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# Did female prisoners with mental disorders receive psychiatric treatment before imprisonment?

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## Abstract

### Background

Throughout the world, high prevalence rates of mental disorders have been found in prison populations, especially in females. It has been suggested that these populations do not access psychiatric treatment. The aim of this study was to establish rates of psychiatric in- and outpatient treatments prior to imprisonment in female prisoners and to explore reasons for discontinuation of such treatments.

### Methods

150 consecutively admitted female prisoners were interviewed in Berlin, Germany. Socio-demographic characteristics, mental disorders, and previous psychiatric in- and outpatient treatments were assessed by trained researchers. Open questions were used to explore reasons for ending previous psychiatric treatment.

### Results

A vast majority of 99 prisoners (66%; 95% CI: 58–73) of the total sample reported that they had previously been in psychiatric treatment, 80 (53%; 95 CI: 45–61) in inpatient treatment,

62 (41%; 95 CI: 34–49) in outpatient treatment and 42 (29%; 21–39) in both in- and outpatient treatments. All prisoners with psychosis and 72% of the ones with any lifetime mental health disorder had been in previous treatment. The number of inpatient treatments and imprisonments were positively correlated ( $\rho = 0.27$ ;  $p < 0.01$ ). Inpatient treatment was described as successfully completed by 56% ( $N = 41$ ) of those having given reasons for ending such treatment, whilst various reasons were reported for prematurely ending outpatient treatments.

## Conclusion

The data do not support the notion of a general ‘mental health treatment gap’ in female prisoners. Although inpatient care is often successfully completed, repeated inpatient treatments are not linked with fewer imprisonments. Improved transition from inpatient to outpatient treatment and services that engage female prisoners to sustained outpatient treatments are needed.

## Keywords

Prisoners, Mental health, Psychiatric hospitalized care, Outpatient mental health treatment

## Background

Female prisoners were estimated to have high rates of mental health and substance use disorders. Prevalence rates of severe mental disorders were estimated to be 3.9% for psychoses and 14.1% for major depression in a recent meta-analysis [1]. Prevalence estimates ranged between 18% and 24% for alcohol use and between 30% and 60% for illicit drug use disorders [2]. Moreover, 42% of female prisoners were estimated to have a personality disorders [3]. Most studies on prison inmates so far included predominantly or completely male samples [4], despite evidence that female prisoners may have higher prevalence rates of mental disorders than men [3,5-9]. Reincarceration rates are higher for people with severe mental health problems [10], especially when there are comorbid substance use disorders [11]. It has been suggested that people with severe mental disorders were increasingly involved with the penal justice system, as they may have reduced access to psychiatric care [12-14].

Psychiatric bed reductions may be associated with increasing prison populations [15]. To further understand this relationship, it is necessary to evaluate whether the same people are admitted to both institutions. Psychiatric treatment histories of prisoners may clarify the proportion of prisoners with mental health problems that at times is served in psychiatric hospitals. So far, only few studies reported psychiatric treatment histories of prisoners, none as primary outcome. Therefore, we searched the literature on prevalence rates of mental disorders in prison populations [1]. In those studies, estimations for the rate of female prisoners with psychiatric treatment prior to incarceration ranged from 36% to 75% [16-20]. Studies from Northern Europe with small numbers had pointed to high rates. The rates for having been not only in psychiatric treatment but specifically in inpatient services prior to imprisonment ranged from 8% [21] to 30% [19] in female prisoners.

It is necessary to further assess and specify psychiatric in- and outpatient treatment histories of female prisoners, as previous studies are still inconclusive and inconsistent. Further

understanding of the degree of interdependence between the psychiatric and penal justice systems is useful for service development. Acknowledging reasons for ending or abandoning previous treatments could provide a starting point to improve the engagement in mental health treatment of women with penal justice involvement. The present study explored the psychiatric in- and outpatient treatment histories of female prisoners in Berlin, Germany and reasons for having ended previous psychiatric treatments.

## Methods

This was a cross-sectional study of a sample of consecutively admitted female prisoners in Berlin, Germany.

