

The Norwegian Offender Mental Health and Addiction Study – Design and Implementation of a National Survey and Prospective Cohort Study



Anne Bukten^{1–3}, Ingunn Olea Lund⁴, Eline Borger Rognli^{1,2,5}, Marianne Riksheim Stavseth¹, Philipp Lobmaier^{1,2}, Svetlana Skurtveit^{1,6}, Thomas Clausen^{1,7} and Nikolaj Kunøe¹

¹Norwegian Centre for Addiction Research, Institute of Clinical Medicine, University of Oslo, Oslo, Norway. ²Oslo University Hospital, Division for Mental Health and Addiction, Oslo, Norway. ³The Correctional Service of Norway, Staff Academy, Oslo, Norway. ⁴Norwegian Institute for Alcohol and Drug Research, Oslo, Norway. ⁵Norwegian National Advisory Unit on Concurrent Substance Abuse and Mental Health Disorders, Hamar, Norway. ⁶Norwegian Institute of Public Health, Department of Pharmacoepidemiology, Oslo, Norway. ⁷Alcohol Research Group, Emeryville, CA, USA.

Supplementary Issue: Harm to Others from Substance Use and Abuse

ABSTRACT: The Norwegian prison inmates are burdened by problems before they enter prison. Few studies have managed to assess this burden and relate it to what occurs for the inmates once they leave the prison. The Norwegian Offender Mental Health and Addiction (NorMA) study is a large-scale longitudinal cohort study that combines national survey and registry data in order to understand mental health, substance use, and criminal activity before, during, and after custody among prisoners in Norway. The main goal of the study is to describe the criminal and health-related trajectories based on both survey and registry linkage information. Data were collected from 1,499 inmates in Norwegian prison facilities during 2013–2014. Of these, 741 inmates provided a valid personal identification number and constitute a cohort that will be examined retrospectively and prospectively, along with data from nationwide Norwegian registries. This study describes the design, procedures, and implementation of the ongoing NorMA study and provides an outline of the initial data.

KEYWORDS: prison context, substance abuse, mental health, longitudinal study, crime

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CORRESPONDENCE: anne.bukten@medisin.uio.no

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Background

Prison inmates constitute a severely underprivileged group. Previous research has documented the overrepresentation of this group on lifetime drug use and mental health problems,^{1–4} including psychosis, personality disorders, anxiety and depression, attention deficit hyperactivity disorder (ADHD), and posttraumatic stress disorders.^{5,6} In addition, prison inmates often have a history of problems in a number of basic social domains such as employment history, education, housing, and economy.^{3,7} Thus, imprisonment can represent a period of stability to many repeated offenders, with reduced exposure to social problems and substance use.⁸

The period immediately following prison release is particularly vulnerable. Overdose risk is especially high during the first two weeks post release^{9–11} as tolerance is much lower compared to pre-imprisonment levels. The mental health of inmates is also a source of vulnerability, as those diagnosed with psychiatric disorders experience elevated levels of adverse health and social outcomes after release.²

Examination of post-release outcomes for former prisoners poses considerable challenges, because of the difficulty in retaining the participants in longitudinal studies.¹² One way to reduce attrition problems is to initiate registry studies using data from nationwide public databases that are regularly updated. The Nordic countries have developed advanced registry databases for the purposes of official statistics and research.¹³ Registry data can be linked at an individual level through the unique personal identification number (PIN). Registers cover the whole population or a subset of the population that is relevant for the register. Registry linkages have several advantages; they are less costly,⁹ often nationwide, longitudinal, have negligible or controllable attrition,¹³ and enable controlling for various confounding factors. Registry data have been extensively used in demographic, economical, and sociological research, but not used much in criminological research.¹³

One limitation of registry data is that there is a restricted opportunity to directly control for which data could be collected and made available for research.¹³ Another shortcoming is that



the registers often lack relevant clinical information on the population studied, such as history of drug use,¹⁴ and are thus limited to inferring indirectly from other sources of data.

To reduce some of these limitations, we have used a different approach. By linking data from a national prison survey to pre- and postimprisonment registry data, we aim to increase the understanding of prisoners' mental health and drug use situation before and during custody. We will also investigate how the observed factors are associated with mental health treatment, criminal activity, and mortality outcomes for ex-prisoners over a prolonged period post-release.

