Journal of Affective Disorders 189 (2016) 207–213

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Research report

# The course of major depression during imprisonment – A one year cohort study

Alicia Baier [a,b], Rosemarie Fritsch [b,c], Yuriy Ignatyev [a], Stefan Priebe [d], Adrian P. Mundt [d,e,f,g,*]

[a] Department of Psychiatry and Psychotherapy, Charité Campus Mitte Universitätsmedizin Berlin, Germany
[b] Department of Psychiatry and Mental Health, Hospital Clínico Universidad de Chile, Santiago, Chile
[c] Department of Psychiatry, Universidad de los Andes, Chile
[d] Unit for Social and Community Psychiatry (WHO Collaborating Centre for Mental Health Services Development), Queen Mary University of London, United Kingdom
[e] Facultad de Medicina, Universidad Diego Portales, Santiago, Chile
[f] Escuela de Medicina sede Puerto Montt, Universidad San Sebastián, Chile
[g] Facultad de Medicina, Universidad de Chile, Santiago, Chile

ARTICLE INFO

*Article history:*
Received 13 July 2015
Received in revised form
25 August 2015
Accepted 5 September 2015
Available online 28 September 2015

*Keywords:*
Prison population
Longitudinal study
Cohort
Major depression
Mental disorders
Psychological symptoms

ABSTRACT

*Background:* First longitudinal studies in prisoners point to improvements of depressive symptoms during imprisonment. The aim of the present study was to assess the course of major depressive disorder during imprisonment and to identify factors influencing remission.
*Methods:* Prisoners with major depressive disorder in a sample of consecutive admissions to the penal justice system in Santiago de Chile were reassessed after one year of imprisonment. Psychiatric diagnoses were established using the Mini-International Neuropsychiatric Interview; psychological symptoms were assessed with the Symptom-Check-List 90 Revised (SCL-90-R). Mean symptom scores were compared at baseline and follow-up using Student's *t*-test. Odds ratios (OR) of comorbid disorders and socio-demographic factors at baseline to predict depression at follow-up were calculated.
*Results:* $N=79$ out of 80 inmates (99%) with major depression at baseline were included. Thirty-five prisoners (44%) had major depression at follow-up. The mean global severity score and all mean subscale scores of the SCL-90-R improved. High suicide risk was present in 37 prisoners (47%) at admission and in 11 (14%) at follow-up. The comorbid diagnosis of PTSD (OR 6.3; $p<0.001$) at admission and having been previously imprisoned (OR 2.5; $p=0.05$) predicted major depressive disorder at follow-up.
*Limitations:* The study could not account for temporary improvements between the assessments.
*Conclusion:* In spite of important symptom improvements, only about half of the prisoners with major depression at admission remit after one year of imprisonment. New interventions should target people with major depression and comorbid PTSD at admission.



## 1. Introduction

Prison population rates have increased worldwide (Walmsley, 2013). The increase of prison population rates was associated with the decrease of psychiatric bed numbers (Mundt et al., 2015a). Psychiatric inpatient and prison populations are largely overlapping (Mundt et al., 2015c). In Chile, prison population rates more than doubled between 1990 and 2010. Even though the rates have gone down in the past four years to 247 per 100,000 people in 2014, prisons are still overcrowded with an occupancy rate of above 110% (www.prisonstudies.org). The conditions are poor compared to other high-income countries.

Rates of major depression were estimated to be 10.1% in male and 14.2% in female prisoners (Fazel and Seewald, 2012). Major depressive disorders in prisoners are an important risk factor for near-lethal suicide attempts (Marzano et al., 2010; Rivlin et al., 2010) and for suicide (Baillargeon et al., 2009). Especially at the moment of admission, prisoners are at high risk of severe mental and comorbid substance use disorders (Mir et al., 2015). A prevalence study in a random sample of consecutively admitted prisoners in the penal justice system in Chile had shown that almost half of the people (49%) had major depression (Mundt et al., 2015b). The rates were higher than previously reported for a study examining the point prevalence of depression in mostly long-term

* Correspondence to: Facultad de Medicina, Universidad Diego Portales, Ejercito 233, Santiago Centro, Chile.
*E-mail address:* a.mundt@qmul.ac.uk (A.P. Mundt).

http://dx.doi.org/10.1016/j.jad.2015.09.003
0165-0327/

convicts in Chile (Mundt et al., 2013). In most places, major depression at admission to prison remains untreated. However, little is known about the course of depression over time during imprisonment. It is unclear whether depressive disorders remit over time when adjustment to the prison environment has occurred or whether they show chronic courses. It is under debate to what degree major depression at admission is related to social adversities and traumatic experiences prior to imprisonment or a consequence of the adverse conditions in the prison environment.

