

**Substance use and problem awareness
among drug-involved prisoners in Norway**

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Abstract

A sample of 110 drug-involved offenders from two prisons was assessed regarding drug and alcohol consumption, problem awareness, ambivalence and treatment readiness. Of these, 56% reported hazardous alcohol consumption and 53% highly problematic drug use. Highly problematic users reported more problem awareness and more cognitive dissonance regarding change. Treatment readiness was rated higher by problematic users compared to users reporting less problems. The influence of prison environment on ambivalence needs to be studied longitudinally after imprisonment. Drug-involved prisoners should be identified systematically including assessment of alcohol consumption. Opportunities for substance misuse treatment in prisons should be increased.

1. Introduction

Drug users are overrepresented in criminal justice populations in many countries (Emcdda, 2007b; Mumola & Karberg, 2006). In Norway, between 58 and 76% of the prison population have used drugs before incarceration (Friestad & Hansen, 2005; Skardhamar, 2002; Ødegård, 2008). The close relationship between drug use and crime has been acknowledged internationally and many drug users are repeatedly incarcerated (Emcdda, 2007a). Re-incarceration rates have been found to be higher among drug-involved offenders compared to other offenders and relapse to drug use is considered a leading cause for re-incarceration (Welsh, 2007). Hence, strategies to reduce involvement in both drug use and criminal activity are warranted. The literature on “What Works?” in offender rehabilitation indicates that to achieve best results, efforts should be directed at the needs of high-risk offenders and it should be responsive to their characteristics, abilities and circumstances (Risk-Needs-Responsivity Model) (Don A. Andrews & Dowden, 2005). Substance misuse is considered an important characteristic in risk assessment since it is a dynamic, changeable risk factor rather than a static, historic factor (D. A. Andrews, Bonta, & Wormith, 2006).

There are many challenges to intervening effectively with substance using offenders in the prison setting. Even in developed countries, criminal justice systems have major difficulties in meeting the extensive treatment needs of drug-involved offenders (Chandler, Fletcher, & Volkow, 2009). Notwithstanding these challenges, there are several examples of effective prison-based treatment programmes: Motivational interviewing with offenders can facilitate behaviour change, lead to longer time in treatment and reduce criminality (McMurran, 2009). Cognitive behavioural programmes for offenders with or without drug problems significantly reduce criminal recidivism (Joy Tong & Farrington, 2006; Lipsey, Chapman, & Landenberger, 2001). Pharmacotherapy such as opioid maintenance treatment is made

increasingly available in prisons with good results (Kinlock, Gordon, Schwartz, Fitzgerald, & O'Grady, 2009; Stallwitz & Stover, 2007). A study on offenders released from a prison-based therapeutic community showed significantly reduced rates of drug relapse and re-offending at five years follow-up (Prendergast, Hall, Wexler, Melnick, & Cao, 2004). The effectiveness of prison-based therapeutic community treatment with aftercare to reduce substance use is also supported by evidence from meta-analyses (Pearson & Lipton, 1999; Perry et al., 2006).

The first challenge before offering treatment that meets the individual's needs, is that an appropriate assessment of drug and alcohol consumption, problem awareness, and treatment motivation needs to be conducted. For assessment of alcohol consumption, the self-report questionnaire AUDIT (Alcohol Use Disorders Identification Test) has been widely used in the community and is increasingly used in criminal justice settings (Reinert & Allen, 2002; Singleton, Farrell, & Meltzer, 2003). A comparable questionnaire to assess drug problems is the Drug Use Disorders Identification Test (DUDIT) (Berman, Bergman, Palmstierna, & Schlyter, 2005). The assessment of problem awareness and treatment motivation has been found to be feasible and valid during incarceration, when drug-involved offenders were compared with drug users in the community (Hiller et al., 2009). The extended version of the DUDIT assesses treatment readiness and perceived positive and negative drug effects, thus acknowledging ambivalent cognition towards change which is considered important in enhancing problem awareness and in relation to motivational interventions (Berman, Palmstierna, Kallmen, & Bergman, 2007). The extent of ambivalence and problem awareness reflects the conflict about attachment to substance use perceived by the incarcerated individual (Orford, 2001). External factors such as the risk of losing personal relations or work and life events such as a serious illness or imprisonment can increase the desire to change unfavourable behaviour (Rosen, Hiller, Webster, Staton, & Leukefeld, 2004). As

prison environment is clearly distinctive from community settings where drugs are more easily accessible, the prison setting is likely to increase the individual's level of cognitive dissonance and awareness of undesired behaviour outside of the prison. Motivation for change and treatment engagement is setting dependent. Imprisonment may constitute a life crisis that encourages revision of addictive behaviour and recognition of the necessity to make changes (Gossop, 2006).

