Not All Substance Dependence Problems are Recognized as Risks—Comparing a Medical Health Study with Prison Assessments

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Abstract Substance abuse is viewed as one of the main factors (criminogenic needs) to be assessed and targeted in prison. Prison assessments of risk and needs are known to validly predict reoffending. However, there seems to be lacking research in how reliably the individual prisoner's problems, such as substance abuse, are represented in the assessments. In this study, we compare an independent medical health study ($N=510$) with in-prison assessments for the

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same persons to see whether some of the inmates' substance abuse disorders were overlooked in prison. We found that sentence plans (257) were in poor agreement with the health study (Kappa 0.315); they recognized only 65 % of all diagnoses. The risk and needs assessments (178) were in closer agreement with the health study, however, alcoholism diagnoses were recognized less accurately (Kappa 0.519) and less frequently (78 %) than drug diagnoses (Kappa 0.627, 87 %). The main factors predicting an assessment of substance abuse risks in prison, analysed through logistic regression were: longer stay in prison and one or more dependence diagnoses. We conclude that, a number of potentially criminogenic dependence problems remain unrecognized since some groups of prisoners are either completely left out from the more thorough instrument, the risk-and-needs assessment, or are not assessed thoroughly enough. This puts prisoners in unequal positions, since all interventions in prison are based on assessments. The study alerts us of the selectiveness of prisoner assessments in practical settings; the unrecognition of problems of shorter sentenced prisoners and prisoners with alcohol dependence.

Keywords Offender assessment · Prisoners · Prisoner health · Reliability · RNR model · Substance abuse

Introduction

Substance abuse among prisoners is greatly more common than in the general population (Fazel et al. 2006). Rehabilitative strategies in prisons, both in Finland and elsewhere, currently view substance abuse as one of the main risk factors (criminogenic needs[1]) to be assessed and targeted in order to reduce reoffending, relying greatly on the Canadian Risk-Need-Responsivity (RNR) model for offender rehabilitation (Andrews and Bonta 2003; Andrews et al. 1990). Criminogenic needs are usually assessed with the help of structured instruments; risk and needs assessments (Andrews et al. 2006). The measurements typically result in an intervention instrument, such as a sentence plan, that directs the interventions during imprisonment, such as the intensity of supervision, which goals should be reached, and which programs are needed in order to target the criminogenic needs.

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[1] A criminogenic need is defined as a factor that according to research raises the risk for recidivism, and thus should be tackled in prison in order to reduce the probability for recidivism (Andrews et al. 1990).

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The validity of the structured instruments in predicting reoffending has been explored by a large body of literature (Hanson and Morton-Bourgon 2009; Flores et al. 2006; Wormith et al. 2007).

Recently, however, researchers have become increasingly interested in how reliably an individual prisoner's problems are portrayed through the assessments and in the intervention instruments that build on the assessments that is whether problems are identified as they should. Some studies point at problems being recognized in an inconsistent manner, or not at all, and that more research is needed on the matter (see for ex. Bosker et al. 2013; van der Knaap et al. 2012; Lowenkamp et al. 2004). Researchers have sought and found explanations for the inconsistency in filling out and/or using structured instruments in attitudes towards the instruments, availability of resources, being rushed, and having an overload of work (Bosker et al. 2013; Kemshall 2010; Miller and Maloney 2013). Failing to treat drug-involved offenders in need of treatment is often blamed on "institutional reasons," such as a lack of resources or incomplete infrastructure (Chandler et al. 2009). However, less attention has been given to whether these reasons also could lead to infrequency of prisons even recognizing treatment needs (such as substance abuse problems) in the first place (cf., Kemshall 2010: 8–11; Chamberlain 2012).

Countries also differ regarding the nature of inmates' substance abuse problems and prison conditions. Finnish prisoners exhibit comparatively high amounts of substance abuse problems (for ex. Andersen 2004; Lintonen et al. 2012). Additionally, Nordic prisons, with comparatively low prisoner rates and allegedly humane prison conditions, have been regarded as "Exceptional," frequently employing the principles of normality and universalism (Pratt 2008). However, researchers seem to be uncertain to what degree the development means equal possibilities for treatment for everyone (Frank and Kolind 2012) and whether all development is particularly Nordic—or particularly exceptional (Ugelvik and Dullum 2012). If Finnish prisons indeed fulfil the above mentioned criteria of universalism and normality, prison factors, such as how long a prisoner spends in prison, or sociodemographic or personal characteristics of the prisoner, should have little to do with whether the frequent substance abuse problems are recognized/assessed or not.

In this study, we compare an independent medical health study with in-prison risk assessments regarding abuse. The main goal is to shed light on how often the prison assesses criminogenic needs connected to alcohol and drugs among persons for whom a clinical dependence diagnosis has been placed. We also analyse which factors predict an assessment of risk for alcohol and drug problems in prison in order to show how organizational structures (here: characteristics of the prison sentence) may rule out recognition of substance abuse dependence as a criminogenic risk.

Risk Assessments, Intervention Instruments, and Their Reliability

Today, most rehabilitative strategies in prisons rely on assessing and targeting so-called criminogenic needs. This relies highly on the Risk Need Responsivity (RNR) model developed by Andrews et al. (1990) and Andrews and Bonta (2003). The model describes three principles for effective offender rehabilitation: 1) The risk principle states that rehabilitative work within prisons should match the intensiveness of the offender's risk level for recidivism (high intervention for high risk offenders); 2) The need principle states that interventions should target those factors (dynamic criminogenic needs) that, according to research, are central for

the offender's reoffending; and 3) The responsivity principle states that the mode of intervention should be responsive to the offender's learning style and disabilities. Central risks are grouped as static criminogenic factors (such as age at first offence, prior criminal history) which cannot be changed and dynamic criminogenic factors (criminogenic needs) that can be influenced through interventions (delinquent attitudes, aggressive problem-solving strategies, addiction or intoxicant abuse).

Structured instruments—risk and needs assessments—are usually used to assess the number and intensity of the offender's criminogenic needs (Andrews et al. 2006). These risk measurements are commonly articulated through an *intervention instrument*, such as a sentence plan, in which practical interventions that are needed in order to target the criminogenic needs are specified.

