Very Integrated Program (VIP): Smoking and other lifestyles, co-morbidity and quality of life in patients undertaking treatment for alcohol and drug addiction in Sweden

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Abstract

Background Most patients with alcohol and drug addiction have other risky lifestyles and non-communicable diseases (NCDs), adding to their morbidity and pre-mortality. Those are, however, potentially preventable. The aim was to identify and compare the patients in treatment for alcohol and drug addiction and identify important factors for high risk.

Methods Data was collected prospectively by interviews, questionnaires, examinations and laboratory tests regarding demographics, smoking, overweight, malnutrition, sedentary lifestyle, heart, lung and liver diseases, diabetes and quality of life. High-risk was identified by >2 NCDs and risky lifestyles.

Results 322 (192 and 130) patients participated, aged 52 years in median (ranging 24-80) and 67% men. Only 7% had no other risky lifestyles and NCDs. 62% were smokers, 11% in risk of malnutrition, 36% physical inactive and BMI was 27 (17-50). Furthermore, 41% had cardiovascular illness, 27% liver and 25% respiratory diseases, and 7% diabetes. After adjustment for confounders, drug addiction was significantly associated to younger age (46 vs. 56 years; OR 0.92 [CI 0.89-0.94]), unemployment (85% vs 66%; 0.35 [0.17-0.72]) and liver disease (49% vs. 12%; 0.21 [0.11-0.40]). The high-risk group was significantly older and more often unemployed. Health-related quality of life was not different between the groups.

Conclusion The large majority of patients in treatment for alcohol and drug addiction have common risky lifestyles and NCD comorbidity. They also have similar conditions, including quality of life. This may be important when planning a future very intergrated program (VIP) of health promotion.

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Introduction

World-wide, alcohol and drug represent three and a half million of annual death, respectively, and cause more than 5% of the global disease burden (1;2). They are followed by serious consequences of social and mental health in addition to the increased morbidity and pre-mortality. Furthermore, patients with alcohol and drug addiction often have other risky lifestyles and non-communicable diseases. They include heavy smoking, poor nutrition and physical inactivity, as well as related illness, e.g. cardiac and lung diseases and diabetes; (3-6) all of which is adding to the detrimental effect of alcohol and drug on health, morbidity and mortality (7).

Obviously, the priority is and should be on the addiction treatment per se, when patients seek help for alcohol and drug addiction. As in many other countries, the addiction treatment in Sweden follows national guidelines involving psychiatry and other specialist competences with a focus on dual diagnoses as well as psycho-social intervention (8). In the daily routines, the additional lifestyle factors are paid attention only to a lesser degree. In Sweden, the overall frequency of unhealthy lifestyles is not high compared to other countries; (7) only 9% of both women and men are smokers, 44% of women and 58% of men are overweight or obese, while 21% and 9%, respectively, have sedentary work. The life expectancy is long, 84 years for women and 81 for men in 2016 (9) and the health-related quality of life high (10).

Never-the-less, vulnerable and disadvantage groups are affected hard by the additional unhealthy lifestyles, which have a social gradient. As an example, the smoking rate and the pre-mortality are 2-4

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times higher among persons with psychiatric diseases, including substance use disorder (11-14). In Sweden, the smoking rate for this group has been reported up to 40-56% (15).

However, as the additional unhealthy lifestyles are in principle modifiable, there seems to be a further potential for improved health, morbidity and mortality, if including them in the addiction treatment. This would require a very integrated program (VIP). A relevant question to be answered is how patients in treatment for alcohol and drug additin may benefit from a similar program? A necessary step towards harvesting the potential for improvement via VIP targeting lifestyle intervention is to characterize the health profile of these patient groups.

Therefore, the aim of this study was to evaluate the additional unhealthy lifestyle, co-morbidity and quality of life among patients in treatment for alcohol and drug addiction. Furthermore, we wanted to identify important factors for high-risk patients.

