barn (NPR), per i dag

Antall egne barn uansett alder og bosituasjon (NPR)

### Alder og bosituasjon for barn under 18 år (NPR)

	0-6 år	7-12 år	13-17 år
Hjemmeboende barn (egne), angi antall	<input type="text"/>	<input type="text"/>	<input type="text"/>
Hjemmeboende barn (andres), angi antall	<input type="text"/>	<input type="text"/>	<input type="text"/>

### Tiltak for barn under 18 år (ikke NPR)

	Ikke behov	Bør iverksettes	Er iverksatt	Ukjent
Hjemmeboende barn (egne), angi antall	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Hjemmeboende barn (andres), angi antall	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

## Graviditet (NPR), per i dag

1 = Ja  
2 = Nei  
9 = Ukjent

**Antall uker gravid**  
(Eks.: 1 uke = 01; 2 uker = 02; 10 uker = 10)

## Testet for blodsmittevirus siste år?

Hepatitt B

Hepatitt C

HIV

1 = Ja  
2 = Nei  
9 = Ukjent

## Psykiske vansker/lidelser (NPR) siste 4 uker

### Siste 4 uker

(begge kolonnene må besvares for hvert spørsmål)  
1 = Ja 2 = Nei 9 = Ukjent

Hatt alvorlige depresjoner

Hatt alvorlig angst

Hatt vrangforestillinger/hallusinasjoner

Blitt forskrevet medisiner for et eller annet psykisk/følelsesmessig problem

Hatt alvorlige tanker om å ta livet av seg

## Forsøk på selvmord siste år

1 = Nei  
2 = Ja, ved overdose  
3 = Ja, på annen måte  
4 = Både ved overdose og på annen måte  
9 = Ukjent

## Mottatt profesjonell hjelp for psykiske vansker/lidelser siste år

1 = Ja  
2 = Nei  
9 = Ukjent

## Antall rusmidler brukt siste 6 måneder

**Angi antall rusmidler**  
(Eks.: 1 rusmiddel = 01; 2 rusmidler = 02;  
10 rusmidler = 10)

00 = Ingen  
99 = Ukjent

## Rusmiddel-/medikamentprofil siste 6 måneder

	Type rusmiddel/medikament(NPR) (Bruk koden nedenfor)	Inntaksmåte (NPR) (Bruk koden nedenfor)	Hvor ofte brukt siste 4 uker (NPR) (Bruk koden nedenfor)	Alder brukt første gang (NPR)	Hvor lenge problemfylt bruk (Antall år)
Mest brukte rusmiddel/ medikament	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
2. mest brukte	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
3. mest brukte	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
4. meste brukte	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> <input type="text"/>	<input type="text"/> <input type="text"/>
0 = Ingen 1 = Alkohol 2 = Cannabis 3 = Heroin/Opium 4 = Metadon, buprenorfin, andre opiat/opioider forskrevet i LAR- program 5 = Metadon, buprenorfin, andre opiat/opioider forskrevet utenfor LAR-program 6 = Metadon, buprenorfin, andre opiat/opioider ervert uten at forskrevet av lege 7 = Benzodiazepiner forskrevet av lege	8 = Benzodiazepiner ikke forskrevet av lege 9 = Andre vanedannende medikamenter 10 = Amfetamin 11 = Kokain 12 = Crack 13 = Andre sentralstimulerende midler 14 = LSD og likn. 15 = Ecstasy 16 = Løsemidler 17 = Rødsprit o.l 18 = Annet 99 = Ukjent	1 = Drikker/spiser 2 = Injiserer 3 = Røyker 4 = Sniffer 8 = Annet 9 = Ukjent	1 = Ikke brukt 2 = Sjeldnere enn 1 gang i uken 3 = Omtrent ukentlig 4 = 2-4 dager i uken 5 = 5-6 dager i uken 6 = Daglig 9 = Ukjent	99 = Ukjent	00 = Ikke 01 = Et år eller mindre 99 = Ukjent

### Brukt sprøyter siste år?

1 = Ja  
2 = Nei  
9 = Ukjent

### Sprøytebruk siste 4 uker (NPR)

1 = Ikke brukt sprøyte  
2 = Sjeldnere enn 1 gang i uken  
3 = Omtrent ukentlig  
4 = 2-4 dager i uken  
5 = Daglig eller nesten daglig  
9 = Ukjent

### Antall ganger overdose siste år

#### Antall for hvert av stoffområdene

Alkohol

Narkotika

Medikament

Kombinasjon

00 = Ingen ganger  
99 = Ukjent

## Kontrollert miljø

I løpet av de siste 30 dagene har du vært innlagt i det vi kan kalle et «kontrollert miljø»?