It has been clearly established that a high level of criminogenic needs measured through the instruments predicts a higher risk for reoffending (Hanson and Morton-Bourgon 2009; Flores et al. 2006; Wormith et al. 2007). However, there seems to be research lacking on how reliably the *individual prisoner's problems*, such as substance use, are represented in the assessments (cf., Obstbaum and Tyni 2015; Frank and Kolind 2012).

Factors That May Hinder the Recognition of Prisoners' Problems

Ideally, the only thing influencing whether or not a person will be assessed with substance abuse needs in prison is whether or not the person indeed has a need for substance abuse intervention according to the prevailing treatment model (cf. Andrews and Bonta 2003). However, it seems that other factors also play a role.

Some studies indicate that problems are not always recorded consequently in structured assessments or intervention plans (Bosker et al. 2013; van der Knaap et al. 2012; Lowenkamp et al. 2004.) Problems in the recording phase can reflect attitudes towards the instruments, the availability of resources, being in a hurry, or having an overload of work (Bosker et al. 2013; Kemshall 2010; Miller and Maloney 2013). Sometimes, the need to keep the proportion of 'high-risk' persons at a manageable level can lead to assessments of risk that fall outside of structured tools' recommendations (Cooper 2005; Shook and Sarri 2007). Sometimes, on the other hand, prisoners do not 'fit' the available interventions. A prisoner might, for example, have a need for an intensive intervention, but the prison cannot offer one during the sentence and the need is not registered (cf. Scott and Ruddel 2011).

Some groups of prisoners may also have more needs than others; for example, incarcerated women tend to have exceptionally grave problems compared to men (cf. for ex. Viitanen et al. 2012; Green et al. 2002). However, Kemshall (2010: 8–10) emphasizes that attention also should be given to how *organizational structures* pose obstacles to forming functional treatment patterns, and whether some groups are left out systematically, even from being assessed with needs. There seems to be very little research on the matter (Chamberlain 2012).

Finnish research indicates that prisoners with *shorter sentences* are assessed with substance abuse needs more seldom than *longer-sentenced* prisoners, although it is known that substance use is particularly connected to reoffending in this group (cf. Obstbaum and Tyni 2015; Kivivuori and Linderborg 2010). Studies additionally find that prisoners with shorter sentences also tend to receive treatment to a lesser degree (Obstbaum and Tyni 2015; Chamberlain 2012; Killias et al. 2000). Is it possible that the reason for this partly lies in poor assessment/recognition of the problems?

Additionally, high recidivism could potentially influence the degree to which problems are recognized, since a prisoner might be returning to prison as someone whose problems are familiar to the staff or someone who knows how to play by the prison rules (cf. Crewe 2011).

If the prisoners were treated equally, the degree to which diagnosable substance abuse problems are noticed in prison assessments should not be influenced, by personal or sociodemographic characteristics of the prisoner, such as age or gender, or by characteristics of the prison sentence such as length of stay in prison or recidivism.

In this study, we ask, firstly, to what degree prisoner's dependence problems that are recognized by an independent medical health study are also recognized in prison risk assessments and, secondly, whether some characteristics of the prison sentence (length of stay in prison or recidivism) raise the probability of substance abuse needs being recognized when personal or sociodemographic characteristics of the prisoner are kept stable.

Needs Assessment in Finnish Prisons

Before proceeding to describe data and methods, we present the two instruments through which assessments of risks are made in Finnish prisons.

The *Risk and Needs Assessment* (RNA) is a semi-structured protocol by which information about the prisoner's psychosocial situation is recorded through a detailed assessment of nine central problems and factors that have led to the current offense. The analysis is conducted by one person or a team of persons who are skilled in either social work, psychology, or the social sciences, etc. The prisoner is always interviewed. The plan is usually made in an assessment centre (Arola-Järvi 2012). The Finnish RNA tool has been greatly influenced by the two following structural assessment tools: the Level of Service Inventory-Revised (LSI-R) (Andrews and Bonta 2003) and the Psychopathy Checklist-Revised (PCL-R) (Hare 2003). The routines also resemble the OASys Offender assessment system (Home Office 2002). RNA assessments should be made for at least all prisoners with a sentence of over 2 years. Additionally, young offenders and offenders with a life sentence should always be assessed.

A *sentence plan* should be made for all prisoners and it should act as a base for measures that will help reintegrate the prisoner into society (Act on Imprisonment 767/2005). Also, the sentence plan should contain assessments of the factors that are central to the prisoner's risk for reoffending, although it is not as detailed as the RNA. The plan can be made based on documents, such as court proceedings, criminal records, criminal sanctions records, examinations of accountability, population registers, and/or an interview with/observations made of the prisoner. When RNA is made, the plan is based on the assessment. All measures and decisions taken in prison, such as rehabilitation or transfers to open prisons, are based on information in the sentence plan. The plan is made either in prison, mainly by prison officers, or, if the sentence is longer, in allocation units by planning officers trained mainly in social or behavioural sciences (Arola-Järvi 2012). When the prisoner health study was carried out around the year 2006 the sentence plan had been recently introduced and, thus, had been made for only half of the prisoners in the study sample. At the time, establishing the assessment process and training staff was seen as an important challenge (cf., Mohell and Pajuoja 2006). Recent research shows that there is also currently considerable heterogeneity in assessment procedures and staffs regard their level of training as insufficient (Liimatainen et al. 2014)

Several studies have shown that drug use among criminal offenders is more often than not characterized by clinically diagnosable substance dependence (Andersen 2004; Brochu et al. 2001; Taxman et al. 2007). Having a clinical dependence diagnosis does not always mean that the dependence poses a criminogenic risk. Thus, if a prison assessment of criminogenic needs does not report a person's substance dependence problem, it is not necessarily problematic from the point of view of the assessment. However, if substance abuse problems are systematically neglected for some groups more than for others, one might suspect that some needs that are potentially criminogenic are also being neglected.

Data

For our study, medical information for 510 prisoners that took part in an independent medical study about prisoner health was combined with their information from the prisoner information register (Vati). The different datasets were linked together using an ID number. The study received ethical approval from the Pirkanmaa Hospital District ethical council, the Ministry of Justice, and the Criminal Sanctions Agency.