Methods
Settings
This study was conducted on patients in treatment for alcohol and drug addiction at the Addiction Centre (four units) and the Integrated Community Care (Integrerad Närsjukvård) (one unit) in Malmö, Region Skåne in Southern Sweden. Patients were included from two wards of alcohol addiction & social integrated drug addiction and of socially non-integrated drug addiction, respectively, as well as one outpatient clinic for alcohol addiction and two for agonist treatment of heroin addiction. The Addiction Centre in Malmö served a population of 1.3 million inhabitants, about 13% of the total Swedish population. An average of 738 patients per year were seeking care in the study period.

Design
This study was a comprehensive survey with data collection via interviews, questionnaires, physical examination and laboratory tests (protocol published in clinicaltrials.gov, NCT01414907).

Participants
All patients seeking care were considered for recruitment. The recruitment was conducted by the contact persons from nursing staff in each unit and the recruitment was conducted in the period April 2011 to September 2013. A total number of 538 patients were considered eligible and were contacted for inclusion in the study, of which 322 (60%) patients entered the survey after informed consent (Figure 1). Patients with both alcohol and drug addiction were grouped according to the clinical action diagnosis.

All adult out-patients or hospitalized patients with a diagnosis of alcohol or drug addiction according to the ICD-10 criteria (16) were considered eligible for inclusion. The exclusion criteria were pregnant or breastfeeding women, withdrawal of informed consent or missing capability to give informed content due to active psychoses, delirium, seizures, dementia, heavy influence of alcohol and/or drugs, loss of consciences, age <18 years or language barriers.

Data collection
After inclusion, the patients were screened for health determinants according to the international Health Promotion Hospitals Data form (17) and for the following non-communicable diseases (NCD co-morbidity); heart and lung disease, diabetes, and liver injury categorized into compensated and in-compensated co-morbidity. Patients with a new diagnose or in-compensated co-morbidity were referred to the primary care or specialists according to the guidelines of the addiction centres.

Figure 1 Trial profile
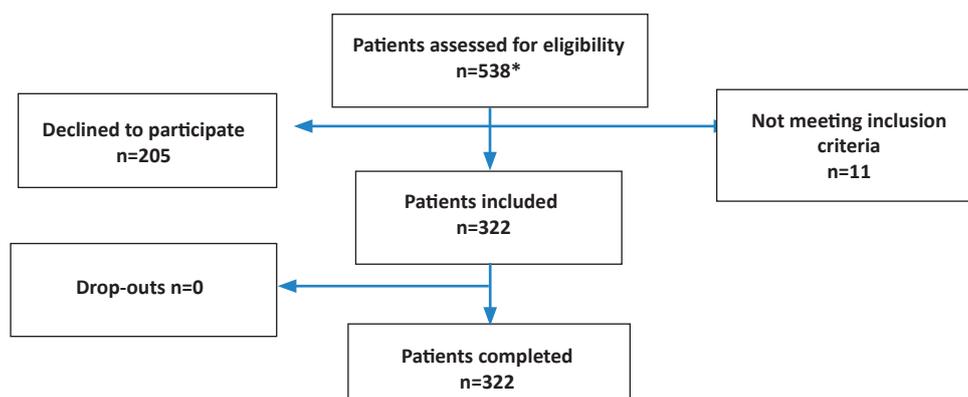
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Lung disease: The history and symptoms were registered by the MRC breathlessness scale (18). The lung function was measured by spirometry (PC Spirometry with Schiller Spirosensor SP 250 and on-board SEMA Data Management Software), and the concentration of oxygen and carbon monoxide in blood (Pulse Oximeter MD300C2; NeoMed CO-Check).

Heart disease: The history and symptoms were registered by the New York Heart Association functional classification system (19). The tests were ECG (Schiller Cardiovit AT-101), pulse and blood pressure (Pulse Oximeter MD300C2 and Panasonic EW3106 blood pressure monitor).

Diabetes: The history was registered together with blood glucose (HemuCue Glucose 201RT), and urine test for sugar, protein and ketoses (Roche Combur-Test® strips).

Liver disease: The history was registered together with analyses of liver enzymes (ALAT, ASAT) and antibodies for hepatitis.