### Sample

The sample was recruited from all consecutive female committals to the penal justice system in Berlin, including the open, semi-open and the closed systems. The sample did not include women regarded to have reduced legal responsibility due to mental disorders in terms of §20 or §21 of the German Criminal Law. We aimed to recruit a total sample of 150 participants. The sample size was exploratory and expected to yield percentage estimates with reasonable 95% confidence intervals (CI) for the total sample, i. e. 10% (95% CI: 5–15) or 20% (95% CI: 14–26). Prisoners with all types of verdict such as people in detention, remand prisoners and convicted prisoners were included in the study. The interview was usually scheduled within a week after imprisonment and always within the first month of imprisonment. Exclusion criteria for the study were the inability to communicate in German and a lack of capacity to provide informed consent.

### Measures

Age, marital and employment status, educational and income level, were assessed on structured questions. The variables were dichotomized as living alone or with partner, education as low (comprising the categories 0–2 of the International Standard Classification of Education [ISCED] with all levels of education up to lower secondary levels of education) and high educational level (comprising the categories 3–6 of the ISCED with all educational levels from upper secondary level and higher [22]). Employment status was dichotomized to employed (including people in training under the age of 28 years) and unemployed (including people in training of 28 years or older and retired people). This classification is in accordance with German legislation which requires the long term unemployed to take part in trainings to continuously qualify for social benefits [23]. The income level was dichotomized to € < 990 and € ≥ 990 per month, which was the line of relative poverty for a single person household in 2010 ([http://www.diw.de/de/diw\\_01.c.411565.de/presse/diw\\_glossar/armut.html](http://www.diw.de/de/diw_01.c.411565.de/presse/diw_glossar/armut.html)). The type of criminal offense was assessed.

The fully structured Mini International Neuropsychiatric Interview (MINI) 6.0 [German version] was conducted to assess mental health and substance use disorders. The MINI was developed by Sheehan and Lecrubier [24] to categorize a part of the axis I mental disorders and antisocial personality disorders according to the fourth version of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV). The interview schedule was supplemented by the module for borderline personality disorder of the Structured Clinical Interview for DSM-IV (SCID) [25]. For the purpose of reporting treatment histories, diagnoses were then

grouped into the following categories: ‘any disorder’ including all disorders covered in the MINI and Borderline disorder, screened for separately; ‘affective disorders’ including major depression, recurrent major depression, bipolar disorders, dysthymia and affective psychosis; ‘anxiety disorders’ including panic disorder, agoraphobia, social phobia, post-traumatic stress disorder, obsessive-compulsive disorder and generalized anxiety disorders; ‘eating disorders including anorexia’, bulimia also covered by the MINI was not found; and ‘psychotic disorders’ including probable non-affective psychoses; and the two personality disorders antisocial and borderline personality disorders were grouped together.

Previous imprisonment as remand or sentenced prisoner, psychiatric and psychotherapeutic treatment history were assessed. From here on, the term psychiatric is used comprising ‘psychiatric and psychotherapeutic’ because in this context they are referred to synonymously. History of previous imprisonments and treatments were based on subjective recall and not corroborated by objective administrative data. For the mental health treatment histories, recall was believed to be superior to objective health records that may have a varying quality as other clinical routine data. With respect to the previous imprisonments this was a pragmatic decision due to confidentiality concerns on the side of the prison administration to extract data from penal justice records. The decision was based on the rationale that recall with respect to previous imprisonments was sufficiently accurate in the study population. For cases of previous imprisonments in other states or countries and prior to the introduction of electronic records, subjective recall may be more accurate than electronic files or criminal records. Reasons for ending in- and outpatient care were assessed using the following open questions: ‘What were the reasons for ending psychiatric in-patient treatment?’ and ‘What were the reasons for ending psychiatric/psychotherapeutic outpatient treatment?’ Those questions were followed up by using a specification, if the treatment was prematurely ended on either side or abandoned: ‘What were the reasons for that?’

## **Procedure**

The capacity to give informed consent was tested by assessing the potential participant’s ability to understand the purpose of the study. The field team consisted of two clinical psychologists trained and supervised by a senior consultant psychiatrist in using the instruments. The interviews lasted for 45–60 minutes and were held in a separate room of the prison to ensure confidentiality. The data were collected between April 2012 and May 2013. All interviewees provided written informed consent. The study was approved by the Ethics Board of the Charité Universitätsmedizin Berlin (EA1/302/11) and by the legal justice department of the State of Berlin, Germany (reference AL, 20.01.2012).