The aims of this study were to assess pre-arrest substance use, alcohol consumption and drug use patterns among prisoners to identify highly problematic users. Also, ambivalence and cognition concerning positive and negative drug effects were explored and related to treatment readiness and motivation to change.

2. Methods

Participants

The study sample for analyses comprised 110 prisoners who reported drug use and they were recruited from a total of 123 participants who had returned complete DUDIT questionnaires; 13 individuals who did not report any drug use were excluded from the analyses. The English language version of the questionnaires were chosen by 11% of the participants, 17% reported to be on remand, 46% reported to be convicted and the remaining 37% did not make a statement. Participants came from two prisons in Norway with high and low security level units, the Oslo prison with up to 392 inmates and Kongsvinger prison with up to 119. Data were collected in January 2007, and participants were self-selected, drug-involved, male prisoners on remand or sentenced to prison. The mean age was 33.1 years (standard deviation = 9.14, range from 18 to 61 years) and 60% of the sample had been imprisoned for less than six months, 15% between six months and one year, with the remaining 25% having spent

more than one year in prison at the time of the assessment. In 2006, the mean sentence length for prisoners in the two prisons was about 415 days for Oslo and about 70 days for Kongsvinger. The mean sentence length for the total Norwegian prison population in 2006 was about 103 days.

Procedure

The two prisons participated in this study as part of a wider clinical research project (Lobmaier, Kunoe, Gossop, Katevoll, & Waal, 2010). Prison staff were accustomed to routinely distributing survey questionnaires before the nightly lock up and collecting them the following day. These routines were adopted and additionally posters with study information were displayed in every ward. It was explicitly stated that drug and alcohol use should be reported for the period prior to incarceration: questions were asked about problems and behaviours during the past year preceding imprisonment. To secure anonymity, questionnaires were returned in sealed envelopes provided. Participation was voluntary, anonymous and not compensated. All participants signed informed consent.

Questionnaires

Three self-report questionnaires in Norwegian or English language were provided: the Alcohol Use Disorders Identification Test (AUDIT), the Drug Use Disorders Identification Test (DUDIT), and its extended version the DUDIT-E. The AUDIT is a 10-item self-report questionnaire for assessment of alcohol consumption (Saunders, Aasland, Babor, de, & Grant, 1993). Cut-off values of 1, 8 and 20 points indicate a high likelihood of occasional, harmful or dependent alcohol consumption, respectively. The DUDIT assesses level of drug problems and cut-off scores of 1, 6 and 25 points indicate occasional, harmful and highly problematic use, respectively (Berman et al., 2005). Internal consistency of the AUDIT and DUDIT were

excellent in our sample with Cronbach's alpha values of 0.891 and 0.936, respectively. The DUDIT-E assesses which particular substances are used, drug-related beliefs and treatment readiness on four subscales (Berman et al., 2007): The D-scale assesses the type and frequency of substance use. The P- and the N-scales assess positive and negative beliefs around drug effects. Cronbach's alpha values were excellent with 0.946 for the P-scale and 0.917 for the N-scale. The T-scale assesses treatment readiness and desire to change, Cronbach's alpha indicated good internal consistency with 0.838. From the DUDIT-E, a composite score which indicates motivation to change drug use patterns can be calculated by multiplying T-scale scores with the scores from the N-scale divided by the P-scale. Lower values on this Motivational Index (MotInd) reflect less desire to change existing use patterns and more positive rather than negative beliefs about drug effects.

Statistical analyses

Based on the DUDIT problem scores, three groups were established: occasional, harmful and highly problematic users. Only respondents who returned complete DUDIT questionnaires were included in the analyses. Alcohol consumption data were only analysed for the 99 respondents who returned complete AUDIT questionnaires. Based on their problem scores, the three groups were compared using Chi-square statistics (Fisher's Exact Test) for binomial outcomes. Missing data on the D-scale were imputed on the assumption that respondents did not use these drugs. Frequent drug use was defined as reporting at least twice weekly or daily substance use. Frequent use was combined for hard drugs (amphetamines, cocaine or opioids), prescription drugs (painkillers and sedatives) and other drugs (solvents, hallucinogens, GHB). The general drug problems reflected by the DUDIT scores were compared with the use of particular substances as reported in the extended form DUDIT-E. Frequent use of any substance that differed significantly across the three established groups was entered into a

logistic regression model as predictors of the groups' DUDIT problem scores. To compare positive and negative beliefs and treatment readiness among the three groups, one-way analyses of variance with Scheffé post-hoc tests were performed. The single cognition items that the highly problematic users scored highest were compared to the ratings from occasional and harmful users. Internal consistency analyses using Cronbach's alpha were performed for the AUDIT and the DUDIT and for DUDIT-E subscales on beliefs and treatment readiness. Values above 0.8 are usually considered good and above 0.9 excellent (Cronbach, 1951). SPSS version 16 for Windows was used for all data analyses.