The Prisoner Health Study Data on Substance Dependence

The prisoner health study data represents all Finnish prisoners (Joukamaa et al. 2010). The stratified sample (N=510) consists of 309 male prisoners, 101 female prisoners, and 100 male lifers.[2] The sampling was conducted so that half of the persons in the sample had served time in a closed prison for some time. The other half had begun their sentence very recently, or they were just going to enter into a closed prison. Data was gathered between October 2005 and October 2007; the majority of data was obtained in 2006. Participation was voluntary and written informed consent was obtained from all participants. The prisoners were very willing to cooperate, although the process was rather demanding. Altogether, 13 of eligible prisoners refused or were unable to take part in the data collection due to a short sentence or transfer to another institution.

The prisoners participated in a comprehensive field study consisting of laboratory tests, several questionnaires, interviews, the Structured Clinical Interview for DSM-IV disorders (SCID) (see First et al. 1997), and a clinical medical examination. The interviews were conducted by registered nurses, the SCID-interviews were conducted by SCID-trained psychologists, and the medical examinations and clinical summaries were conducted by medical doctors working for Prison Health Services. Most of the clinical examinations were performed by two of the authors (PV and TW). In this study, we used the clinical diagnosis of the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10). These present analyses make use of diagnoses, according to the ICD-10, of alcohol dependence, drug dependence or both.[3] A dependence diagnosis was set for the prisoner if he

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[2] We excluded fine defaulters, who are serving time due to non-payment of a fine, since prison assessments are not made for this group. It is also important to notice that the relative share of both women and, especially, life-imprisoned persons is much larger in our sample than on any given day in prison; the aim of the sampling was to enable analysis of the lifers' and women's health as a group, since otherwise, their relative share would have become too small for making conclusions.

[3] Alcohol dependence: F10.2X. For drugs, a summarized variable (α=0.657) of dependence to any of the following substances was used: F11.2X Opioids, F12.2X Cannabinoids, F13.2X Sedatives, F13.2X Cocaine, F15.2X Stimulants, F16.2X Hallucinogens, F19.2X Poly drug dependence.

or she had at some time been diagnosed with a dependence problem or if the diagnosis was made at the time of study. The majority of the diagnosed persons had already been diagnosed with their alcohol or drug problems earlier (cf. Joukamaa et al. 2010; Lintonen et al. 2011). In the analyses, we also used part of the nurses' interviews questions about use of drugs intravenously or intramuscularly (abbreviated here as IV use) during the time before (the latest) imprisonment.

The medical health study was an independent, anonymous, academic study and its results were not known to the prison's practitioners who conducted the prison assessments of needs.

Data From the Prisoner Information Register

Sentence plans, RNAs and other data concerning the prisoners' sentences were obtained from the prisoner information database (VaTi) that was taken into use gradually between 2005 and 2006.

Dependent Variables

The sentence plan articulates the problems that are seen as most important to address during imprisonment in its introductory text. From this text we searched for data on substance abuse with keywords that indicated alcohol and/or drug use.[4] The search gave hits for 115 prisoners. The prisoner's central needs are also coded numerically in the plan. Numerical codes that concerned substance use were used for 116 prisoners in our data.[5] We created a summarized variable called *sentence plan assessed substance abuse problems* (alpha 0.810) that included substance abuse needs, coded either numerically or in the introductory text.

The risk-and-needs assessments (RNAs) assess nine aspects of the prisoners' psychosocial situation. For this study, we used the part that concerns alcohol abuse and the part that concerns drug abuse. There were eight specifying points to both parts (see Table 1): We constructed a summarized variable if one or more of the components had the value 2 (severe problems), separately for drug abuse and alcohol abuse: *alcohol problems assessed in RNA* ($\alpha=0.85$) and *drug problem assessed in RNA* ($\alpha=0.83$).[6] The question in the RNA that measured *intravenous use of drugs* during the last 2 years was analysed separately.

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[4] The keywords in Finnish and in Swedish (the other official language in Finland) were 'päih' 'alkoh' 'humal'. 'huum' ' amfet' 'bentso' ' rusning' ' berus' 'rusmedel' ' kannabi' 'rait' 'subute' 'narko'. We also looked for a number of other keywords, such as suboxone, and different slang words for drugs, such as 'grass' ('ruoho'), without hits. It seems that prison officials use quite conservative language in the assessments. The prison officials' knowledge of Swedish was sometimes limited, so some of the keywords are not proper Swedish.

[5] Central numerically coded needs are: Housing and managing daily life, Income and financial situation, Education, Work, Social contacts and lifestyle, Alcohol/Drug problems, Attitudes, Antisocial patterns, Health problems, and others. The main codes are sometimes replaced by specifications. Concerning substance use, the specifications (used here) are: "intoxicants and other addictions," "staying substance-free," "to lessen harm from intoxicant abuse," "the use of alcohol," and "the use of drugs."

[6] Using only the value 2 (severe problem) for the analyses was motivated by the nature of our research assignment; we aimed at critically assessing the consistency between the clinical and actuarial measurements and we wanted to use a measurement from the prison that did not exaggerate the inconsistency. The value 1 might sometimes be given for use of substances that may not indicate use of dependence character. Value 2 indicates problematic use more clearly (see Table 1).