## **Analyses**

Socio-demographic characteristics and prevalence rates of mental disorders were calculated as per cent values with 95% CI using a bootstrap algorithm for the groups with previous psychiatric treatment and without previous psychiatric treatment. Prevalence rates of mental disorders for the total sample will be reported in a forthcoming paper. Two-sided Spearman’s correlations for non-parametric tests were used to explore correlations between the number of previous imprisonments and the following: having been in any psychiatric treatment, in previous inpatient treatment and in previous outpatient treatment. To test the relationship between having been in psychiatric inpatient treatment with the number of previous imprisonments found in bivariate analyses, we conducted a Poisson generalized linear regression analysis with previous imprisonments as the dependent variable. We introduced

having been in any treatment, having been in inpatient treatment and having been in outpatient treatment as independent variables.

To identify high users of both systems, a group of prisoners with  $\geq 2$  previous admissions to psychiatric inpatient treatments and  $\geq 2$  previous imprisonments were identified. Values of  $p < 0.05$  were considered statistically significant. The statistical analyses were made using SPSS version 20.0 and Stata 12.0.

The answers to the open questions were subjected to content analysis [26]. We used a conventional approach to content analysis. Codes were derived from the data and defined during data analysis. Two of the authors independently coded the data.

## Results

### Recruitment

During the recruitment period, 338 women entered the central facility for the admission of female prisoners to the penal justice system in Berlin. Sixty women were transferred to other detention centres within days or were imprisoned for only a few days and, therefore, could not be approached for inclusion to the study. Of the remaining 278 women, 198 fulfilled the inclusion criteria, while 80 women did not: 69 were not able to speak sufficient German, and 11 had severe cognitive or psychological incapacities and were not able to give informed consent to participate in the study. Of the 198 fulfilling the inclusion criteria, 48 declined participation, and 150 agreed to participate.

### Psychiatric treatment trajectories

Table 1 reports the types of psychiatric treatment received for the whole sample.

**Table 1 Prevalence rates and 95%-confidence intervals for the psychiatric treatment history in a sample of consecutively admitted female prisoners**

| Psychiatric treatment history                     | N  | %  | 95% CI |
|---|----|----|--------|
| Any psychiatric service                           | 99 | 66 | 58-73  |
| Never used any psychiatric service                | 51 | 34 | 26-41  |
| Inpatient psychiatric service                     | 80 | 53 | 45-61  |
| Only inpatient psychiatric service                | 37 | 25 | 18-32  |
| Outpatient psychiatric service                    | 62 | 41 | 34-49  |
| Only outpatient psychiatric service               | 19 | 13 | 7-18   |
| Both inpatient and outpatient psychiatric service | 43 | 29 | 21-39  |

Two thirds ( $n = 99$ ; 66%; 95% CI: 58–73) of the interviewees had previously received some form of psychiatric treatment. About half of the sample ( $n = 80$ ; 53%; 95% CI: 45–61) had been in inpatient treatment; 62 prisoners (41%; 95% CI: 34–49) had received psychiatric outpatient treatment; and 43 prisoners (29%; 95% CI: 21–39) had received both in- and outpatient psychiatric treatment; 37 prisoners (25%; 95% CI: 18–32) had been hospitalized without ever having used any outpatient psychiatric service; and 19 (13%, 95% CI: 7–18) had been treated in outpatient psychiatric services, without ever having been in psychiatric inpatient care.

Previously hospitalized individuals (n = 80) had a mean number of 3.7 (95% CI: 2.7-4.7) psychiatric inpatient treatments. The number of previous imprisonments was positively correlated with having been in any psychiatric treatment (Spearman's rho = 0.23; p < 0.01) and also with the number of previous psychiatric inpatient treatments (Spearman's rho = 0.27; p < 0.01), but not with previous outpatient treatments (Spearman's rho = 0.01; p = 0.88). The generalized linear model with the number of previous imprisonments as dependent variable is shown in Table 2. Having been in psychiatric inpatient treatment associated with the number of previous imprisonments (incidence risk ratio of 2.49; p = 0.005). Previous outpatient treatment and any treatment did not show a significant relationship with the number of previous imprisonments.