The specific aims of the Norwegian Offender Mental Health and Addiction (NorMA) study are to (1) describe substance use (current and past) and mental health among inmates in Norwegian prisons, (2) establish a cohort where survey data are linked with register data based on inmates' consent and personal identification number, and (3) describe and explore data patterns, inmate factors, or – subgroups associated with pre- and post-release outcomes.

The purpose of this article is to provide a full description of the ongoing NorMA study to ensure replicability and transparency of the design and study procedures and to provide an outline of the initial data.

Methods

Overall design. Our study consist of both cross-sectional and longitudinal data. Respondents were invited to provide their PIN, allowing for linkage of their baseline data to nationwide registers.

In Norway, every resident is assigned a unique PIN. The PIN is necessary for personal identification to public authorities and to open a Norwegian bank account. The PIN is also used in many registries and makes it possible to link information on individuals across registries.¹³

The PIN consists of the date of birth (DDMMYY), followed by a three-digit individual number, ending with two control digits. The control digits are calculated through an algorithm involving modulo 11 of weighted sums of the first 9 and 10 digits, respectively. As the algorithm for calculation of the control digits is known, it is possible to test whether a PIN is valid. All the PINs collected in the study were controlled, and only valid PINs will be used in the linkage to other registries.

Setting. Norway is a Northern European country characterized by generous universal public health coverage and a rehabilitative perspective on criminal justice. One main objective of the Norwegian Correctional Services is that the prison inmates should be drug free or able to control their drug use upon release.¹⁵ The Norwegian Correctional Services have implemented cognitive behavioral drug treatment programs¹⁶ and separate drug treatment units in prisons to achieve the goals of rehabilitation. Treatment is ideally transferred to community treatment settings upon release.

The longest regular sentence in Norway is 21 years of imprisonment and release after two-thirds of the sentence

is common. Of all releases from prison during 2013, about 30% of the inmates were released after 30 days or less and about 90% were released within one year.¹⁷ Convicts deemed to be at high risk of repeating violent or dangerous acts upon release, but who do not qualify for coerced mental health treatment, may be sentenced to protective detention.¹⁸ Protective detention can be imposed as a life sentence or a sentence corresponding to "life imprisonment" in other penal systems as there is no upper limit for the jurisdiction duration.

The Norwegian criminal justice system is often described according to the Scandinavian exceptionalism^{19,20} as characterized by low imprisonment rates and a comparably high level of care and services. The Norwegian prison population rate was 75 per 100,000 in 2014,²¹ which is low compared to other countries (698 in the US, 468 in Russia, 214 in Mexico, and 118 in Canada²²). Norway has 43 prisons spread over 63 separate units.¹⁷ This form of prison organization allows most prisoners to preserve geographical closeness to friends and family during custody. All Norwegian prisons are publicly funded and are categorized into high- and low-security prisons and transitional housing, and almost two-thirds of them are high-security prisons. Inmates often start serving their sentence in high-security prisons, before being transferred to a prison with low security. When part of the sentence is completed, inmates can be transferred to transitional houses. Transitional houses are also defined as prisons units; they have defined control systems, but are less restrictive. The largest prison has a capacity of 392 cells, and the smallest prison has a capacity of 13 cells. The transitional housing facilities vary in capacity from 12 to 24 residents.¹⁷

In 2013, the average number of registered inmates in Norway at any given time was 3,787 inmates. Of these, 995 (26%) were detained on remand and 85 (2%) were sentenced to preventive detention.²¹

Women constitute a minority in Norwegian prisons, with an annual proportion of about 6%. During 2013, about 30% of all Norwegian prisoners were foreign prisoners without a Norwegian citizenship. The most frequently represented nationalities were Poland, Rumania, Nigeria, and Lithuania.¹⁷ While childcare services are usually the first option for individuals below 18 years of age, individuals as young as 15 years may be designated as criminals and sentenced to imprisonment.