Table 1 Components of the Finnish risk and needs assessment that deal with substance abuse

Item	Score		
	2	1	0
1a Frequency of alcohol use	severe problems	some problems	no problems
2a Mixed use of substances and alcohol and/ or surrogate alcohol.	yes	–	no
3a Crimes to finance alcohol use or crimes under the influence of alcohol	yes, very importantly	yes, but the connection is ot as clear as in 2	no
4a Violent behaviour under the influence of alcohol	yes, very importantly	yes, but the connection is ot as clear as in 2	no
5a Influence of alcohol use on working life, studies or leisure-time	severe impact	some impact	no
6a Effects of alcohol use on health	severe impact	some impact	no
7a Influence of alcohol use on family, relationship, friendships	thoroughly damaged	some damage	no
8a Motivation to tackle alcohol problem during imprisonment	does not acknowledge /does not want to acknowledge problems	some motivation but trouble identifying problem, needs support	is motivated
1b History of drug use	admits using/very clear that is using,	–	no
2b Frequency of drug use	everyday	weekly	no
3b Intravenous use	admits using/very clear that is using,	has used at some point [not now]	no
4b Crimes to finance drug use/under the influence of drugs	yes, very importantly	yes, but the connection is ot as clear as in 2	no
5b Violent behaviour under the influence of drugs	yes, very importantly	yes, but the connection is ot as clear as in 2	no
6b Influence of drug use on working life, studies or leisure-time.	severe impact	some impact	no
7b Effects of drug use on health	thoroughly damaged	some impact	no
8b Influence of drug use on family, relationship, friendships	thoroughly damaged	some damage	no
9b Motivation to tackle drug problem during imprisonment	doesn't/does not want to acknowledge problems	some motivation but trouble identifying problem, needs support	is motivated

The table portrays the structured protocol in abbreviated form from. Translation from Finnish and abbreviation by the first author (Y O)

Independent Variables

Information about gender, age, length of stay in prison, and the number of prior sentences were obtained from the prison registers. The *number of sentences* was categorized according to first-timers and the rest according to dispersion (2–5 sentences and 6 or more sentences). *Length of stay in prison* was categorized into three classes: The first class includes those who stayed 8 months or less, since sentences of this length also can be transformed into community service according to Finnish law. The second class includes stays longer than 8 months. The third class, Lifers, was categorized into a class of their own since lifers are regarded as special group of their own—most of them are convicted for murder—and they were also treated as a separate group in the prison health study.[7] We were able to measure the exact length of stay in prison, since the study made use of data on prisoners who were already released.

Information about *basic education* was obtained from the prisoners themselves through the health study.

Methods

We started by analysing how many of the prisoners who had a sentence plan or an RNA may also have been clinically diagnosed with substance dependence (Table 2). The aim was to clarify whether the dispersion of diagnoses was uneven among those for whom prison assessments had been made compared to those for whom they had not been made.

Second, we analysed to what degree prisoners who had a diagnosis of dependence were assessed to have risks connected to these substances in prison (Table 3). An inter-rater reliability analysis using the Kappa statistic was performed to determine consistency between prison assessments and clinical diagnoses (cf. Landis and Koch 1977).

Thirdly, logistic regression analysis was used to identify significant covariates for receiving a prison assessment of substance abuse risks. Three series of nested logistic models were run, for three dependent variables: *sentence plan assessed substance abuse problems*, *alcohol problems assessed in RNA*, and *drug problem assessed in the RNA* (Tables 4, 5, and 6). The independent variables entered were the same in all three series, but, for the diagnostic variable, it varied according to the dependent variable: alcohol dependence, drug dependence, or both.[8]

We analysed the bivariate association (models 0) and a series of multivariate models (models 1–4). First, we only controlled for gender and age (model 1). Second, we entered the length of stay in prison and the number of prison sentences to represent characteristics/structures of the prison sentence (model 2). After this, basic education was

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[7] In practice, a lifetime sentence in Finland means a sentence of 12 years or more
[8] All 510 study subjects were included in the logistic analyses, although not all of these prisoners had been assessed with sentence plans risk and needs assessments. This was motivated by our research assignment: to investigate what factors contribute to being assessed with problems in the entire prison population. We also ran the same analyses for only those who had received the assessments in question (not shown). The results went in the same direction as the (final) analyses that included all cases, but the effects were more modest due to the small number of observations.

entered as a dimension of socioeconomic status (model 3) .[9] Finally the appropriate dependence diagnosis was entered (model 4). Our main focus is on the last model, in which all the variables are mutually adjusted. If associations between the outcome variable and prison sentence characteristics and/or education (model 3) persist when differences in having a diagnosis of substance dependence have been taken into account (model 4), then it can be concluded that the sentence characteristics and/or personal characteristics have an independent effect on whether or not a diagnosed problem is recognized in prison; having a dependence problem is in that case not the only significant factor predicting being assessed with risks connected to substance abuse in prison. Also other factors influence whether the substance abuse problem is recognized.[10]

Results

Of the prisoners in the study, 82 % had some kind of a dependence diagnosis according to the medical health study. Alcohol dependence was diagnosed for 61 % and drug dependence for 63 % of the prisoners (see Table 2). A sentence plan was made for almost half of the prisoners (253). RNAs were made for 178 persons, 34 % of the persons studied.

Dependence diagnoses were more common in the group of prisoners for whom sentence plans had *not* been made. Also, drug diagnoses and IV use that was measured separately in the health study, were more common among those for whom RNA had *not* been made. Alcohol dependence diagnoses were equally common in both groups. Thus, important shares of dependence problems, especially drug problems, remain unrecognized simply due to not being in the scope of assessments.

The Frequency of Prison Assessments of Substance Abuse Risks

Table 3 reports the share of persons who were assessed with substance abuse risks in the sentence plan or in the RNA according to whether they did or did not have a dependence diagnosis.

Substance abuse risks were assessed in the sentence plan for 65 % of those prisoners who had a clinical dependence diagnosis and for whom a sentence plan was made. However, 22 % of (assessed) prisoners with *no* dependence diagnosis were also assessed with substance abuse risks. The inter-rater agreement between the clinical diagnosis and the prisons measurement was Kappa=0.315 CI (0.209, 0.420), which must be seen as poor agreement.

Risks connected with *alcohol abuse* were assessed in the RNA for 78 % of the prisoners with an alcoholism diagnosis (and for whom RNA was made). However, risks related to alcohol abuse were also assessed for 25 % of those with *no* diagnosed alcohol dependence.

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[9] Basic education is to be seen as a control variable. However, it was entered in model 3 (and not in the first model as typical for control variables). Basic education (entered in model 3) and the dependence diagnosis (entered in model 4) were both obtained from the prisoner health study and we wanted to include the variables from the prison registers first, before proceeding to explore the effects of controlling for information about the prisoner that we gained from the prisoner health study.