**Table 2 Poisson generalized linear regression model with number of previous imprisonments as dependent variable**

| <b>Independent variable</b> | <b>Incidence Rate Ratio</b> | <b>95% confidence interval</b> | <b>p-value</b> |
|-----------------------------|-----------------------------|--------------------------------|----------------|
| Inpatient treatment         | 2.49                        | 1.31-4.73                      | .005           |
| Outpatient treatment        | 0.81                        | 0.57-1.14                      | .23            |
| Any treatment               | 0.81                        | 0.39-1.79                      | .58            |

Twenty-nine participants had at least two previous psychiatric inpatient treatments and had been admitted at least for the second time to the penal justice system (n = 29; 19% of the total sample; 95% CI: 13–27). Only 15 out of these 29 prisoners (52%) had received outpatient treatment.

### **Socio-demographic characteristics**

Socio-demographic characteristics are shown for the groups with and without previous psychiatric treatment (Table 3).

**Table 3 Socio-demographic characteristics of consecutively admitted female prisoners with and without history of previous psychiatric treatment**

| Socio-demographic characteristic | Total sample |            |         | No previous psychiatric treatment history |            |         | Previous psychiatric treatment |            |         |
|----------------------------------|--------------|------------|---------|---|------------|---------|--------------------------------|------------|---------|
|                                  | N = 150      | Mean       | 95% CI  | N = 51                                    | Mean       | 95% CI  | N = 99                         | Mean       | 95% CI  |
| Age                              |              | <b>34</b>  | 33-36   |   | <b>36</b>  | 33-39   |                                | <b>34</b>  | 31-36   |
| Previous imprisonments           |              | <b>1.2</b> | 0.9-1.5 |   | <b>0.9</b> | 0.5-1.4 |                                | <b>1.4</b> | 1.1-1.8 |
|                                  |              | <b>%</b>   |         |   | <b>%</b>   |         |                                | <b>%</b>   |         |
| Living alone                     | 139          | <b>93</b>  | 88-97   | 43  | <b>84</b>  | 74-94   | 96                             | <b>97</b>  | 93-100  |
| Co-residing                      | 11           | <b>7</b>   | 3-12    | 8   | <b>16</b>  | 6-26    | 3                              | <b>44</b>  | 0-7     |
| <b>Educational level</b>         |              |            |         |   |            |         |                                |            |         |
| ISCED 0-2                        | 89           | <b>59</b>  | 51-67   | 29  | <b>57</b>  | 43-71   | 60                             | <b>61</b>  | 51-71   |
| ISCED 3-6                        | 61           | <b>41</b>  | 33-49   | 22  | <b>43</b>  | 30-58   | 39                             | <b>39</b>  | 29-49   |
| <b>Employment</b>                |              |            |         |   |            |         |                                |            |         |
| Unemployed                       | 113          | <b>75</b>  | 68-82   | 36  | <b>71</b>  | 58-83   | 77                             | <b>78</b>  | 69-86   |
| Employed                         | 37           | <b>25</b>  | 18-32   | 15  | <b>29</b>  | 17-42   | 22                             | <b>22</b>  | 14-31   |
| <b>Income level</b>              |              |            |         |   |            |         |                                |            |         |
| Below poverty line               | 119          | <b>79</b>  | 73-86   | 40  | <b>78</b>  | 67-90   | 79                             | <b>80</b>  | 72-87   |
| Above poverty line               | 31           | <b>21</b>  | 14-27   | 11  | <b>22</b>  | 14-38   | 20                             | <b>20</b>  | 15-32   |
| <b>Family situation</b>          |              |            |         |   |            |         |                                |            |         |
| Children                         | 104          | <b>69</b>  | 62-77   | 37  | <b>73</b>  | 59-84   | 67                             | <b>68</b>  | 58-77   |
| No children                      | 46           | <b>31</b>  | 23-38   | 14  | <b>28</b>  | 15-40   | 32                             | <b>32</b>  | 24-42   |
| <b>Offense category</b>          |              |            |         |   |            |         |                                |            |         |
| Failure to pay a fine            | 69           | <b>46</b>  | 39-54   | 21  | <b>41</b>  | 27-55   | 48                             | <b>49</b>  | 38-58   |
| Theft/fraud                      | 35           | <b>23</b>  | 17-30   | 13  | <b>26</b>  | 14-38   | 22                             | <b>22</b>  | 14-31   |
| Remand prisoners                 | 16           | <b>11</b>  | 6-16    | 8   | <b>16</b>  | 6-26    | 8                              | <b>8</b>   | 3-14    |
| Violent crimes                   | 15           | <b>10</b>  | 5-15    | 3   | <b>6</b>   | 0-13    | 12                             | <b>12</b>  | 6-19    |
| Related to drugs                 | 10           | <b>7</b>   | 3-11    | 4   | <b>8</b>   | 2-16    | 6                              | <b>6</b>   | 2-12    |
| Related to immigration           | 6            | <b>4</b>   | 1-7     | 3   | <b>6</b>   | 0-13    | 3                              | <b>3</b>   | 0-7     |