Ethics and approvals

Participation in the study was voluntary. All participating prisoners gave their written informed consent and were provided with contact details of the research staff. They were advised to contact research staff for treatment referrals, if desired. This study was approved by the Norwegian Correctional Services (reference 2006/18211-4/602) and the South Norwegian Regional Committee for Medical and Health Research Ethics (reference S-06182). All collected information was handled in accordance with the approval of the Norwegian Social Sciences Data Service (reference 15468).

3. Results

Pattern of substance use and alcohol consumption

One hundred and ten respondents reported substance use prior to the current prison sentence and 47% had DUDIT scores indicating highly problematic drug use. Figure 1 indicates which substances the respondents used frequently outside prison and which they had tried at least once. Cannabis, stimulants and prescription drugs (sedatives and analgesics) were widely used and the proportion using cannabis, amphetamines and sedatives several times weekly or daily

was high. Among offenders who had tried opioids at least once a high proportion had used opioids frequently outside prison. However, the most commonly used psychoactive substance was alcohol with 32% of all 110 respondents drinking daily or several times per week. Among all 110 drug users, 57% had AUDIT scores of 8 or more indicating hazardous alcohol consumption before incarceration.

//Figure 1 about here//

Among the 15 respondents reporting occasional substance use on the DUDIT, 27% also indicated hazardous alcohol consumption (AUDIT score 8 or above). In this group, no substances were used frequently (at least twice weekly) except for prescription drugs reported by 7%. In the group reporting harmful drug use (n=37), 56% also reported hazardous alcohol consumption: 49% reported frequent cannabis use, 27% frequent hard drug use (stimulants or opioids) and 16% reported frequent use of prescription drugs. Among the 58 highly problematic drug users, the majority reported frequent use of hard drugs (79%), cannabis (67%) and prescription drugs (62%). These proportions were higher among highly problematic drug users than in the other two groups. Also, hazardous alcohol consumption was reported by 70% of the highly problematic drug users. Although no statistically significant differences were found across groups, hazardous alcohol use was commonly reported and showed an increasing trend when drug problems increased.

Predictors of highly problematic substance use

The group of highly problematic drug users (n=58) reported more frequent use of cannabis, prescription drugs and hard drugs than the other two groups ($p < 0.001$). These drug categories were entered in a logistic regression model to assess whether frequent use was associated with

higher problem scores according to the DUDIT. The strongest predictor of high problem scores was frequent use of hard drugs with an odds ratio (OR) of 6.8 (95% CI 2.43 to 19.03; B=1.917; $p < 0.001$). Frequent use of prescription drugs was also significant with an OR of 5.0 (95% CI 1.63 to 15.20; B=1.604; $p = 0.005$). Although reported more often by the group of highly problematic users, frequent use of cannabis was not found to be a statistically significant predictor of high DUDIT problem scores.

Beliefs about drug effects and treatment readiness

Positive aspects of drug effects were scored higher by the highly problematic users than the occasional users. At the same time, highly problematic users scored negative aspects of drug-effects higher compared to the occasional and harmful users. Higher awareness of positive and negative drug effects was associated with higher scores on treatment readiness in the problem use group compared to the occasional or harmful users. Table 1 shows the mean sum scores on positive and negative drug-related beliefs and treatment readiness of the three groups.

//Table 1 about here//

On the positive beliefs scale, the item on *relaxing drug effects* was rated higher by highly problematic users. Further, drug effects made them *feel normal* and *function socially*, while life without drugs was rated as *boring*. At the same time on the negative beliefs scale, highly problematic users rated drug effects such as *damaging family life, finances* and *social relations* higher than occasional or harmful users. They also expressed more treatment interest than occasional or harmful users on the items addressing motivation to change drug use: highly problematic users rated *readiness* and the *importance of change* higher than occasional

or harmful users. Also, they rated *being worried* about their drug use and *needing professional help* to change higher.