Procedure. Data were collected in 57 prison units in Norway during 2013 and 2014, including high- and low-security units and transitional houses. There are altogether three prisons for women in Norway, which were all covered during data collection. Due to limited staff capacity and geographical inconvenience, six units, with a total capacity of 179 inmates, were not visited. Those prisons that were not visited did not differ from the prisons included in the data collection.

To ensure that inmates and prison staff received sufficient information before the study was conducted, brochures and posters with information about the study were distributed



to all prisons, and the study was explained in newsletters for criminal justice staff. Questionnaires were administered by study investigators and distributed to prisoners on the day of the visit. Prisoners serving in isolation in high-security units were informed about the study in their prison cell, while inmates serving in low-security units received information in groups. Respondents could choose whether to complete the questionnaires in a room with others or alone in their cells. In most cases, the study investigators collected the questionnaires, but in cases where the respondent wanted more time for completion and had no reservation for returning their questionnaires to prison officers, the questionnaires were collected in closed envelopes and returned to the investigators by registered mail.

All inmates imprisoned in Norway at the time of data collection were eligible to participate, including those of foreign nationality, any age, any gender, and with any somatic or mental illness. Inmates were recruited based on the availability and willingness to participate as opposed to recruiting via means such as stratified random sampling for representativeness.

Survey questionnaire and consent form. An important goal of this study was to provide robust baseline data identifying prisoners' situations before they entered custody and their problems and needs early in life (Fig. 1). A questionnaire used in a previous Norwegian prison study²³ formed the basis for our survey. The questionnaire was partly modified and a number of standardized instruments were added. The questionnaire was made available in Norwegian and also in four other languages based on recommendations from the Directorate of Norwegian Correctional Service: English, Russian, French, and German. This included translated versions of standardized instruments (see below) procured from official sources (European Monitoring Centre for Drugs and Drug Addiction and World Health Organization) and/or by soliciting official translations from instrument authors.

A one-page consent form was included in the questionnaire that explained the purpose of the study and sought permission for linking the survey responses with pre- and postsurvey registry data. In addition to a written signature, an 11-digit field was provided to capture the PINs.

The NorMA survey questionnaire covered a wide range of topics, including demographics (nationality, employment, education, income, social support, and housing) and the status and length of imprisonment (security level, charges and convictions, and participation in correctional programs). Mental health questions included enquiry about the participant's experiences with anxiety, depression, and psychosis and also their experiences of growing up; for example, did their family have problems with alcohol, narcotics, or mental health. Questions regarding physical health were also included, covering well-being, participation in opioid maintenance treatment, hepatitis and HIV, exercise, and smoking. We also asked the participants specifically about their alcohol and drug use. For example, we asked about the intake of alcohol one year prior

to imprisonment, use of illicit drugs, and prescription drugs before and during imprisonment in addition to lifetime use. Other questions regarding exposure to crime, previous criminal activity, self-control, and motivation for change were also included (Fig. 1).

The questionnaire incorporated several standard instruments: The Alcohol Use Disorders Identification Test (AUDIT) was used to assess alcohol consumption in the 12 months prior to incarceration.²⁴ AUDIT is a 10-item instrument, validated for use in criminal justice settings,²⁵ designed to identify problematic alcohol use, even before it becomes an alcohol use disorder.²⁴ The Drug Use Disorders Identification Test (DUDIT)²⁶ and its extended version (DUDIT-E)²⁷ were used to map the frequency of illicit drug use in the 12 months prior to incarceration and the positive and negative aspects of drug use and treatment readiness.

Symptoms of anxiety and depression were measured using a 10-item version of the Hopkins Symptoms Checklist.²⁸ Several versions of the Hopkins scale (5–90 items) have been used in a wide range of settings, and shortened versions have generally shown satisfactory reliability and validity.²⁹

Self-control was measured using the Self-Control Scale,³⁰ which provides information on six characteristics of low self-control: impulsivity, insensitivity, a preference for easy and simple tasks, a preference for physical rather than mental tasks, temper control, and risk taking. The Self-Control Scale has been validated in a number of settings and has also been proven to be a valid measure in a criminal justice setting.³¹

The questionnaire contained 116 questions and took approximately 30–60 minutes to complete. Respondents who had never used alcohol and/or drugs were instructed to skip parts of the questionnaire that focused on drug use. At the end of the questionnaire, the participants could check a one-item box to confirm if they were opioid dependent and interested in receiving information on a study on long-acting naltrexone.