1 = Nei

2 = Fengsel

3 = Behandlingsinstitusjon for rusmiddelmissbrukere

4 = Somatisk sykehus

5 = Psykiatrisk sykehus/klinikk

6 = Bare avrusning/avgiftning

7 = Annet kontrollert miljø, spesifiser: .....

Var dette miljøet/behandling med LAR?

Nei

Ja

## Kjæledyr

Har du eget kjæledyr?

Nei  Hund  Katt  Fugl  Hest  Annet, spesifiser: .....

Dersom ja, hva er de viktigste grunnene til at du har eget kjæledyr?

Min beste venn

Har alltid hatt dyr

Føler trygghet

Ingen spesiell grunn

Liker dyr

Vet ikke

Enklere relasjon med dyr enn mennesker

Annet, spesifiser: .....

## Sosialt nettverk siste 6 måneder

Hvem er du mest sammen på fritiden vanligvis?

(Lengeværende kjæresteforhold defineres som familie/minst 1 år)

1 = Familie uten nåværende problemer med alkohol/stoff/medikamenter

2 = Familie med nåværende problemer med alkohol/stoff/medikamenter

3 = Venner uten nåværende problemer med alkohol/stoff/medikamenter

4 = Venner med nåværende problemer med alkohol/stoff/medikamenter

5 = Er mest alene

Hvor mange av dem du er mest sammen med er jevnlig involvert i kriminalitet (unntatt egen bruk og besittelse)

Ingen  De færreste  Omtrent halvparten  De fleste  Alle  Vet ikke / vil ikke svare



Utsatthet for kriminalitet siste år			
	Siste år		
	Nei	Ja	Ant ganger
Har du blitt frastjålet personlige ting som penger, mobiltelefon eller andre ting?	<input type="checkbox"/>	<input type="checkbox"/>	
Har du blitt utsatt for fysisk vold som førte til synlige merker eller skader på kroppen?	<input type="checkbox"/>	<input type="checkbox"/>	
Har du blitt utsatt for fysisk vold som ikke førte til synlige merker eller skader på kroppen?	<input type="checkbox"/>	<input type="checkbox"/>	
Har du blitt utsatt for trusler?	<input type="checkbox"/>	<input type="checkbox"/>	
	Siste året		
Har du noen gang <b>det siste året</b> blitt utsatt for seksuelt motivert vold, overgrep eller voldtekt, eller forsøk på dette?	<input type="checkbox"/>	<input type="checkbox"/>	

Hvem utførte kriminaliteten mot deg ved siste hendelse?			
<input type="checkbox"/> Ukjent person	<input type="checkbox"/> Bekjent/venn	<input type="checkbox"/> Person som brukte makt i sitt arbeid	
<input type="checkbox"/> Familie/partner	<input type="checkbox"/> Andre	<input type="checkbox"/> Vil ikke svare	

Egen kriminalitet det siste året			
	Siste år		
	Nei	Ja	Ant ganger
Har du vært involvert i kriminelle handlinger? (unntatt egen bruk og besittelse)	<input type="checkbox"/>	<input type="checkbox"/>	
Hvis Ja: Herunder vinningskriminalitet? (alle typer tyveri, bedrageri, innbrudd, heleri)	<input type="checkbox"/>	<input type="checkbox"/>	
Hvis Ja: Narkotikaforbrytelser? (unntatt egen bruk og besittelse, gjelder narkotika og doping, solgt, smuglet, tilvirket, annet)	<input type="checkbox"/>	<input type="checkbox"/>	
Hvis Ja: Voldskriminalitet? (Med vilje påført andre fysisk smerte/skade)	<input type="checkbox"/>	<input type="checkbox"/>	
Hvis Ja: Trafikk kriminalitet? (Kjørt ruspåvirket, uten førerkort, for fort, annet)	<input type="checkbox"/>	<input type="checkbox"/>	
Hvis Ja: Annen kriminalitet?	<input type="checkbox"/>	<input type="checkbox"/>	