4. Discussion

High levels of problem awareness and ambivalence about drug effects were reported by drug-involved prisoners with highly problematic use. In this group, both negative and positive beliefs related to drug use were more prominent than among prisoners who reported less problem drug use. Apparently conflicting statements, such as that drug effects allow social functioning, but also damage social relations and family life, reflect cognitive dissonance which can be explored in counselling to enhance motivation to change. The extent to which the prison environment enhances or limits cognitive dissonance among highly problematic users remains unclear from this cross-sectional study and should be investigated further in a pre-post, longitudinal design. However, the hope that imprisonment can be used as a window of opportunity for change talk is supported by the finding that the group of problem users tended to express more treatment readiness and interest in change than the prisoners with less problematic use.

Another finding of this study is the extent to which alcohol use co-occurs with substance use, with more than half of the drug-involved prisoners also reporting hazardous alcohol consumption. Alcohol use is an important and underrated problem in the assessment and treatment of drug misusers (Gossop, Marsden, Stewart, & Rolfe, 2000). Drug misusers typically report patterns of multiple drug use and many also have problematic patterns of drinking. Excessive alcohol use by drug misusers may aggravate other drug-related problems, and may adversely affect their response to treatment. In particular, dually (drug and alcohol) dependent substance users have been found to have higher rates of criminal involvement and

more health problems than drug misusers without drinking problems (Roszell, Calsyn, & Chaney, 1986). Besides hazardous alcohol use, the increasingly problematic position of prescription drug misuse is noteworthy (Hernandez & Nelson, 2010). Our study found a five-fold increased risk of prescription drug users to report highly problematic drug use, whereas no such association was found for frequent cannabis users.

Our findings of high awareness of drug-related problems and significant interest in treatment among drug-involved offenders are in line with the results from other prisoner samples (Hiller et al., 2009; Stewart, 2009) and with the results of a recent evaluation of drug users who reported high problem awareness when admitted to an emergency department (Abar, Baumann, Rosenbaum, Boyer, & Boudreaux). The Motivational Index scores calculated for our sample are comparable with the scores from a Swedish prisoner sample (Berman et al., 2007), although our scores failed to reflect the group differences that were reported for single drug cognition items, mean values or treatment readiness. To further enhance preparation for substance misuse treatment and to increase treatment engagement, motivational interviewing constitutes an evidence-based intervention that systematically explores ambivalence in order to strengthen commitment to change (Miller & Rollnick, 1991). Single-session motivational interviewing has been found to increase self-efficacy regarding the capacity to abstain from drugs, and detoxified inpatients were more likely to proceed to preparation / action stages of change (Berman, Forsberg, Durbeej, Kallmen, & Hermansson, 2010). Evidence of the effectiveness of motivational interviewing among drug-involved offenders has also been reported (Forsberg, Ernst, Sundqvist, & Farbring, 2011; McMurrin, 2009).

Certain limitation of this study should be noted. There may be limitations due to the use of self-reported substance use data, however other studies suggest that self-report data are

reliable and correlate well with urine and hair drug testing (Simpson, Joe, & Broome, 2002). The present findings should not be considered representative of the general prison population, and those for drug use cannot be interpreted as prevalence rates. Also, the limited data that were available to calculate the Motivational Index composite score may have impeded the finding of statistically significant differences between groups. Problem awareness scores may have been influenced by exposure to treatment during imprisonment, which was not assessed in order to keep the questionnaire as short as possible. However, as treatment availability in our two participating prisons is low with a maximum of 20 slots in a prison-based therapeutic community for the almost 400 inmates in Oslo prison, the impact of experience with prison-based treatment on drug problem awareness in our sample would likely be rather limited. Finally, this cross-sectional survey may have been prone to recall bias because the time period from imprisonment to assessment of drug use preceding the ongoing prison sentence varied. However, for the majority of our respondents the time spent in prison was shorter than six months.

Despite these limitations, our results suggest that identifying highly problematic drug users and assessing their need for treatment may be achieved effectively during imprisonment. Assessing highly problematic drug use before imprisonment contributes to the identification of high-risk offenders. Screening for drug use upon imprisonment is not an established practice within the Norwegian Criminal Justice system. A clinically significant proportion of highly problematic users participated in our survey and disclosed their interest in change and the need of professional treatment. However, even less intensive prison-based addiction interventions such as drug counselling is typically regarded as secondary to the function of prisons as punitive institutions (McIntosh & Saville, 2006). The possibility to engage in treatment while in prison is still limited and there are fewer options in prisons compared to the

community (Dolan, 2009; Lines, 2006; O'Brien, 2008). In line with findings from several other countries, nearly half of the about 3500 Norwegian prisoners have used hard drugs regularly before imprisonment (Ødegård, 2008). Hence, the need to increase specialized addiction treatment capacity in criminal justice settings should be considered. Systematic assessment is an indispensable step before entering treatment and it should be implemented upon imprisonment.