The questionnaire was piloted in a local prison prior to the launch of the study. Prison inmates were asked to fill out the research questionnaire and then answer questions about their experiences in responding to the questionnaire. The pilot questions focused on whether the researcher had explained the study clearly, whether it was easy to understand the written information describing the study, whether they reacted negatively on some content of the questionnaire, and whether it was difficult to answer the questions honestly. The prison inmates were also invited to suggest additional questions that they felt were important for the study. Responses from inmates were taken into account when the final version of the questionnaire was prepared.

National registries. For our study, consenting inmates will constitute a cohort that will be examined retrospectively and prospectively with data from the following registries: the Cause of Death Registry, the Norwegian Prescription Database (NorPD), the Police Registry, the Norwegian Prison

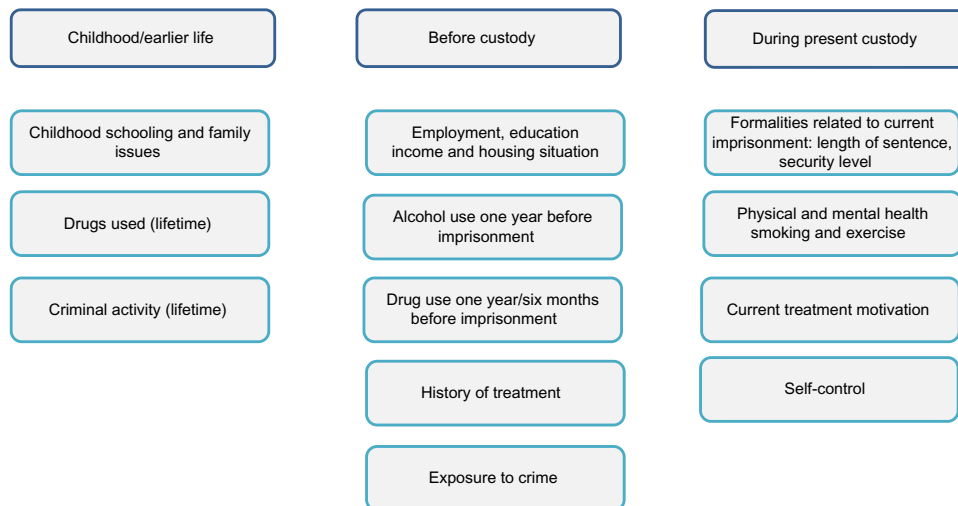


Figure 1. Baseline questionnaire information about prisoners' experiences at different phases: childhood/early life, before and during custody.

Registry, and the Norwegian Patient Registry (NPR) (Fig. 2). In the following section, the national registries are presented, with examples of how they can be utilized to investigate outcomes in the NorMA study.

The Norwegian Cause of Death registry is administered by the Norwegian Institute of Public Health and has been available in electronic format since 1951. In Norway, medical doctors are required to report deaths and to complete a death certificate. Death certificates are collected by the Cause of Death Registry for coding of information, based on the International Classification of Diseases (ICD),³² and determination of the cause of death to be used in death statistics (the underlying cause of death). The ICD allows for comparing mortality in different countries and for following the development of various causes of death over time.

Data from the Norwegian Cause of Death registry will be used to calculate the time period between release from prison and death, to describe the causes of death and the types of substances that contributed to death, and to estimate the effect of take-home naloxone, if given to inmates upon release (Fig. 2).

The Norwegian Prescription Database (NorPD) is administered by the Norwegian Institute of Public Health. NorPD is a national registry and a unique resource for studying the use of prescribed drugs.³³ NorPD contains information on all prescription drugs, whether reimbursed or not, dispensed by pharmacies to individual patients. In Norway, all drugs are classified according to the Anatomical Therapeutic Chemical Classification System,³⁴ which classifies the active ingredients of drugs according to the system or organ on which they act. The amount of drugs dispensed is recorded as the number according to defined daily dose, which is the assumed average maintenance dose per day for adults.^{35,36} Prescribers use either the ICD version 10 or the International Classification of Primary Care Codes as the code of reimbursement on the prescriptions.