All patients completed the SF-36 questionnaire for self-evaluated health and functionality (20).

After the data collection, the results were communicated to all patients orally and in written. Based on the results, the patients were offered a tailored brief intervention of about 5-10 minutes.

Outcomes and definitions

The outcome measures were the prevalence of smoking, overweight, risk of malnourishment, physical inactivity as well as the NCDs: cardiovascular illness, lung diseases, diabetes and liver diseases.

We defined the patients as current smokers or snuff users if they responded affirmatively to the question "Are you smoking / using snuff daily?". The overweight was defined as the Body Mass Index (BMI) more than 25 kg/m² or the waist measurement more than 80 centimetres for woman and 94 for man. The malnourishment was defined as the BMI less than 20.5 kg/m² or confirmed weight loss, reduced food intake or severe stress-metabolism according to the clinical ESPEN guidelines on national risk screening (21). The physical inactivity was defined as confirmed less than 30 minutes of physical activity per day.

The patients with two or more co-morbidities and two or more lifestyle related risk factors were defined as high-risk patients. The rest of the patients were regarded as low risk patients.

Ethical issues

The project was approved by the Scientific Ethical Committee (Dnr 2010/470) and the Swedish Data Protection Agency. The patients participated after informed consent.

Statistical methods

All data were continuously included in a research database and anonymously analysed for the description of the prevalence of health determinants and co-morbidity in alcohol and drug dependents at the Addiction Centre Malmo. All statistical analyses were conducted in IBM SPSS 23 statistics package. Health determinants and co-morbidity as well as quality of life were compared for patients with alcohol and drug addiction. Analyses for significant factors associated with high risk patients were performed using un-adjusted analyses followed by adjusted analyses presented as odds ratio (OR) and 95% confidence interval (CI). If the CI did not include the value 1, the result was considered significant.

Results

A total of 322 patients were included in the survey. Of these, 106 (33%) were women and 216 (67%) men, and 192 (60%) were diagnosed with alcohol addiction, while 130 (40%) were addicted to drugs, and 97 (30%) had both alcohol and drug addiction. Overall, only 23 (7%) patients had no lifestyle related risk factors in addition to the alcohol and drug addiction. A total of 93% patients had at least one and 54% patients had two or more additional risk factors. The prevalence of at least one NCDs was 70%, and 26% had two or more NCDs. Cardio-vascular diseases were most frequent (41%), followed by respiratory illness (25%) and liver diseases (27%), while fewer had diabetes (7%). Only 6 patients (2%) had no risk factors neither NCDs.

The un-adjusted analyses showed that the patients with drug addiction were more often unemployed, homeless, smoking and suffering from liver disease and at a younger age compared to patients with alcohol addiction, who had a higher frequency of cardiovascular diseases (table 1). The adjusted analyses confirmed the significant younger age (OR 0.92; CI 0.89-0.94) as well as more frequent unemployment (0.35; 0.17-0.72), homelessness (0.88; 0.41-1.93) and liver disease (0.21; 0.11-0.40) associated to drug addiction (table 1).

After adjustment, factors associated with the high-risk group defined by at least two lifestyle-related risk factors and two NCDs were older age and unemployment (table 2).

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Table 1 Characteristics of 322 patients (% or median and range) and comparison of patients with alcohol and drug addiction. The results are presented as un-adjusted and adjusted analyses with odds ratio (OR) and 95% confidence interval (CI); significant results are highlighted in bold.