Most of the participants in either group had been living alone, had low educational levels, were unemployed prior to admission, had incomes below the poverty line and had committed minor non-violent offenses such as not paying a fine, theft or fraud.

## Treatment histories for specific diagnostic groups

Table 4 shows by diagnostic group whether they had received previous psychiatric treatment. One hundred and fifteen prisoners (77%) of the sample had at least one current and 136 prisoners (91%) at least one lifetime disorder.

**Table 4 Previous psychiatric treatment histories for different diagnostic groups**

| Mental disorder                                  | Total sample |    | No previous treatment |    | Previous psychiatric treatment |     | Previous inpatient treatment |     | Previous outpatient treatment |    |
|--|--------------|----|-----------------------|----|--------------------------------|-----|------------------------------|-----|-------------------------------|----|
|  | N = 150      | %  | N = 51                | %  | N = 99                         | %   | N = 80                       | %   | N = 62                        | %  |
| At least one <b>current</b> disorder             | 115          | 77 | 29                    | 25 | 86                             | 75  | 72                           | 63  | 51                            | 44 |
| At least one <b>lifetime</b> disorder            | 136          | 91 | 38                    | 28 | 98                             | 72  | 80                           | 59  | 61                            | 45 |
| <b>Current</b> affective disorder <sup>1</sup>   | 35           | 23 | 7                     | 20 | 28                             | 80  | 22                           | 63  | 22                            | 63 |
| <b>Lifetime</b> affective disorder               | 97           | 65 | 22                    | 23 | 75                             | 77  | 60                           | 62  | 54                            | 56 |
| Substance-related disorder<br>(one year)         | 93           | 62 | 21                    | 23 | 72                             | 77  | 64                           | 69  | 41                            | 44 |
| <b>Current</b> anxiety disorder <sup>2</sup>     | 55           | 37 | 11                    | 20 | 44                             | 80  | 37                           | 67  | 30                            | 55 |
| <b>Lifetime</b> anxiety disorder                 | 65           | 43 | 14                    | 22 | 51                             | 78  | 43                           | 66  | 35                            | 54 |
| Eating Disorder: Anorexia                        | 4            | 3  | 0                     | 0  | 4                              | 100 | 3                            | 75  | 3                             | 75 |
| <b>Current</b> psychotic disorder                | 3            | 2  | 0                     | 0  | 3                              | 100 | 3                            | 100 | 2                             | 67 |
| <b>Lifetime</b> psychotic disorder               | 8            | 5  | 0                     | 0  | 8                              | 100 | 7                            | 88  | 5                             | 63 |
| Borderline or antisocial<br>personality disorder | 53           | 35 | 10                    | 19 | 43                             | 81  | 41                           | 77  | 28                            | 53 |

<sup>1</sup>including major depression, recurrent major depression, bipolar disorders, dysthymia and affective psychosis.

<sup>2</sup>including panic disorder, agoraphobia, social phobia, post-traumatic stress disorder, obsessive-compulsive disorder and generalized anxiety disorders.