Data from NorPD provide information on drugs used to treat addictive disorders (eg, methadone and buprenorphine for treating opioid dependency), drugs with the potential to be abused (eg, strong opioids and benzodiazepines), and drugs used for pharmacological treatment of mental disorders (eg, antidepressants for treating depression, psychostimulants for treating ADHD, or antipsychotics for treating symptoms of psychoses).³⁴ Thus, data from the NorPD can be used to investigate both substance use and mental health problems, both as predictors and outcomes (Fig. 2).

The Norwegian Prison Registry was founded in 1992 and is administered by the Correctional Service of Norway. The registry was established to serve a range of administrative and statistical purposes and includes a range of personal data on people who have been imprisoned in Norway, including age, gender, convictions and sentences, and the actual time spent in prison.³⁷

The Norwegian Police Registry forms the basis of the official Norwegian crime statistics and includes information on all registered criminal cases, including identified offenders. The Norwegian Police Registry has been a national registry since 1992 and contains information from all Norwegian police districts.³⁸ There is a code for every offense,³⁸ which represents information about the offense and the corresponding paragraphs of the Penal Law. There are currently more than 600 different codes in the registry.³⁹ The Norwegian Police Registry provides data on several prosecuting decisions such as formal charge leading to conviction and formal charge leading to acquittal, fines, and others.³⁹

Data from the Norwegian Prison Registry and the Police Registry will be used both as predictors and outcomes. Retrospective data from the two registries will form a basis for calculating the inmates' involvement in the crime earlier in life, before the current sentencing (Fig. 2). Moreover, retrospective crime data along with baseline data may provide risk factors for relapse into crime and overdose mortality after release from incarceration.

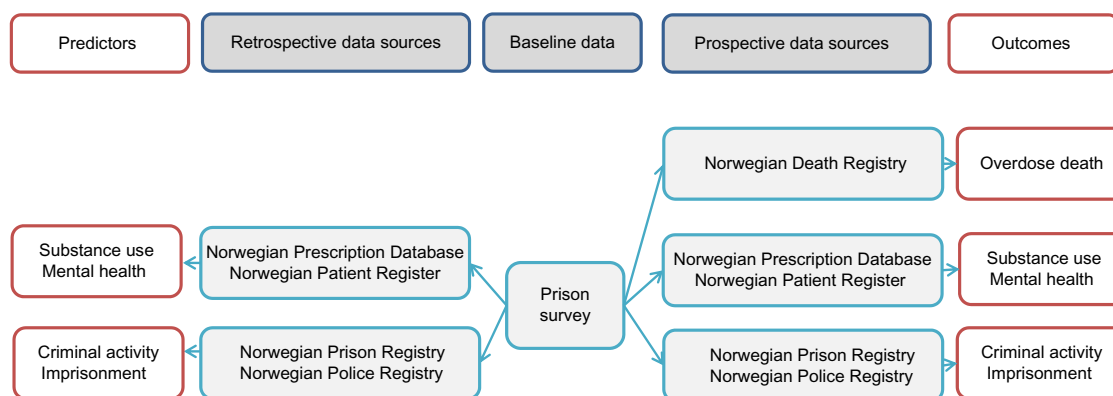


Figure 2. Overview of risk factors and outcomes, and the national registers where information is retrieved.

The Norwegian Patient Register (NPR) is administered by the Norwegian Directorate of Health and made available for research in 2008. The NPR includes information on all patients receiving hospital-level care in both in- and out-patient facilities, for mental and somatic illness. The NPR also includes birth date and county of residence, date of admission, date of discharge, and primary and secondary diagnoses (according to ICD10). These data allow us to monitor treatment during the period following prison release (Fig. 2).

Ethics. Prison inmates may be perceived as being a suitable group for research; they are often reached at relatively low cost, and residing in a closed environment makes them highly available. However, from the perspective of research ethics, prison inmates are a disadvantaged group in a coerced setting, which not only increases the need for scientific knowledge on the group and their situation but also requires increased awareness of ethical boundaries by investigators and research personnel.