	Total	Alcohol	Drug	non-adjusted	Adjusted
	322	192	130	OR (95% CI)	OR (95% CI)
Demographic data					
Age (1 missing)	52 (24-80)	56 (25-80)	46 (24-77)	**0.91 (0.89-0.93)**	**0.92 (0.89-0.94)**
Men (0 missing)	67%	69%	65%	0.86 (0.54-1.39)	
Married/living with partner (12 missing)	72%	67%	74%	0.64 (0.38-1.07)	
Unemployed (0 missing)	73%	66%	85%	**0.77 (0.68-0.88)**	**0.35 (0.17-0.72)**
Educational level after 9 to 12 years at basic level (11 missing)					
No or short	18%	16%	19%	0.80 (0.45-1.44)	
Up to three years	60%	59%	62%	0.91 (0.57-1.44)	
Three years or more	19%	21%	16%	1.36 (0.76-2.44)	
Housing (11 missing)					
Homeless	15%	11%	20%	**0.49 (0.26-0.91)**	0.88 (0.41-1.93)
Risky lifestyles (other than alcohol and drug addiction)					
Daily smokers (7 missing)	62%	53%	76%	**0.71 (0.60-0.83)**	0.58 (0.32-1.08)
Cigarettes smoked per day	20 (2-60)	20 (4-40)	20 (2-60)	1.01 (0.99-1.03)	
Daily snus users (12 missing)	24%	25%	24%	1.05 (0.71-1.56)	
Body mass index (0 missing)	27 (17-50)	27 (19-43)	26 (17-49)	0.99 (0.95-1.04)	
Risk of malnourishment (0 missing)	11%	9%	15%	0.51 (0.31-1.04)	
Physical inactivity (7 missing)	36%	34%	32%	1.09 (0.79-1.49)	
Non-communicable diseases (0 missing)					
Cardio-vascular diseases	41%	52%	25%	**2.09 (1.50-2.91)**	1.78 (0.97-3.25)
Respiratory illness	25%	27%	23%	1.17 (0.79-1.73)	
Diabetes	7%	9%	5%	1.91 (0.77-4.73)	
Liver disease	27%	12%	49%	**0.24 (0.16-0.37)**	**0.21 (0.11-0.40)**

There was no significant difference regarding the health related Quality of Life between patients with alcohol and drug addiction or between the high- and low-risk patients (figure 2).

Discussion

Overall, the study population represents a disadvantaged and frequently ill sub-group of the Swedish population. Though several similarities, the patients with alcohol and drug addiction have some significant differences. Patients in treatment for alcohol addiction were older, whereas patients in treatment for drug addiction were more often smokers and un-employed as well as having a higher prevalence of liver disease. Across the addiction groups, high-risk patients defined by at least two risky lifestyles and two NCD co-morbidities were older and more often unemployed. Interestingly, quality of life did not differ across the addiction groups or high- and low-risk groups.

Unhealthy lifestyles are frequent among patients with addiction. The very high rate of smoking among patients with drug addiction has also been described in the literature (22). Among patients with alcohol addiction, the prevalence of smoking has been reported higher, ranging 80-90% in studies from other countries (23;24) compared to 53% in our study. This may be due to the general low smoking rate of 13% in Sweden (25) and that the other studies may have been performed in earlier time, where the smoking rate was higher than today.
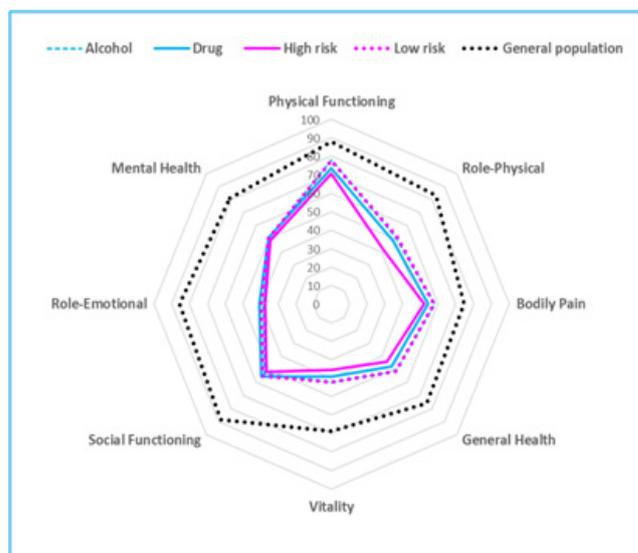
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Table 2 Characteristics of the 322 patients with alcohol and drug addiction categorized into a high-risk and a low-risk group covering other lifestyles and co-morbidity. The results are presented as un-adjusted and adjusted analyses with odds ratio (OR) and 95% confidence interval (CI); significant results are highlighted in bold.