[10] We also fitted the same series of nested models using linear probability models. This was done to check that the changes in the variable coefficients could indeed be attributed to the inclusion of the new variables in the nested models. Coefficient comparisons between nested logistic regression models are problematic due to the so-called scale identification issue (cf. Mood 2010). The findings (not shown) were similar. We checked for multicollinearity using variance inflation factor (VIF); no multicollinearity was found. We also checked for interactions between the independent variables in the logistic analyses: they were not significant.

Table 2 The percentage of prisoners for whom dependence diagnoses were made in the medical health study according to whether a sentence plan or RNA was made in prison (%)

Dependence diagnoses made in the medical health study		Prison assessment			
		Sentence plan			
		No	Yes	Total	sig
	Dependence diagnosis	85.4 % (216)	78.6 % (202)	82.0 % (418)	NS
	Total	253	257		
		Risk and needs assesment			
		No	Yes	Total	sig
	Alcohol dependence diagnosis	60.5 % (201)	62.4 % (111)	61.2 % (312)	NS
	Druga dependence diagnosis[a]	68.1 % (226)	52.2 % (93)	62.5.% (319)	***
	Intravenous or intramuscular use[b]	59.9 % (199)	46.1 % (82)	55.1 % (281)	**
	Total	332	178	510	

***$p<.001$; **$p<.01$; *$p<.05$ (χ^2) (two-tailed tests). *N.s.* not significant

[a] *opioid, cannab.sedat.cocaine. stimul. halluc. polydrug*

[b] Interview data

Table 3 Dependence diagnoses among prisoners who were assessed with substance abuse risks in the sentence plan or in the RNA (%)

		No	Yes	Total	Kappa	CI kappa	
		Any dependence diagnosis					
Sentence plan sets a goal to influence substance abuse	No	78 % (43)	35 % (70)	44 % (113)	0.315	0.209	0.420
	Yes	22 % (12)	65 % (132)	56 % (144)			
		100 % (55)	100 % (202)	100 % (257)			
		Alcohol dependence diagnosis					
Alcohol problems assessed in RNA	No	75 % (50)	22 % (24)	42 % (74)	0.519	0.391	0.647
	Yes	25 % (17)	78 % (87)	58 % (104)			
		100 % (67)	100 % (111)	100 % (178)			
		Drug dependence diagnosis					
Drug problems assessed in RNA	No	75 % (64)	13 % (12)	43 % (76)	0.627	0.512	0.741
	Yes	25 % (21)	87 % (81)	57 % (102)			
		100 % (85)	100 % (93)	100 % (178)			
		Intravenous use[a]					
Intravenous use assessed in RNA	No	95 % (91)	18 % (15)	60 % (106)	0.772	0.865	0.678
	Yes	5 % (5)	82 % (67)	40 % (72)			
		100 % (96)	100 % (72)	100 % (178)			

Sentence plan $N=257$, Risk and needs assessment (RNA) $N=178$

[a] As recorded in nurses' interview

Table 4 Sentence plan sets a goal to influence substance use. (1 = goal to influence substance use in sentence plan, 0 = no goal). Logistic regression N=434

	N	Models 0 Exp(b)	Model 1 Exp(b)	Model 2 Exp(b)	Model 3 Exp(b)	Model 4 Exp(b)
Gender						
Women	101	1	1.00	1	1	1
Men	409	3.19***	4.51***	2.29	2.48*	2.48*
Age						
Under 26	104	1	1.00	1	1	1
23–36	203	1.26	1.24	1.02	1.36	1.36
37 or more	203	1.36	1.37	0.80	1.04	1.04
Lenght of stay in prison						
Less than 8 months	56	1		1	1	1
8 months or more	280	1.10		1.00	1.11	1.08
Lifers	100	9.70***		8.27***	9.62***	13.27***
Number of sentences						
1	131	1		1	1	1
2–5	194	1.00		1.48	1.40	1.11
6 or more	185	0.73		1.13	1.01	0.59
Basic education						
High school (completely or partly)	59	1			1	1
Not finished primary school	146	1.91			3.59**	2.42
Primary school	303	2.17*			2.71*	1.92
Any dependence diagnosis						
No	92	1				1
Yes	418	3.08**				7.44***
Log likelihood			495.6	429.7	421.5	395.9
LR Chi2[a]			21.8	87.8 (65.9)	96.00 (8.19)	122.0 (216.1)
p			0.000	0.000 (0.000)	0.000 (0.017)	0.000 (0.000)
Nagelkerke R			0.070	0.263	0.285	0.352

Models 0 are bivariate associations

***p<.001; **p<.01; *p<.05 (χ^2) (two-tailed tests)

[a] Values for the variables entered at each step are given in brackets

The inter-rater agreement of the measurements Kappa=0.519 CI (0.391, 0.647), which is seen as fair agreement.

Risks connected with *drug abuse* were assessed for 87 % of prisoners with a drug dependence diagnosis (and a RNA). Risks related to drug abuse were, however, also assessed for 25 % of those with *no* diagnosed drug dependence. The inter-rater agreement for the measurements was Kappa=0627 (CI (0.512, 0.741), which is usually seen as fair agreement.

Intravenous use of drugs was noted in the RNA for 82 % of prisoners (with a RNA) for whom intravenous drug use was recorded in the nurse's interview. Intravenous use of drugs was also noted for only 5 % of those for whom IV use was *not* noted in the nurse's interview. The inter-rater agreement for the measurements was found to be Kappa=0772 CI (0.678, 0.865). This can be seen as excellent agreement.