All prisoners with psychotic disorders and eating disorders had received psychiatric treatment. For the other diagnostic groups the rate of previous treatment was close to 80%. Close to 20% with most diagnoses had never been in psychiatric treatment. Irrespective of the diagnostic group, rates of previous inpatient treatment were equal or higher than rates of previous outpatient treatment.

## Reasons for ending previous psychiatric treatments

Seventy-three out of 80 prisoners with previous inpatient treatments reported a total of 78 reasons for having ended psychiatric inpatient treatments. By far the most commonly reported reason was that the treatment had been effective and that the mental health problem had improved because of it (n = 41; 56%). Detoxification treatments were described as successful when they had led to at least temporary abstinence or stable substitution. These treatments were perceived as not successful when they were abandoned during hospitalization. Treatments were discontinued mostly for drug craving (n = 13; 18%), problems with the setting such as sharing the ward with 'mad' people and not liking psychiatry in general (n = 7; 10%), dismissal for conduct problems (n = 7; 10%), and the experience of coercive measures (n = 6; 8%). Less frequent were administrative problems (n = 3; 4%) or the end of a forensic treatment verdict (n = 1; 1%).

Forty-five out of 62 prisoners with previous outpatient treatments reported a total of 53 reasons for having ended outpatient treatments. Only 16 (36%) stated that the treatment had

been successfully completed with an improvement of the given mental health problem. Patients discontinued outpatient treatment because they felt unable to talk (n = 12; 27%), relapsed into substance abuse (n = 6; 13%), had no access to further treatment (n = 4; 9%) or were imprisoned during treatment (n = 4; 9%).

## **Discussion**

### **Main findings**

Female prisoners report very high rates of access to psychiatric treatment, especially to inpatient treatment. About 20% of prisoners with mental disorders across the most common diagnostic categories have reported to have never been in psychiatric treatment. However, the vast majority have received psychiatric treatment, and many even repeatedly. This was particularly in inpatient settings where most participants felt the treatment was successful.

### **Strengths and limitations**

The study recruited consecutively admitted women so that the sample included female prisoners regardless of their length or type of verdict. Diagnoses were established by independent researchers, using standardised instruments.

Yet, the study also has several limitations. Firstly, the recruitment was carried out in one single site that receives all female prisoners in Berlin and it is debatable to what degree the findings can be generalised to larger parts of Germany or other European contexts. Secondly, the sample did not include prisoners whose German language proficiency was insufficient to understand the interview questions. However, we included non-native speaking immigrants with sufficient language proficiency. Thirdly, we did not include people without capacity to give informed consent such as severe cognitive impairments or acute agitation. And finally, the data on the treatment history and the history of previous imprisonments were based on the recall of the participants and not corroborated by objective data.

### **Comparison against the literature**

In the following, the findings are first discussed against a study reporting treatment histories for male prisoners in Germany and then compared with reports from other countries with different legal and social contexts. In Germany, 31% of convicted male prisoners had been previously admitted to inpatient psychiatric treatment as compared to 53% of the females in this study and 20% of the male prisoners had previously used outpatient care as compared to the 41% of the females in our sample [27]. Our findings indicate that female prisoners have higher rates of previous psychiatric inpatient and outpatient treatment than male prisoners in Germany.

Female prisoners in New Zealand had rates of previous psychiatric hospitalizations of 8% [21], much lower than in our study and than in other studies from Europe. From Ireland lower rates of previous mental health treatment (34% including inpatient and outpatient treatments) in female committals to prison were reported as compared to psychiatric treatment histories of female prisoners in Berlin in this study (66%) [16]. A study from England and Wales reported 12% inpatient and 24% outpatient treatment histories as adults and 9% child guidance in sentenced female prisoners [17]. The highest rates of psychiatric treatment

history reported so far for female prisoners were from a small sample  $n = 33$  in Finland indicating 75% of previous psychiatric treatment and 30% of psychiatric hospitalization [19]. As compared to our study, the rates were higher for any psychiatric treatment but lower for the inpatient treatment.