As imprisonment represents a restriction of personal freedom and much of prison life is associated with complying with rules and regulations, we were aware of the risk that prisoners could perceive answering the questionnaire as one of the duties of prison life. Emphasis was put on reassuring inmates about the voluntary nature of participating in both parts of the study (survey and/or cohort) and that refraining from participation would not be associated with any form of sanctions. Moreover, prison management refrained from giving any directions on whether inmates should participate or not.

Our study has been formally approved by the Regional Committees for Medical and Health Research Ethics, the Norwegian Social Science Data Services, and the Directorate of Norwegian Correctional Service. In addition, the prison management at each prison approved all visits by researchers.

Study population. A total of 1,499 prison inmates responded to the survey questionnaire, including 1,396 men and 96 women (Table 1). The mean age of the total population was 34.6 years. The majority of respondents were born in Norway (67.1%, $n = 1,006$), 8.4% ($n = 126$) were born in Eastern Europe, and 7.3% ($n = 109$) were born in Africa.

About three quarters ($n = 1,134$) of the sample stated that they were Norwegian citizens. Most of the respondents were convicted prisoners (75.5%, $n = 1,131$), while about 18% ($n = 269$) were detained on remand, and about 5% ($n = 73$) were sentenced to protective detention (Table 1).

Of the 1,499 survey respondents, 741 provided consent to participate in the pre- and postimprisonment cohort and provided a valid Norwegian personal identification number. Among these 741 respondents, almost 90% ($n = 662$) were Norwegian citizens. Among those who did not provide a valid PIN, about 60% were Norwegian citizens ($n = 472$) (Table 1).

Discussion

Methodological implications. A representative sample can be defined as a subset of a statistical population that accurately reflects the members of the entire population. Although our sample ($n = 1,499$) was not drawn randomly from the official prison population, it is representative with regard to a number of demographic variables, such as proportion of women, proportion of inmates with a Norwegian citizenship, and country of birth.^{17,21}

When considering generalization of the material included in our study, the readers should be aware of the possibility of selection bias. In the NorMA study, some groups may not have been included because they were hard to reach. First, some individuals were characterized as being mentally ill or unstable by the local prison authorities and could not be contacted due to security reasons. Second, some inmates were not present at the time of our visit as they were in court or had appointments with lawyers or doctors and so on. Further, prison inmates in the low-security units were regularly involved in a wide range of activities, often outside of the prison area.

In prison populations, a high proportion of inmates have difficulties in reading and writing, as well as concentration problems such as ADHD.³ It is likely that some individuals may have had trouble responding to all the items in the questionnaire. Further, some of the foreign inmates did not have sufficient skills in any of the questionnaire languages.



Table 1. Background and prisoning characteristics (n = 1499).

	TOTAL (n = 1499)		VALID PIN (n = 741)		NON-VALID PIN (n = 758)	
	n	%	n	%	n	%
Gender (men)*	1396	93.1%	690	93.1%	706	93.1%
Age (mean)*	34.6		35.5		33.6	
Country of birth*						
Norway	1006	67.1%	604	81.5%	402	53.0%
Nordic Countries, outside Norway	40	2.7%	10	1.3%	30	4.0%
Western Europe outside Scandinavia	53	3.5%	9	1.2%	44	5.8%
Eastern Europe	126	8.4%	27	3.6%	99	13.1%
Africa	109	7.3%	23	3.1%	86	11.3%
South or Central America	20	1.3%	7	0.9%	13	1.7%
North America	10	0.7%	1	0.1%	9	1.2%
Asia	85	5.7%	42	5.7%	43	5.7%
Oceania	1	0.1%			1	0.1%
Norwegian citizenship*	1134	75.7%	662	89.3%	472	62.3%
Status of imprisonment**						
Sentence	1131	75.5%	579	78.1%	552	72.8%
Remand	269	17.9%	144	19.4%	125	16.5%
Protective custody	73	4.9%	17	2.3%	56	7.4%

Notes: *Missing values: Gender (n = 7, 0.5%), Age (n = 131, 8.7%), Country of birth (n = 49, 3.3%), Norwegian citizenship (n = 35, 2.3%), Status of imprisonment (n = 41, 2.7%). **15 respondents reported both Sentence and Remand.