Table 5 Alcohol problems assessed in the RNA. (1 = alcohol problems assessed, 0 = no alcohol problems assessed). Logistic regression N=434

	N	Models 0 Exp(b)	Model 1 Exp(b)	Model 2 Exp(b)	Model 3 Exp(b)	Model 4 Exp(b)
Gender						
Women	83	1	1.00	1	1	1
Men	351	7.85***	9.42	3.50*	3.64*	3.56
Age						
Under 26	104	1	1.00	1	1	1
23–36	203	1.25	1.09	0.78	0.82	0.85
37 or more	203	1.32	1.11	0.45	0.41	0.41
Lenght of stay in prison						
Less than 8 months	131	1		1	1	1
8 months or more	194	2.28		2.042	2.11	2.17
Lifers	185	26.5		25.75***	29.1***	37.68***
Number of sentences						
1	56	1		1	1	1
2–5	278	1.00		1.52	1.48	1.40
6 or more	100	0.65		1.16	1.023	0.68
Basic education						
High school (completely or partly)	54	1			1	1
Not finished primary school	122	1.38			1.45*	1.32
Primary school	258	1.55			1.02	1.24
Any dependence diagnosis						
No	170	1				1
Yes	264	4.18***				7.63***
Log likelihood			429.4	343.1	338.9	304.55
LR Chi2[a]			26.6	112.3 (82.6)	117.3 (5.05)	151.6 (34.3)
p			0.000	0.000 (0.000)	0.000 (0.080)	0.000 (0.000)
Nagelkerke R			0.091	0.350	0.364	0.453

Models 0 are bivariate associations

***p<.001; **p<.01; *p<.05 (χ^2) (two-tailed tests)

[a] Values for the variables entered at each step are given in brackets

The findings indicate that sentence plans do not recognize diagnosed substance abuse problems to a very high degree. The RNAs that are more thorough, but conducted less frequently, recognize diagnosed problems more accurately and with higher relative frequency. Alcohol problems are noted less frequently than drug problems. Intravenous use of drugs is almost always recognized.

Longer Sentences and Substance Dependence Predict Prison Assessments of Substance Abuse Risks

The first series of nested logistic models (Table 4) predicts recognizing *substance abuse risks in the sentence plan*. Controlling for age and gender, increases the odds for men compared to

Table 6 Drug problems assessed in the RNA. (1 = drug problems assessed 0 = no drug problems assessed). Logistic regression N=434

	N	Models 0 Exp(b)	Model 1 Exp(b)	Model 2 Exp(b)	Model 3 Exp(b)	Model 4 Exp(b)
Gender						
Women	83	1	1	1	1	1
Men	351	6.00***	6.49***	3.20*	2.90*	3.23*
Age						
Under 26	104	1	1.00	1	1	1
23–36	203	1.03	1.20	2.38*	2.05	1.15
37 or more	203	0.80	1.10	1.47	1.28	0.89
Lenght of stay in prison						
Less than 8 months	131	1		1	1	1
8 months or more	194	2.10		1.89	1.86	2.17
Lifers	185	11.53		11.84	11.88***	18.63***
Number of sentences						
1	56	1		1	1	1
2–5	278	1.28		1.96*	1.92	1.49
6 or more	100	0.89		1.72	1.77	0.99
Basic education						
High school (completely or partly)	54	1			1	1
Not finished primary school	122	0.59			0.93	1.06
Primary school	258	1.20			1.56	1.54
Any dependence diagnosis						
No	164	1.00				1
Yes	270	2.76***				5.69***
Log likelihood			422.3	377.07	374.12	347.04
LR Chi2[a]			20.47	66.0 (45.5)	68.95 (2.95)	96.0 (27.1)
p			0.000	0.000 (0.000)	0.000 (0.229)	0.000 (0.000)
Nagelkerke R			0.161	0.221	0.230	0.310

Models 0 are bivariate associations

***p<.001; **p<.01; *p<.05 (χ^2) (two-tailed tests)

[a] Values for the variables entered at each step are given in brackets

women to be assessed with substance abuse risks (model 1). This is, to some extent, explained by women prisoners being, on average, younger and that older male lifers are assessed (with problems) more often. Adjusting for length of stay in prison and the number of sentences (model 2), lifers stand out as having higher odds of being assessed with risk in comparison to prisoners with a sentence of 8 months or less. Adjusting for education (model 3), the odds of being assessed with substance abuse problems is higher for persons with education lower than high school. Adjusting for a diagnosis (model 4) eliminates the differences between the education groups. This shows that those with a lower education more often have a diagnosis but are also assessed to have problems more often. In the final model (4), length of sentence and substance dependence, together with gender, predict being assessed as having problems in the sentence plan. The differences between the lifers and those with a stay of less than

8 months increases in this model, which underlines the fact that that those with longer sentences are assessed with substance abuse risks more often, even when differences in having a diagnosis is controlled for.

The only statistically significant bivariate connections with *having alcohol problems assessed in the RNA* (Table 5) were gender and having an alcohol dependence diagnosis (models 0). However, when gender, age, length of sentence, and number of sentences are controlled for (model 2), having a lifetime sentence also becomes a significant predictor of an assessment of alcohol problems compared to having a less than 8 month stay in prison. Additionally, being male is significant. Not having finished primary school stands out as significant when it and the aforementioned variables are controlled for in model 3. Differences between education levels cease to be significant when having a diagnosis is controlled for in model 4; length of sentence and substance dependence, together with gender, predict an assessment of alcohol problems in the RNA when the other variables were mutually adjusted.

The impacts of the independent variables take the same directions in the models predicting *drug problems assessed as risks in the RNA* as in the former series of nested models (Table 6). Some differences can, however, be noted. Having 2–5 sentences stands out and raises the probability for drug problems being assessed, controlling for age, gender, length of stay in prison and the number of sentences, in model 2. Having a large number of sentences thus has some impact on whether or not a drug problem is recognized. Also, the "in between" age group of 26–36 year olds stand out as having higher odds for having drug problems assessed as risks compared to the younger group. The large number of (older) lifers with assessed drug problems might be the reason for this. Both differences disappear when basic education is controlled for. In model 4, length of stay in prison and having diagnosis of substance dependence, together with gender, predict an assessment of drug problems in the RNA.

In all three nested regression models, model 4, shows that even if differences in having/not having a diagnosis of substance dependence is taken into account, staying in prison for a longer period of time (and, in Tables 4 and 6, being male) raises the odds for recognizing a substance dependence as a need.

As a body, the results indicate that the reason for the substance abuse problems of lifers and prisoners with longer sentences being recognized to a higher degree lies on two levels: Longer-sentenced persons are assessed more frequently, which was noted above, but perhaps also with more precision, which will be discussed below.