Not only in Germany but also internationally, the rates were lower for male prisoners as compared to females [17]. As for the female prisoners, the access to psychiatric care, especially in the inpatient sector prior to imprisonment may be higher in Germany for male prisoners as compared to other countries, such as the US [28], Ireland [29] or Australia [30]. It could be a characteristic of the German legal context and the reimbursement system in health care that inpatient treatment is more ubiquitous and accessible for this population than outpatient care. The rate of psychiatric hospital beds is high in Germany and people with addiction are accepted for acute inpatient detoxification [31]. However, the high rate of previous inpatient treatment cannot only be attributed to one specific diagnostic group such as addiction. The finding that having been hospitalised in psychiatry significantly correlated with the number of previous imprisonments is consistent with the hypothesis that people with severe mental disorders are at high risk of re-offending [10] and for the direct interdependence of the penal justice system and the psychiatric inpatient services [15]. The repeat hospitalizations in psychiatry are an indicator for the severity and the chronicity of the disorders that come together with repeat penal justice involvement, which could mean that the crimes of this group tend to be minor, that rehabilitation usually fails and that the execution of punishment fails to disincentive further criminal behaviour. This finding could also indicate that the psychiatric treatment as currently provided is ineffective in reducing the rate of subsequent imprisonment, otherwise an inverse relationship would have been expected. A history of psychiatric treatment including inpatient treatment that was perceived as successful appears not to prevent imprisonment. Prospective studies are necessary to confirm this.

## **Conclusions**

The data do not support the notion of a general ‘mental health treatment gap’ in female prisoners. The number of prisoners with all types of mental health problems who had not received psychiatric treatment is much smaller than the number of those who had received such treatment and smaller than expected from the literature. More research is required in different national, legal and social contexts exploring exact pathways to psychiatric care of people with penal justice involvement. Better treatments that engage people into sustained outpatient care and reduce re-incarceration are needed for female prisoners.

## **Competing interests**

The authors declare that they have no competing interests.

## **Authors’ contributions**

APM JM and SP conceived of the study, JM and SK collected the data, APM SK and SP drafted the manuscript. All authors critically revised the manuscript for important intellectual content and approved of the final version.

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## References

1. Fazel S, Seewald K. Severe mental illness in 33 588 prisoners worldwide: systematic review and meta-regression analysis. *Br J Psychiatry*. 2012;200(5):364–73.
2. Fazel S, Bains P, Doll H. Substance abuse and dependence in prisoners: a systematic review. *Addiction*. 2006;101(2):181–91.
3. Fazel S, Danesh J. Serious mental disorder in 23000 prisoners: a systematic review of 62 surveys. *Lancet*. 2002;359(9306):545–50.
4. Jordan BK, Schlenger WE, Fairbank JA, Caddell JM. Prevalence of psychiatric disorders among incarcerated women. II. Convicted felons entering prison. *Arch Gen Psychiatry*. 1996;53(6):513–9.
5. Steadman HJ, Osher FC, Robbins PC, Case B, Samuels S. Prevalence of serious mental illness among jail inmates. *Psychiatr Serv*. 2009;60(6):761–5.
6. von Schönfeld CE, Schneider F, Schroder T, Widmann B, Botthof U, Driessen M. Prävalenz psychischer Störungen, Psychopathologie und Behandlungsbedarf bei weiblichen und männlichen Gefangenen. *Der Nervenarzt*. 2006;77(7):830–41.
7. Butler T, Allnutt S, Cain D, Owens D, Muller C. Mental disorder in the New South Wales prisoner population. *Aust N Z J Psychiatry*. 2005;39(5):407–13.
8. Binswanger IA, Merrill JO, Krueger PM, White MC, Booth RE, Elmore JG. Gender differences in chronic medical, psychiatric, and substance-dependence disorders among jail inmates. *Am J Public Health*. 2010;100(3):476–82.
9. Fazel S, Baillargeon J. The health of prisoners. *Lancet*. 2011;377(9769):956–65.
10. Baillargeon J, Binswanger IA, Penn JV, Williams BA, Murray OJ. Psychiatric disorders and repeat incarcerations: the revolving prison door. *Am J Psychiatry*. 2009;166(1):103–9.
11. Baillargeon J, Penn JV, Knight K, Harzke AJ, Baillargeon G, Becker EA. Risk of reincarceration among prisoners with co-occurring severe mental illness and substance use disorders. *Adm Policy Ment Health*. 2010;37(4):367–74.
12. Lamb HR, Weinberger LE. The shift of psychiatric inpatient care from hospitals to jails and prisons. *J Am Acad Psychiatry Law*. 2005;33(4):529–34.
13. Lamb HR, Weinberger LE. Some perspectives on criminalization. *J Am Acad Psychiatry Law*. 2013;41(2):287–93.