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Figure 1: Substance use pattern before current imprisonment among 110 Norwegian prisoners

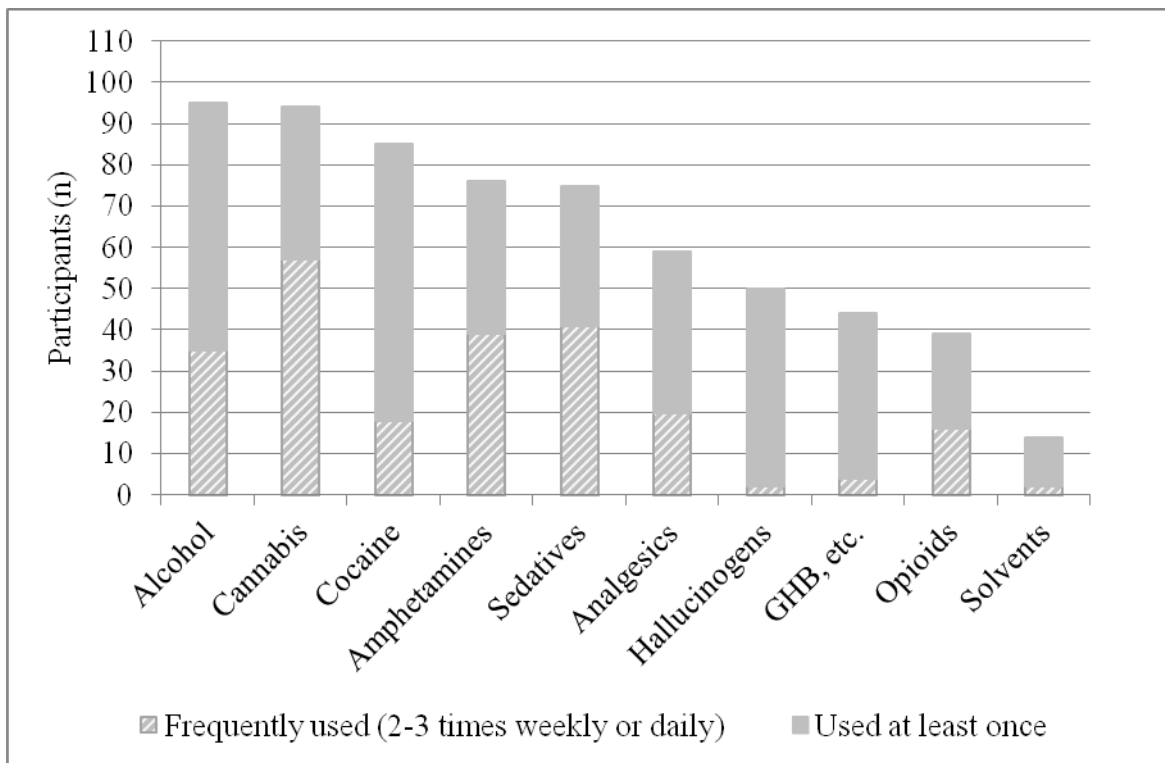


Table 1:

Problem awareness among the 110 drug-involved prisoners: positive and negative drug effects, treatment readiness and the Motivational Index by DUDIT problem scores.

	Occasional use n=15	Harmful use n=37	Highly problematic n=58	Highly problematic use compared to	
				occasional	harmful
Positive aspects of drug use: P-scale	3.2 (5.65)	29.4 (16.26)	37.6 (16.55)	p<0.001	p=0.082
Negative aspects of drug use: N-scale	3.2 (4.92)	15.3 (13.27)	29.1 (10.73)	p<0.001	p<0.001
Treatment readiness: T-scale	0.8 (1.30)	2.9 (2.79)	4.9 (2.56)	p=0.006	p=0.006
Motivational index (MotInd)	3.4 (6.55)	5.6 (14.50)	6.2 (8.32)	p=0.869	p=0.979

Note: The groups are based on DUDIT problem scores with 0 to 5 points indicating occasional use, 6 to 24 harmful use and 25 to 44 highly problematic use. Mean values are shown with standard deviations in brackets. There were no significant differences between the occasional and the harmful use group. The range for the P- and N-scale is 0 to 68 points and for the T-scale - 4 to 10. Group differences were calculated with a one-way analysis of variance and Scheffé post-hoc tests. Complete data were available for 80 % of respondents on the P-scale, 75 % on the N-scale and 83 % on the T-scale. Thus, data to calculate the composite score MotInd were available for 60 % of the total sample.