Discussion

In this article, we compared a medical study of prisoner health ($N=510$) with prison assessments of risk connected to substance abuse, made in sentence plans (257) and risk-and-needs assessments (RNAs) (178). We found that not all diagnosed dependence problems are recognized as risks in prison assessments. Prisoners with shorter sentences are assessed with substance abuse risks systematically more seldom, which leads us to suspect that some potentially criminogenic problems are overlooked.

The selection for being assessed with substance abuse risks takes place on two levels. First, our study shows that the RNAs recognize substance abuse problems to a higher degree than the sentence plans. However, *not all prisoners are assessed through the more thorough RNA*. RNAs are made less frequently for persons with shorter sentences mainly because it, according to instructions, is obligatory only for persons with a sentence of over 2 years, for lifers, and for

young offenders. In this study, the infrequency of conducting the more thorough RNA resulted in overlooking drug problems in particular, since drug diagnoses were more common for prisoners with no RNA made.[11]

Second, *not all diagnosed problems are noticed even when a sentence plan or a RNA is made*. In our study, the sentence plans were in particularly poor agreement with the health study and recorded risk for only 65 of the persons with a diagnosis. The RNAs recorded all kinds of diagnoses more frequently than the sentence plans, and were in closer agreement with the health study, but also they failed to notice a portion of the diagnosed dependencies. Alcohol problems were recognized less frequently than drug problems; intravenous use was, however, almost always recognized.

Sentence plans and RNAs in this study also assessed criminogenic substance abuse risks in cases where dependence diagnoses had not been set. These could be interpreted as cases where substance use is seen to add to the person's criminogenic risks or being worth targeted in prison even if there is not a dependence problem but might also reflect something else that we are unable to measure here.

The multivariate analyses show that the diagnoses of particular groups of prisoners are recognized more often than others. When age, gender, the number of prior sentences, length of stay in prison, and having a dependence diagnosis were mutually adjusted, staying in prison longer (and being male), along with having been diagnosed with a problem, predicted substance abuse problems being recognized in both sentence plans and the RNAs.

Why are Not all Substance Dependencies Recognized as Risks?

The fact that some dependence diagnoses are not noticed in assessments might have several explanations.

First, it is possible that not all substance dependences—particularly some (latent) alcoholism diagnoses—should be considered criminogenic factors in the sense that their existence raises the risk for recidivism. Thus it may be that not every single dependence diagnosis needs to be recognized and targeted according to the criteria posed by the RNR model. Day et al. (2003) present a meta-analysis pointing out that there can be other, mediating factors behind alcohol use that are the criminogenic factors. In our study, alcoholism diagnoses were recognized less frequently as criminogenic risks, compared to drugs, which might, in part, be due to the ambivalent nature of alcoholism as a criminogenic factor. Also alcohol dependence is so common among Finnish prisoners (conf., Joukamaa et al. 2010) that when drug dependence additionally is detected, attention might easily be focussed on the drug dependence instead of the alcohol dependence; this might lead to alcoholism not even being recorded in the assessment. Also, attitudes defining drug abuse as being the "worse thing" (cf., Christie and Bruun 1968) may contribute to the infrequency of recognizing alcohol problems.

Second, conversely, some alcohol (or drug) use, might be criminogenic, although not a diagnosable dependence. In our study the RNAs and sentence plans also recognized risks in cases where no diagnosis had been placed. Use of alcohol can lower the threshold for violence by making people more irritable or making a given social situation more accepting of violence (Lenke 1996). Changes in overall alcohol consumption is known to connect strongly to the prevalence of violence in Finland (Sirén and Lehti 2006) and to be an intrinsic factor of violent

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[11] This was also true for sentence plans, but since sentence plan nowadays are made for all prisoners, this result is no longer valid.

offences and homicides (Kivivuori and Lehti 2006). The section in the RNAs that ask for "violent behaviour while intoxicated" and "crimes while intoxicated" (Items 4a and 5b in Table 1) should measure this kind of behaviour (cf., Arola-Järvi 2012).

Third, intravenous use seems to be easier to notice than alcohol use or other types of drug use. Intravenous use was the type of abuse problem that was recognized most consistently by the RNAs compared to the medical health study. There were, however, a few more cases of IV use reported in the prisons' RNAs than in the health study. This is interesting since the prisoner health study interview addressed lifetime use and the RNA adheres to only the last 2 years, and one would expect the opposite to be true. Intravenous use was, however, not clinically diagnosed in the health study, but rather reported in the health interview conducted by the nurse. The RNA, on its side, is a structured instrument that allows other ways of assessing the prisoner in addition to an interview, such as observations and/or interviews by one or several persons. This could contribute to a more thorough assessment concerning IV use in the RNA.

Why Do Long Sentences Predict Positive Assessments?

We found that prisoners with shorter stay in prison were assessed with substance abuse risks systematically less frequently than prisoners who stayed longer, both in sentence plans and in RNAs. Since the *dispersion of dependence problems was not dependent on sentence length*, this indicates that the assessments might overlook potentially criminogenic problems. This article cannot, however, answer how many alcohol problems that indeed influence recidivism are unnoticed.

The reason for dependence problems going unnoticed may have to do with several issues: Sentence plans might sometimes be done in haste when a sentence is very short. Routinization, particularly when paired with an overload of work, is known to produce ways of coping with the shortfall between demand and resource availability and can lead to underestimating risk (Kemshall 2010: 8–9; Lipsky 1980). The sentence plan for short-sentenced prisoners is often made based on documents (cf., Arola-Järvi 2012). Problems in such cases might go unnoticed if they are not mentioned in the documents.

Problems might, however, be unobserved even when an interview is made on top of the analysis of documents. Most of the intoxicant welfare programs in Finnish prisons are meant for prisoners with longer sentences and are not run very often (cf. Knuuti and Vogt-Airaksinen 2010). The level of welfare for abusers is also generally thought to be insufficient in Finland and elsewhere (Rounds-Bryant and Baker 2007; Tourunen et al. 2012; Wormer and Persson 2010). Is it possible that some practitioners knowingly avoid recording a need that would require treatment in the sentence plans (particularly for prisoners with short sentences) if they know that there is no treatment available? Studies of both child welfare and community corrections note that, sometimes, the need to keep the proportion of "high-risk" persons on a manageable level can lead to making decisions that fall outside the structured tool's recommendations (Cooper 2005; Shook and Sarri 2007).