14. Lamb HR, Weinberger LE, Marsh JS, Gross BH. Treatment prospects for persons with severe mental illness in an urban county jail. *Psychiatr Serv.* 2007;58(6):782–6.
15. Mundt AP, Chow WS, Arduino M, Barrionuevo H, Fritsch R, Giralá N et al.: Psychiatric hospital beds and prison populations in South America Since 1990: does the penrose hypothesis apply? *JAMA Psychiatry* 3 Dec 2014, epub ahead of print, doi: 10.1001/jamapsychiatry.2014.2433
16. Wright B, Duffy D, Curtin K, Linehan S, Monks S, Kennedy HG. Psychiatric morbidity among women prisoners newly committed and amongst remanded and sentenced women amongst the Irish prison system. *Ir J Psych Med.* 2006;23(2):47–53.
17. Maden T, Swinton M, Gunn J. Psychiatric disorder in women serving a prison sentence. *Br J Psychiatry.* 1994;164(1):44–54.
18. Mohan D, Scully P, Collins C, Smith C. Psychiatric disorder in an Irish female prison. *Crim Behav Ment Health.* 1997;7(3):229–35.
19. Joukamaa M. Mental health of Finnish prisoners: Results of a survey. *The Journal of Forensic Psychiatry.* 1993;4(2):261–71.
20. Davidson M, Humphreys MS, Johnstone EC, Owens DG. Prevalence of psychiatric morbidity among remand prisoners in Scotland. *Br J Psychiatry.* 1995;167(4):545–8.
21. Brinded PMJ, Stevens I, Mulder RT, Fairley N, Malcolm F, Wells JE. The Christchurch prisons psychiatric epidemiology study: methodology and prevalence rates for psychiatric disorders. *Crim Behav Ment Health.* 1999;9(2):131–43.
22. International Standard Classification of Education ISCED 2011 [<http://www.uis.unesco.org/Education/Documents/isced-2011-en.pdf>].
23. Mundt A, Kliewe T, Yayla S, Ignatyev Y, Busch M, Heimann H, et al. Social characteristics of psychological distress in disadvantaged areas of Berlin. *Int J Soc Psychiatry.* 2014;60(1):75–82.
24. Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, Hergueta T, Baker R, Dunbar GC: The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J Clin Psychiatry* 1998, 59 Suppl 20:22–33;quiz 34–57.
25. Fydrich T, Renneberg B, Schmitz B, Wittchen HU. SKID-II. Strukturiertes Klinisches Interview für DSM-IV. Achse II: Persönlichkeitsstörungen. Göttingen: Hogrefe; 1997.
26. Hsieh HF, Shannon SE. Three approaches to qualitative content analysis. *Qual Health Res.* 2005;15(9):1277–88.
27. Dudeck M, Kopp D, Kuwert P, Drenkhahn K, Orlob S, Luth HJ, et al. Prevalence of psychiatric disorders in prisoners with a short imprisonment: results from a prison in north Germany. *Psychiatr Prax.* 2009;36(5):219–24.

28. Steadman HJ, Monahan J, Duffee B, Hartstone E. The Impact of State Mental Hospital Deinstitutionalization on United States Prison Populations, 1968–1978. *Journal of Criminal Law and Criminology*. 1984;75(2):474–90.
29. Duffy DLS, Kennedy HG. Psychiatric morbidity in the male sentenced Irish prisons population. *Ir J Psych Med*. 2006;23(2):54–62.
30. Sodhi-Berry N, Preen DB, Alan J, Knuiman M, Morgan VA. Pre-sentence mental health service use by adult offenders in Western Australia: Baseline results from a longitudinal whole-population cohort study. *Crim Behav Ment Health*. 2014;24(3):204–21.
31. Mir J, Priebe S, Mundt AP. People with mental disorders in East and West Germany: Indicators of institutionalized care since reunification. *Nervenarzt*. 2013;84(7):844–50.

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