	High risk 57	Low risk 265	Un-adjusted OR (95% CI)	Adjusted OR (95% CI)
Demographic data				
Age (1 missing)	56 (24-80)	52 (24-77)	**1.02 (1.00-1.05)**	**1.03 (1.00-1.07)**
Men (0 missing)	68%	67%	1.08 (0.58-2.00)	
Alcohol addiction (0 missing)	61%	60%	0.92 (0.51-1.65)	
Married/living with partner (11 missing)	26%	27%	0.97 (0.50-1.85)	
Unemployed (0 missing)	88%	70%	**3.05 (1.32-7.02)**	**2.46 (1.03-5.85)**
Educational level (11 missing)				
No or short	21%	17%	1.33 (0.65-2.72)	
Up to three years	60%	61%	0.96 (0.53-1.72)	
Three years or more	16%	20%	0.76 (0.35-1.65)	
Housing (11 missing)				
Homeless	21%	13%	0.64 (0.35-1.15)	

Figure 2 Results of the eight dimensions of SF-36 among the 322 patients categorized into alcohol and drug addiction as well as into high-risk and low-risk groups.

A recent observational study of 36, 370 adults with moderate to harmful drinking reported that 61% were physically inactive, i.e. physical activity less than 150 minutes per week (26). This number is almost two times higher than our findings. However, 150 minutes were lower than the definition of physical inactive used in our study; i.e. less than 210 minutes per week, and therefore more persons would be considered physical active in the previous study (26).

Many types of addiction are associated with serious deficiencies in nutrition (27;28). Our study did not find a significant difference between patients in treatment for alcohol and drug addiction. The reason could be due to national differences in healthcare and social support, but also to differences in the patient characteristics. All patients in our study were in contact with healthcare services. Thouh Sweden is a high-income country, about one of seven patients in our study were homeless at the time of inclusion, meaning that they had no permanent housing, but would be staying with friends or relatives, in shelters or even parks. Never-the-less, the routine addiction treatment in the recruiting units included social services (such as offering accomondation, food supply, family support and others) delivered by trained social workers according to need of the patients.

Chronic medical diseases are closely related to the addiction substance it-self as well as the additional lifestyles. This has been investigated in numerous cohort studies and meta-analyses (1-7). In our addiction study, the only significant difference was a higher frequency of liver diseases among the drug addicted patients that exceeded the prevalence of liver damage related to alcohol addiction. The communicable hepatitis (type B and C) is the main reason, which has also widely described in the available literature (29;30).

The results of this study impact our future research, as it seems that the core structure could be similar across the addiction groups, but that we rather than the mono-factorial health promoting, such as smoking cessation intervention exclusively, should consider a multi-factorial integrated program - also allowing individual tailoring. We have planned to evaluate and report the effect of such a VIP program in a randomised design at a later stage.

Bias and Limitations
This study has several bias and limitations. The inclusion rate of 60% may raise a selection bias. Unfortunately, we had no information about the non-included and cannot perform a sensitivity analysis to showcase, if the 60% response rate was associated to some specific exposure or outcome variables that are included in our survey. Furthermore, we had no information on other

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mental disorders than the addiction diagnosis. However in this region of Sweden, patients with severe mental disorder in addition to their addiction are usually treated in the psychiatric clinics outside the Addiction Centre.

A major limitation for generalisation is that the study was conducted in Southern Sweden in Malmö City, and there may be a difference in socio-demographic and health profile characteristics in other populations. The relatively high number of women and the lack of significance across gender are considered a strength for generalisation. Due to the bias and limitation, the generalisation should however be considered carefully.

Conclusion

We conclude that large majority of patients in treatment for alcohol and drug addiction have additional lifestyle related risk-factors and NCD co-morbidity. They also have many similar conditions, including quality of life. This may impact the planning of future research and development to improve health, and a common program allowing individual tailoring should be considered.

Acknowledgements

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