LAR-medisin og kriminalitet det siste året				
	Nei	Ja	Ikke aktuelt	Ønsker ikke å svare
Har du siste år omsatt/byttet ditt eget LAR-medikament?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Har du siste år gitt bort/delt ditt eget LAR-medikament?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Har du siste år blitt frastjålet ditt eget LAR-medikament?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Har du siste år kjøpt illegalt LAR-medikament?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Soning det siste året				
	Nei	Ja	Ant ganger	Dersom soning, ant måneder totalt
Har du sonet dom i fengsel siste år?	<input type="checkbox"/>	<input type="checkbox"/>		

## SCL – 25. Hvor mye har du vært plaget av: (den siste uka)

(samme spørsmål i SCL-90)

	0	1	2	3	4
<i>Sett en ring rundt det svaret som passer deg best.</i>	Ikke i det hele tatt	Litt	Moderat	Ganske mye	Veldig mye
1. Hodepine	0	1	2	3	4
2. Skjelving	0	1	2	3	4
3. Matthet eller svimmelhet	0	1	2	3	4
4. Nervøsitet, indre uro	0	1	2	3	4
5. Plutselig frykt uten grunn	0	1	2	3	4
6. Stadig redd eller engstelig	0	1	2	3	4
7. Hjerterbank, hjerteslag som løper avgårde	0	1	2	3	4
8. Følelse av å være anspent, oppjaget	0	1	2	3	4
9. Anfall av angst eller panikk	0	1	2	3	4
10. Så rastløs at det er vanskelig å sitte stille	0	1	2	3	4
11. Mangel på energi, alt går langsommere enn vanlig	0	1	2	3	4
12. Lett for å klandre seg selv	0	1	2	3	4
13. Lett for å gråte	0	1	2	3	4
14. Tanker om å ta ditt liv	0	1	2	3	4
15. Dårlig matlyst	0	1	2	3	4
16. Søvnproblemer	0	1	2	3	4
17. Følelse av håpløshet med tanke på fremtiden	0	1	2	3	4
18. Nedtrykt, tungsindig	0	1	2	3	4
19. Følelse av ensomhet	0	1	2	3	4
20. Tap av seksuell lyst og interesse	0	1	2	3	4
21. Følelse av å være lur i en felle eller fanget	0	1	2	3	4
22. Mye bekymret eller urolig	0	1	2	3	4
23. Uten interesse for noe	0	1	2	3	4
24. Følelse av at alt er et slit	0	1	2	3	4
25. Følelse av å være unyttig	0	1	2	3	4

## Somatisk helse. Hvor mye har du vært plaget av: (siste 6 måneder)

Sett en ring rundt det svaret som passer deg best.

	0	1	2	3	4	Kronisk lidelse?	
	Ikke i det hele tatt	Litt	Moderat	Ganske mye	Veldig mye	(minst 3 mnd i løpet av siste halvår)	
						Ja	Nei
Fordøyelsesplager	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Diare	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Forstoppelse	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Luftveisplager	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Eksem	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Hudinfeksjoner	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Leddsmerter	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Hodepine	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Brystsmerter	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Svimmelhet	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Nedsatt hukommelse	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Synsforstyrrelser	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Urinveisplager	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Kjønnsykdommer	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Blodpropp	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>
Tann/tannkjøttplager	0	1	2	3	4	<input type="checkbox"/>	<input type="checkbox"/>

## Har du noen av de nevnte sykdommer per i dag?

	Ja	Nei	Ukjent/ vet ikke	Hvis Ja, har du i løpet av de siste 6 mnd fått behandling for din(e) sykdom(mer)?	
				Ja	Nei
	Diabetes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Høyt blodtrykk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hjertesykdom	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
KOLS	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Astma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hepatitt B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hepatitt C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levercirrose	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
HIV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Kreft	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Annet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## Nåværende livskvalitet

Sett en ring rundt det svaret som passer deg best.