The above mentioned factors may of course also be intertwined. Having a conversation with a competent member of the prison staff at a tranquil pace might pave the way for an atmosphere where the prisoner feels secure and might talk about problems more easily. However, if a person does not expect to receive any help, is mistrusting or is very depressed or ill, he/she might not want to talk about problems with prison staff. Dixon (2012) found that mentally ill prisoners did not view risk screening schedules as objective but rather as instruments of control, and emphasized the need to persuade staff that their risk had

reduced. The prisoners in our study might have been more comfortable expressing problems to a doctor or nurse in the prisoner health study, which was known to be confidential. Additionally, the prisoner knew that expressing problems in the health study could not affect him/her negatively, such as resulting in more thorough screening by the staff, but that he/she would be treated as mentioned in the informed consent. Indeed, Crewe (2011) has pointed out that 'prisoners cannot assume that the staff engagement [in their problems: author's insertion] is sincere.'

Having had many sentences also had some impact for drug problems being noted. These persons might become more skilful acting in prison situations based on earlier experiences and want to have their problems recorded, or, contrarily, staff might know some of them and their background more thoroughly from their previous sentences and thus take note of their problems to a higher degree.

Socioeconomic Status Not Significant

Lower socioeconomic status is known to connect to prisoners' health problems (cf. for ex. Skardhammar 2003). Thus it could be hypothesized that lower SES might increase the probability for (recognized) substance abuse problems among prisoners. Basic education that was used in our study as a measure of the respondents' SES, however, did not have a connection to being assessed with problems in prison. The same was true for other measures of socioeconomic status that we included initially but dropped from the final analysis. Earlier works with this data have found that socioeconomic status has had little or no connection to health differences between prisoners. It has been concluded that the socioeconomic background of the prisoners, on average, is quite low and the impact of differences in health is, thus, not very large (Joukamaa et al. 2010). Our study indicates that differences in socioeconomic status do not have an impact on whether dependence problems are noted in prison.

Limitations

The proportion of prisoners with long sentences was larger in the prisoner health study sample than in the Finnish prison population in general. The prisoner health study was so vast that a person staying in prison for a very short time would not have had time to participate throughout the study. Mostly, only those short sentences that had just begun at the time of the study could be enrolled in the study. This does not have an impact on how well the material portrays the health of Finnish prisoners (cf. Joukamaa et al. 2010). It, however, has some impact on the interpretation of measurements related to the prison sentences.

With regard to sentence plans, the overrepresentation of long sentences in the sample is partly counterbalanced by the fact that sentence plans became obligatory for prisons only in 10/2006. Prisoners who had begun their sentences before this date were less likely to have a sentence plan. There is, thus, a good representation of persons with short sentences among those who had a sentence plan in this study, since they entered into prison when the plans became obligatory. Had the dispersion of sentence length in the sample matched the current dispersion of sentence length in prisons at large, and with sentence plans being made for prisoners with sentences of all lengths, *length of sentence might have had an even larger impact* on whether or not assessments of substance abuse are made.

Also the large relative share of lifers should be taken into account when reading our results; RNAs are made more often for lifers. It is thus not surprising that their problems are also

recognized more often. However, this does not alter the conclusion that having a longer sentence (or a life sentence) increases the odds for substance abuse problems being seen as a risk in a prison assessment.

Gender differences in recognizing substance abuse problems in prison should, however, mostly be ascribed to the fact that neither sentence plans nor RNAs were made for women to a very high degree *at the time of the study*. Were the study made today, it might be that women's problems would be recognized to a higher degree. The result concerning lifers, on the contrary, should be as valid today.

Conclusions

The main implication of the study is that it alerts us of the selectiveness of prisoner assessments in practical settings; not all substance abuse problems are recognized by the prison and not all prisoners are assessed thoroughly enough when it comes to substance abuse problems. Prison structures and routines affect how thoroughly prisoners are assessed. This puts prisoners in different positions, since receiving any kind of intervention is connected to the problem being recognized by the assessment/intervention instruments.

Alcohol problems were in our study recognized to a lesser degree than drug problems. We attributed this to the potential visibility of drug-use (IV use), but also to drug problems perhaps being perceived as more criminogenic than alcohol problems (cf., Christie and Bruun 1968).

A structured risk and needs assessment proved more accurate in recognizing substance abuse problems in the study than only a sentence plan, for which the routines are not equally coherent. However, the RNA also overlooks potentially criminogenic substance abuse dependencies.

The problems of short-sentenced prisoners were recognized infrequently. We suspect that prison routines seldom enable thorough assessment of the prisoners in this group. International studies indeed show that time-tables and overloads of work contribute to assessments not being filled or conducted consequently (Miller and Maloney 2013; Bosker et al. 2013). In Finland, a shorter sentence is an accepted ground for making a sentence plan only based on documents—without meeting the prisoner—since time is scarce (cf., Arola-Järvi 2012, 15). This is problematic, since persons with shorter sentences often have alcohol or drug problems that contribute to their recidivism (cf. Kivivuori and Linderborg 2010). Our study points at infrequency of even recognizing the problems being part of the reason for the infrequency of treating short-sentenced prisoners that is indicated in other studies (cf., Obstbaum and Tyni 2015; Chamberlain 2012).

Policy Implications

This study highlights problems that arise when prison processes do not enable thorough assessment of prisoners with short sentences. In this context, it would be important to conduct more research on assessment processes in practice, to develop procedures and facilitate staff training. The use of the RNA tool should be encouraged and the procedures regarding the sentence plan should be made more coherent. It would also be important to clarify the reasons for the infrequency of recognizing alcohol problems, particularly since alcohol abuse and mixed use of alcohol and medication is prominent in Finland (Nuorvala et al. 2008).

Procedures should be improved particularly in relation to the assessment of shorter-sentenced prisoners. Even if help cannot be offered during the short prison sentence, efforts should still be made to notice problems and to provide support during the re-entry phase. The first days of liberty have proven a crucial phase both for recidivism and for relapse into abuse (Belenko 2006; Harrison 2001).

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