Moreover, considering that the survey was about inmates' health and substance use, more privileged inmates sometimes refrained to answer the survey, expressing that they had neither substance use nor health problems. Therefore, our sample may be skewed toward both a healthier and a less healthy group of people.

We encountered several challenges in obtaining inmates' PINs. PINs are primarily provided to people who are born in Norway or registered as residents. Therefore, individuals with short-term legal residence and those who reside in Norway illegally will constitute a group that we are unable to include in the follow-up. Moreover, several inmates expressed that they wished to provide their PIN but did not remember all the digits. Finally, a number of respondents expressed general skepticism about providing sensitive personal information along with their PIN.

Organizational matters also influenced the number of respondents we contacted at each prison unit. When conducting a study in a prison, the researcher is dependent on how the organization of data collection is handled by the prison. In most cases, prisons had put in extra resources on the day of data collection, often with a prison officer or social worker accompanying the researcher. In some cases, however, it was more challenging to get into contact with the inmates and to request their participation. Most often, this was due to an unforeseen staffing situation on the day of data collection.

The information obtained from Norwegian registries is known to have a high level of reliability and has missing data only in very few cases.¹³ However, several aspects can influence the specific information that goes into the different registers, and hence the analysis has some limitations. A register only includes what is actually registered and hence does not necessarily document the actual occurrence of a given phenomenon. Although Norway has an inclusive health and social system, different groups in the population are likely to utilize the health system to varying degrees, producing hidden statistics in the material. For the Police Registry, changes in legislations, governmental control, and police practice may produce changes in criminal statistics over time.³⁹ For example, a more explicit focus on drug use may lead to an increase in drug-related offenses being recorded. Moreover, one potential weakness of the Norwegian Prescription Database is the lack of information about diagnosis or severity of the conditions treated. In addition, drugs dispensed to individuals during a hospital stay or in nursing homes are not recorded in the prescription database, which means that the total drug use for the population is underestimated.³⁶

Strengths of the study. The NorMA study succeeded in conducting a national survey in Norwegian prisons and secured valid cohort participation to collect and analyze longitudinal data trajectories from 741 inmates. We believe that the design of survey and register and the high number of participants will provide new knowledge about the complex relationship between inmates' experiences and behaviors before and during

custody and events that may occur post release. While criminological-oriented studies typically investigate criminality as an outcome and health-oriented studies investigate at health as an outcome, this study combines a number of outcomes that are both criminological and health oriented. Considering the complex interaction between various health- and crime-related paths in a prisoner's life, this is a great strength.

There are many advantages associated with the use of registry data: duplication of contact is minimized and follow-up is ensured in a less resource-intensive manner. The presence of nationwide register data ensures that few respondents are lost in the longitudinal analysis and that a variety of outcomes may be addressed across time. The combination of registry and survey data provides extensive information about the individual that is usually not available when combining different registers alone. Data initially meant for clinical use become more robust when combined with the personalized survey data.

Clinical implications. Problem drug use demands considerable health and social care resources. Successful treatment and prevention of relapse and overdose potentially save both health care and criminal justice resources as well as individual suffering. In order to improve relapse rates and prevent overdose among prisoners, knowledge about what characterizes the drug use and mental health situations and how these factors affect transition from prison into the community is crucial. The NorMA study offers a unique combination of research methods to address questions related to improved rehabilitation services.

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Author Contributions

Conceived and designed the experiments: AB, EBR, MRS, PL, TC, SS, NK. Analyzed the data: AB, MRS. Wrote the first draft of the manuscript: AB, IOL. Contributed to the writing of the manuscript: AB, IOL, EBR, MRS, SS, TC, PL, NK. Agree with manuscript results and conclusions: AB, IOL, EBR, MRS, SS, TC, PL, NK. Jointly developed the structure and arguments for the paper: AB, IOL, EBR, MRS, SS, TC, PL, NK. Made critical revisions and approved final version: AB, IOL, EBR, MRS, SS, TC, PL, NK. All authors reviewed and approved of the final manuscript.

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