		0	1	2	3	4
	Ikke aktuelt	Meget dårlig	Dårlig	Verken god/t eller dårlig	God/t	Meget god/t
Hvordan synes du selv din fysiske helse er?		0	1	2	3	4
Hvordan synes du selv din psykiske helse er?		0	1	2	3	4
Hvordan er ditt forhold til deg selv?		0	1	2	3	4
Hvordan er ditt forhold til dine venner?		0	1	2	3	4
Hvordan er ditt forhold til din partner?	<input type="checkbox"/>	0	1	2	3	4
Hvordan er din evne til å være glad i andre mennesker?		0	1	2	3	4
Hvordan fungerer du seksuelt?		0	1	2	3	4
Hvordan fungerer du sosialt?		0	1	2	3	4
Hvordan er din arbeidsevne?		0	1	2	3	4
Hvordan synes du kvaliteten på livet ditt er?		0	1	2	3	4
Hvordan er kontakten med din familie?		0	1	2	3	4
Hvordan er kontakten med egne barn?	<input type="checkbox"/>	0	1	2	3	4

## Mål på psykologisk avhengighet siste 4 uker

<i>Som du opplever det mht til rusmidler siste måned.</i>	0	1	2	3
	Aldri	Noen ganger	Ofte	Alltid
Tenker du at ditt forbruk av rusmidler er ute av kontroll?	0	1	2	3
Gjør tanken på å ikke ta rusmidler at du føler deg engstelig eller bekymret?	0	1	2	3
Bekymrer ditt forbruk av rusmidler deg?	0	1	2	3
Skulle du ønske du kunne klare å slutte?	0	1	2	3
	Ikke i det hele tatt	Litt vanskelig	Vanskelig	Umulig
Hvor vanskelig synes du det er å stoppe? (gjelder ikke LAR-medisiner)	0	1	2	3

## Selvkontroll

<i>Nedenfor skal du vurdere påstandene etter hvor godt de passer for deg.</i>	0	1	2	3	4
	Passer ikke det hele tatt	Litt	Moderat	Ganske mye	Passer svært godt
Jeg er flink til å motstå fristelser	0	1	2	3	4
Jeg synes det er vanskelig å endre dårlige vaner	0	1	2	3	4
Jeg er lat	0	1	2	3	4
Jeg sier upassende ting	0	1	2	3	4
Jeg gjør enkelte ting som er morsomt, selv om det ikke er bra for meg	0	1	2	3	4
Jeg motstår ting som er dårlig for meg	0	1	2	3	4
Jeg skulle ønske jeg hadde mer selvdisciplin	0	1	2	3	4
Folk vil si jeg har jerndisciplin	0	1	2	3	4
Ønsket om å ha det gøy forhindrer meg noen ganger i å få jobben gjort	0	1	2	3	4
Jeg har konsentrasjonsvansker	0	1	2	3	4
Jeg klarer å jobbe effektivt mot langsiktige mål	0	1	2	3	4
Enkelte ganger klarer jeg ikke å stoppe meg selv i å gjøre noe jeg vet er galt	0	1	2	3	4
Jeg handler ofte uten å ha vurdert alle alternativene	0	1	2	3	4

## Generelle matvaner siste 4 uker

Hvor mange måltider spiser du per dag?

Hvor mange varme måltider spiser du vanligvis per dag?

Hvor mange mellommåltider (snack) spiser du per dag?

Hvor mange brødmåltider spiser du vanligvis per dag?

Med hvem spiser du vanligvis dine måltider?

1 = Alene

2 = Med familie

3 = Med venner

4 = Med andre

## Generelle matvaner siste 4 uker

	0	1	2	3
<i>Sett en ring rundt det svaret som passer deg best.</i>	Aldri	Sjelden	Av og til	Ofte
Hvor ofte spiser du tilberedt mat som blir servert på for eksempel suppestasjoner/institusjon/værested?	0	1	2	3
Hvor ofte spiser du «fast food» (hamburgere, pizza, pølser etc) som et hovedmåltid?	0	1	2	3
Hvor ofte spiser du halvfabrikatmat (frossenpizza, supper etc) som du varmet selv?	0	1	2	3
Hvor ofte lager du/familiemedlem varme hjemmelagde måltider som du spiser?	0	1	2	3
Hvor ofte mottar du «matposer» fra for eksempel Frelsesarmeen?	0	1	2	3
Benytter du deg av kosttilskudd?	0	1	2	3

## Tobakksvaner siste 6 måneder

Røyker du tobakk?