Very few studies have assessed the course of mental health symptoms or mental disorders over time during imprisonment. A recent systematic review included 15 studies (Walker et al., 2014). It pointed to the paucity of evidence and concluded that there was need for further high quality studies (Walker et al., 2014). The studies are still inconclusive but suggest an improvement of mental health symptoms over time during imprisonment, especially depression and anxiety symptoms. Several of the studies have methodological shortcomings. Most studies examined the course of psychological symptoms over time with self-report instruments. The few studies that used standardized diagnostic interviews to also establish diagnoses used self-rated screening prior to the application of the structured interview (Hassan et al., 2011; Hurley and Dunne, 1991), which may have limitations in terms of representativeness depending on the validity of the screening instrument. Most of the studies had rather short follow-up periods that may not have been sufficiently long to account for meaningful adjustment processes. Hassan et al. (2011) showed that female prisoners may have less symptom improvement during imprisonment. Predictors of the course of depression during imprisonment at admission could help identify people for mental health interventions. Socio-demographic characteristics, especially those relating to adjustment during imprisonment and comorbidities of depression could be candidates to be such predictors.

Aim of the present study was to reassess people with major depression at admission to the penal justice system after one year of imprisonment with respect to diagnoses and symptom levels. The study aimed to establish the rate of remission from major depression during imprisonment and to identify factors influencing remission.

## 2. Method

### 2.1. Sample

We conducted a longitudinal observational study of consecutively admitted prisoners with major depression at admission to the penal justice system. The study included baseline and one-year follow-up assessments. Inclusion criteria were current major depression in a representative sample of newly admitted prisoners at baseline and imprisonment at one year follow-up. The baseline assessments took place in the three central remand prison facilities in Santiago. At baseline, $N=427$ prisoners were randomly selected from lists of newly committed prisoners. They were assessed for mental health symptoms and disorders within their first weeks of imprisonment (mean 7 days after imprisonment). All females admitted between February and September 2013 were approached for inclusion; every third male on the daily printed admission lists was approached for inclusion. Prisoners with all types of verdict such as detention, remand prisoners and sentenced prisoners were included in the study. Exclusion criteria were the inability to communicate in the Spanish language and a lack of capacity to provide informed consent. Further details on the sampling were described elsewhere (Mundt et al., 2015b). $N=210$ had major depression at baseline. All prisoners with major depression at baseline and still imprisoned after one year in the metropolitan area of Santiago de Chile ($N=80$) were approached for the follow-up assessment after one year. Follow-up assessments were held from April to June 2014 in five different prison facilities for remand and sentenced prisoners in the metropolitan region of Santiago de Chile: Centro de Detención Preventiva (CDP) Santiago Uno, Centro Penitenciario Femenino (CPF) San Joaquín, CPF San Miguel, CDP Santiago Sur and CDP Puente Alto.

### 2.2. Instruments

Age, marital status, background of migration, educational level and the legal status in prison were assessed using structured questions. The marital status was categorized in the not mutually exclusive categories single, married, co-residing, separated, divorced, widowed. The educational level was categorized according the International Standard Classification of Education (ISCED), comprising levels 5 and 6 (university and doctorate degrees) to one level (UNESCO Institute for Statistics, 2011). The legal status was dichotomized to sentenced and pre-trial remand prisoners. The type of criminal offense and having had previous imprisonment(s) were recorded. Information on psychiatric or psychological treatments in prison was obtained.

The Spanish version of the Mini-International Neuropsychiatric Interview (MINI) was administered to establish diagnoses in accordance with the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). The MINI is a fully structured lay administered interview schedule with good interrater and test-retest reliability (Lecrubier et al., 1997; Sheehan et al., 1998). Its first use in a prison population was in 2004 (Black et al., 2004). Since then, it has been administered in several countries to assess mental disorders in prisoners (Fotiadou et al., 2006; Gunter et al., 2008; Maccio et al., 2015; Ponde et al., 2011). The MINI covers the antisocial personality disorder as the only one of the personality disorders. The module for borderline personality disorder of the Structured Clinical Interview for DSM-IV (SCID II) was added to the interview schedule (First et al., 1990).

The Spanish revised version of the self-reporting 90-item symptom checklist (SCL-90-R) was used to assess symptoms of psychological distress. The instrument is scored on a 5-point Likert scale, ranging from 0 (not at all) to 4 (extremely). The 90 items are grouped into nine dimensions that assess *Somatization*, *Obsessions-Compulsions*, *Interpersonal Sensitivity*, *Depression, Anxiety*, *Hostility*, *Phobic Anxiety*, *Paranoid Ideation*, and *Psychoticism*. The Global Severity Index (GSI) is the average item score and an indicator for general psychological distress (Derogatis, 1977). The SCL-90-R is suitable to measure change of psychological distress over time. Thresholds for 'caseness' and clinically meaningful differences for the GSI and each subscale were established for the general population in Chile (Gempp Fuentealba and Avendaño Bravo, 2008). The SCL-90-R has been used in longitudinal studies of prison populations before (Gibbs, 1987, 1991; Taylor et al., 2010).

### 2.3. Procedure

Procedures for the baseline assessment are described in detail elsewhere (Mundt et al., 2015b). At both time points, potential interviewees were first approached by the prison staff on call assisting in the logistics of the study and led to the interview area of the institution for information on the study. During the interview sessions, only the interviewer and the prison inmate were present in a separate study room to ensure confidentiality. The interviews lasted 45–60 min. Four clinical psychologists conducted the interviews at baseline. One of the psychologists and one doctorate student conducted the interviews at follow-up. All interviewers were trained and supervised by a senior consultant psychiatrist.