1 = Ja  
2 = Nei

Bruker du snus?

1 = Ja  
2 = Nei

Hvis ja, hvor mange sigaretter daglig?

Hvis ja, antall dager per boks?

## Dopingmidler siste 6 måneder

Bruker du dopingmidler?

1 = Ja  
2 = Nei

Hvis ja, hvor mange ganger per uke?

Hvis ja, hvilken type dopingmidler?

Anabole steroider     Andre: .....

Hvis ja, bruker du sprøyter?

1 = Ja  
2 = Nei

## Fysisk trening siste 6 måneder

Driver du med fysisk trening, enten organisert eller i privat regi?

1 = Ja  
2 = Nei

Hvis ja, hva slags trening? .....

Hvis ja, hvor mange dager per uke?

## Høyde og vekt

Selvrapportert vekt i kilo

--	--	--

Selvrapportert høyde i cm

--	--	--

Hvordan vurderer du din egen vekt i dag?

For lav     Passe     For høy

## ADHD – selvrapporterings skjema for voksne-V1.1 (ASRS-V1.1)

<i>Kryss av for den ruten som best beskriver hvordan du har følt og oppført deg de siste 6 månedene.</i>	0	1	2	3	4
	Aldri	Sjelden	I blant	Ofte	Svært Ofte
Hvor ofte har du problemer med å avslutte en oppgave etter at de interessante delene er unnagjort?	0	1	2	3	4
Hvor ofte er det vanskelig for deg å få orden på ting når du skal utføre en oppgave som krever organisering?	0	1	2	3	4
Hvor ofte har du problemer med å huske avtaler eller forpliktelser?	0	1	2	3	4
Når du har en oppgave som krever at du tenker nøye igjennom det du skal gjøre, hvor ofte unngår eller utsetter du å begynne på den?	0	1	2	3	4
Hvor ofte sitter du og fikler med noe når du må sitte lenge i ro?	0	1	2	3	4
Hvor ofte føler du deg overdrevet aktiv og tvunget til å gjøre noe, som om du var drevet av en indre motor?	0	1	2	3	4

## Spørsmål om ADHD

	Nei	Ja
Har du noen gang lurt på om du har ADHD?	<input type="checkbox"/>	<input type="checkbox"/>
Har du noen gang vært utredet for ADHD?	<input type="checkbox"/>	<input type="checkbox"/>
Har du etter en utredning fått en ADHD diagnose?	<input type="checkbox"/>	<input type="checkbox"/>
Er du medisinert for ADHD?	<input type="checkbox"/>	<input type="checkbox"/>



Rusbehandling siste år  
(Eks.: 1 mnd = 01; 12 mndr = 12)

	Antall måneder	Fullført etter planen
Hvor mange måneder til sammen har du vært i døgnbehandling uten LAR siste år?	<input type="text"/> <input type="text"/>	<input type="checkbox"/>
Hvor mange måneder til sammen har du vært i døgnbehandling med LAR siste år?	<input type="text"/> <input type="text"/>	<input type="checkbox"/>
Hvor mange måneder til sammen har du vært i poliklinisk behandling uten LAR siste år?	<input type="text"/> <input type="text"/>	<input type="checkbox"/>
Hvor mange måneder til sammen har du vært i poliklinisk behandling med LAR siste år?	<input type="text"/> <input type="text"/>	<input type="checkbox"/>

Behandling psykisk/somatisk helse siste år  
(Eks.: 1 mnd = 01; 12 mndr = 12)

	Antall måneder	Fullført etter planen
Hvor mange måneder til sammen har du vært i poliklinisk behandling psykisk helse siste år?	<input type="text"/> <input type="text"/>	<input type="checkbox"/>
Hvor mange måneder til sammen har du vært i døgnbehandling psykisk helse siste år?	<input type="text"/> <input type="text"/>	<input type="checkbox"/>
Hvor mange måneder til sammen har du vært i poliklinisk behandling for somatikk (spesifikk lidelse) siste år?	<input type="text"/> <input type="text"/>	<input type="checkbox"/>
Hvor mange måneder til sammen har du vært i døgnbehandling for somatikk (sykehus e.l.) siste år?	<input type="text"/> <input type="text"/>	<input type="checkbox"/>

Behandlingsavbrudd siste år (indexbehandling)

Hvor mange avbrudd fra LAR har du hatt siste år? (Med avbrudd menes minst 30 dagers opphold fra LAR-medisiner)	<input type="text"/> <input type="text"/> <input type="checkbox"/> Ikke aktuelt
Hvor mange avbrudd fra døgnbehandling har du hatt siste år? (Med avbrudd menes utskrevet fra institusjon)	<input type="text"/> <input type="text"/> <input type="checkbox"/> Ikke aktuelt

Årsaker til avbrudd siste avbruddsepisode

LAR		Døgnbehandling	
<input type="checkbox"/> Ufrivillig utskrevet	<input type="checkbox"/> Frivillig behandlingsavbrudd	<input type="checkbox"/> Ufrivillig utskrevet	<input type="checkbox"/> Frivillig behandlingsavbrudd

## Årsak til siste behandlingsavbrudd (flere valg mulig)

<input type="checkbox"/> Rusmisbruk	<input type="checkbox"/> Ønske om nedtrapping og avslutning av LAR-medisin (planlagt)
<input type="checkbox"/> Manglende behandlingsnytte	<input type="checkbox"/> Bivirkninger av LAR-medisin
<input type="checkbox"/> Trusler og/eller vold mot pasient/ansatt	<input type="checkbox"/> Misnøye med regler og rammer under behandlingen
<input type="checkbox"/> Ønske om annen behandling	<input type="checkbox"/> Annet
<input type="checkbox"/> Misnøye med medikament (LAR eller annet)	

## Behandling/oppfølging i dag

Er du i behandling i dag?

- Nei
- Poliklinisk med LAR
- Poliklinisk uten LAR
- Døgn med LAR
- Døgn uten LAR

Hva er ditt behandlingsmål med dette behandlingsopplegget?

- 1 = Rehabilitering med rusfrihet
- 2 = Stabilisering med bedre rusmestring

Ønske for varighet av behandling?

(Eks.: 1 mnd = 001; 12 mndr = 012; 12 år = 144, Livslang = 999)

Vet ikke

Oppfølging fra hjelpeapparatet siste 6 mnd (flere valg er mulig)

<input type="checkbox"/> Individuell plan	<input type="checkbox"/> Ansvarsgruppemøter
<input type="checkbox"/> Bistand mht bolig	<input type="checkbox"/> Bistand kurs; skole, utdanning
<input type="checkbox"/> Bistand mht jobb	<input type="checkbox"/> Bistand sosiale aktiviteter
<input type="checkbox"/> Oppfølging somatisk helse	<input type="checkbox"/> Oppfølging psykisk helse
<input type="checkbox"/> Oppfølging ernæring	<input type="checkbox"/> Oppfølging fysisk aktivitet/trening
<input type="checkbox"/> Oppfølging LAR-medisin	<input type="checkbox"/> Forskrevet benzodiazepin
<input type="checkbox"/> Oppfølging økonomi	<input type="checkbox"/> Oppfølging hos fastlege

I forhold til tiden **før** du begynte i behandling, hvordan vurderer du **nå**

	Bedre	Som før	Dårligere	Uaktuelt	
Boligforhold	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Sosiale relasjoner til venner/familie	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Deltagelse i rusfrie nettverk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Psykiske helse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Kroppslige helse	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Ernæringsstatus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Samlet vurdering av livssituasjon/kvalitet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Ikke lenger	Mindre	Som før	Større/mer	Uaktuelt
Samlet rusmiddelforbruk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bruk av alkohol	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bruk av benzodiazepiner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bruk av opioider (inkl heroin) (ikke LAR-medisin)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bruk av cannabis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Bruk av andre illegale rusmiddel	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Deltagelse i kriminell aktivitet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Utsatthet for kriminalitet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Grad av oppfølging fra hjelpeapparatet/helsevesen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Behov for ytterligere behandling for rusproblem	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Godt	Både og	Dårlig		
Hvordan har behandlingen fungert i forhold til dine forventninger?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Samlet sett hvor fornøyd er du med behandlingen?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

BEHANDLING



RUSBRUK



BOFORHOLD



AKTIVITET/ARBEID



Viktige livshendelser (+/-)



## **Appendix III**

### **NorComt T1 Additional Questionnaire – WHOQOL-BREF**

Please read each question, assess your feelings, and circle the number on the scale for each question that gives the best answer for you.

		Very poor	Poor	Neither poor nor good	Good	Very good
1(G1)	How would you rate your quality of life?	1	2	3	4	5

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
2 (G4)	How satisfied are you with your health?	1	2	3	4	5

The following questions ask about **how much** you have experienced certain things in the last two weeks.

		Not at all	A little	A moderate amount	Very much	An extreme amount
3 (F1.4)	To what extent do you feel that physical pain prevents you from doing what you need to do?	1	2	3	4	5
4(F11.3)	How much do you need any medical treatment to function in your daily life?	1	2	3	4	5
5(F4.1)	How much do you enjoy life?	1	2	3	4	5
6(F24.2)	To what extent do you feel your life to be meaningful?	1	2	3	4	5

		Not at all	A little	A moderate amount	Very much	Extremely
7(F5.3)	How well are you able to concentrate?	1	2	3	4	5
8 (F16.1)	How safe do you feel in your daily life?	1	2	3	4	5
9 (F22.1)	How healthy is your physical environment?	1	2	3	4	5

The following questions ask about **how completely** you experience or were able to do certain things in the last two weeks.

		Not at all	A little	Moderately	Mostly	Completely
10 (F2.1)	Do you have enough energy for everyday life?	1	2	3	4	5
11 (F7.1)	Are you able to accept your bodily appearance?	1	2	3	4	5
12 (F18.1)	Have you enough money to meet your needs?	1	2	3	4	5
13 (F20.1)	How available to you is the information that you need in your day-to-day life?	1	2	3	4	5
14 (F21.1)	To what extent do you have the opportunity for leisure activities?	1	2	3	4	5

		Very poor	Poor	Neither	Good	Very good
--	--	-----------	------	---------	------	-----------

				poor nor good		
15 (F9.1)	How well are you able to get around?	1	2	3	4	5

The following questions ask you to say how **good or satisfied** you have felt about various aspects of your life over the last two weeks.

		Very dissatisfied	Dissatisfied	Neither satisfied nor dissatisfied	Satisfied	Very satisfied
16 (F3.3)	How satisfied are you with your sleep?	1	2	3	4	5
17 (F10.3)	How satisfied are you with your ability to perform your daily living activities?	1	2	3	4	5
18(F12.4)	How satisfied are you with your capacity for work?	1	2	3	4	5
19 (F6.3)	How satisfied are you with yourself?	1	2	3	4	5
20(F13.3)	How satisfied are you with your personal relationships?	1	2	3	4	5
21(F15.3)	How satisfied are you with your sex life?	1	2	3	4	5
22(F14.4)	How satisfied are you with the support you get from your friends?	1	2	3	4	5
23(F17.3)	How satisfied are you with the conditions of your living place?	1	2	3	4	5
24(F19.3)	How satisfied are you with your access to health services?	1	2	3	4	5
25(F23.3)	How satisfied are you with your transport?	1	2	3	4	5

The following question refers to **how often** you have felt or experienced certain things in the last two weeks.

		Never	Seldom	Quite often	Very often	Always
26 (F8.1)	How often do you have negative feelings such as blue mood, despair, anxiety, depression?	1	2	3	4	5

Did someone help you to fill out this form?.....

How long did it take to fill this form out?.....

**Do you have any comments about the assessment?**

.....  
.....

**THANK YOU FOR YOUR HELP**

## Errata list

Name of candidate: Ashley Elizabeth Muller

Title of thesis: Quality of life, substance use disorders, and social lives: Exploring one-year outcomes and intrinsic links

Abbreviations for different types of corrections:

Cor – correction of language

Cpltf – change of page layout or text format

<b>Page</b>	<b>Line</b>	<b>Footnote</b>	<b>Original text</b>	<b>Type of correction</b>	<b>Corrected text</b>
i	41		blank	Cpltf	«Article I ..... 53»
i	42		blank	Cpltf	«Article II.....63»
i	43		blank	Cpltf	«Article III.....82»
i	44		blank	Cpltf	« Appendix I.....90»
i	45		blank	Cpltf	«Appendix II.....105»
15	27		«0-3»	Cor	«0-4»
15	29		«0-3»	Cor	«0-4»
16	24		Table 2-C began	Cpltf	blank (inserted line break)