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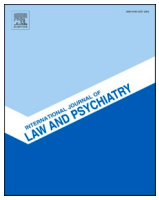

Review Article

Recidivism among forensic psychiatric patients undergoing outpatient treatment for mental health disorders – A meta-analysis

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ABSTRACT

Introduction: The risk for general or criminal recidivism in forensic psychiatric patients has not been extensively investigated in the literature. The aim of this review is to evaluate criminal recidivism among forensic patients with mental disorders undergoing some type of outpatient treatment.

Methods: In this review, we utilized PubMed, Embase, Scopus, and the Cochrane Library to search for studies published from January 1990 up to July 2024. Eligible studies should i) evaluate forensic patients with mental health conditions, ii) evaluate patients undergoing outpatient treatment, and iii) evaluate criminal recidivism (general, sexual, or violent) as a primary outcome. Recidivism was also compared between groups when reported.

Results: Overall, 12 clinical studies including 3271 patients were evaluated. Of these, 3048 patients undergoing outpatient treatment were analyzed. The mean age of all patients was 23.4 years (SD = 6.3), and 79.7 %. were male. The mean follow-up was 33.82 months. Overall, the pooled proportion for general recidivism was 39.1 % (95 % CI: 25 %–54.3 %), and for violent recidivism was 21.7 % (95 % CI: 2.6 %–52.3 %; data from four studies). In group comparisons (data from five studies), there was no difference between patients under treatment and the control groups as far as general recidivism (OR = 0.489; 95 % CI [0.202–1.183]; $P = 0.112$), and violent recidivism (OR = 0.283; 95 % CI [0.056–1.416]; $P = 0.124$) were concerned.

Conclusion: The general and violent recidivism rates are high among forensic patients undergoing outpatient treatment for mental health disorders. There was no difference between outpatient treatment and control groups regarding their effect on recidivism. However, most of the studies reviewed did not provide information about drug treatment; more comparative studies focusing on pharmacotherapy are needed to verify any benefits of outpatient treatment.

1. Introduction

The role of forensic psychiatry is significant as it provides treatment for forensic psychiatric patients, as well as assesses the risk of recidivism and prevents reoffending (Gibbon et al., 2020; Völlm et al., 2018). One of the goals in forensic treatment is to reduce the risk of all types of recidivism. Factors associated with recidivism, irrespective of the classification of crime, include a short time after discharge, young age, frequency of earlier convictions, crimes committed while they are in care, and current drug abuse at discharge (Yukhnenko et al., 2020). Additionally, major mental disorders have been identified as predictors of both general and violent recidivism (Bonta et al., 2014).

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A meta-analysis conducted by Fazel et al. (2016) identified variability in post-discharge reoffending rates among individuals released from secure psychiatric hospitals. Specifically, the incidence of general recidivism was found to vary from 0 to 24,244 per 100,000 person-years, while rates of violent recidivism varied from 273 to 8403 per 100,000 person-years (Fazel et al., 2016). These findings emphasize the differences in forensic psychiatric outcomes across settings and populations (Fazel et al., 2016). These outcomes may be attributed to the specific mental health disorders affecting this population, the presence of comorbid conditions, or the specific treatment interventions they receive. These findings also highlight the effectiveness of forensic psychiatric treatment in reducing recidivism rates (Ojansuu et al., 2023).

In addition, a nationwide longitudinal study conducted in Finland examined recidivism among 501 individuals discharged from forensic psychiatric care between 1999 and 2018. The study reported a general reoffending rate of 16.6 %, with 9.6 % involving violent offenses. The risk of recidivism was highest within the first five years post-discharge and decreased substantially after ten years (Ojansuu et al., 2023).

Several risk factors for recidivism were identified, including younger age at discharge, male gender, and the presence of substance use disorders. Individuals with comorbid substance use disorders exhibited more than double the risk of both general and violent reoffending compared to those without such diagnoses. In contrast, a longer duration of treatment was associated with a significantly reduced risk of recidivism, suggesting a protective effect of extended forensic psychiatric care (Ojansuu et al., 2023). These findings emphasize the importance of addressing substance use disorders and considering treatment length as part of risk management strategies in forensic settings.

Furthermore, a recent study examined the risk factors for violent recidivism among forensic psychiatric patients with impaired intellectual functioning (IQ < 80). The results indicated that adverse childhood experiences (ACEs) and low intellectual ability (IA) were independently associated with an increased likelihood of violent reoffending within five years after discharge (Janković et al., 2024). Patients with greater exposure to ACEs and lower cognitive functioning showed significantly higher risk of recidivism, whereas substance use disorders (SUDs), were not found to be a significant predictor in this subgroup.

It is crucial that forensic patients with mental health disorders undergo some type of treatment either in an inpatient or outpatient program (Noland et al., 2022). However, the risk of general or criminal recidivism in forensic psychiatric patients -in contrast to the risk of delinquency in the general population- is not well investigated.

Therefore, the aim of this review is to evaluate the risk of recidivism among forensic psychiatric patients undergoing some type of outpatient treatment for a mental disorder and potentially compare it with control patients.

2. Materials and methods

2.1. Data sources and search

We systematically searched PubMed, Embase, Scopus, and the Cochrane Library for clinical studies published from January 1990 up to July 2024 that evaluated forensic patients undergoing outpatient treatment for mental health conditions. The primary outcome evaluated was recidivism of any type. The secondary outcomes included any risk factors associated with recidivism.

This review was conducted according to PRISMA guidelines (Liberati et al., 2009). We performed a systematic review using Scopus and PubMed using various combinations of the key words: *'forensic', 'outpatient treatment', 'mental health disorder', and/or 'recidivism'*. In addition to searching databases, reference lists of all included studies, as well as meta-analyses and reviews, were manually evaluated, including unpublished data. Only studies published in English were included in this review. References from eligible articles or textbooks were also reviewed to identify further potential sources.

2.2. Inclusion and exclusion criteria

Studies included in this review met the following criteria cumulatively: (i) Clinical studies evaluating forensic patients undergoing outpatient treatment of any type; (ii) Clinical studies evaluating recidivism as an outcome; (iii) The design of the study could be prospective or retrospective. If more than one study reported results from overlapping populations (from same institutions and during overlapping time periods), then the study with the largest number of patients and the largest time period of treatment was included in the review.

No restrictions were placed on participants' age, gender, or psychiatric diagnosis. Both adolescent and adult samples were accepted, including various diagnostic groups (e.g., mood, psychotic, neurodevelopmental, substance use disorders). Studies involving either voluntary or involuntary outpatient care were eligible, acknowledging differences in legislation across countries. Furthermore, studies without formal control groups were included if they reported outcomes relevant to recidivism or treatment-related changes, such as pre−/post-treatment assessments (e.g., Violence Risk Scale–Youth Version).

Exclusion criteria included: (i) Types of publications other than clinical studies such as reviews, letters, meta-analyses, case reports, or editorials; (ii) Series including less than ten patients; (iii) Abstract-only publications or abstracts from conferences; (iv) Studies not published in English in full; (v) Studies evaluating forensic patients undergoing inpatient treatment; (vi) Studies not evaluating recidivism as an outcome; (vii) Studies not reporting outcomes separately for patients undergoing outpatient treatment and case studies.

2.3. Data extraction – Outcomes – Definitions

Two authors independently (P.B. and E.K.) completed data extraction based on the defined search criteria and quality assessment. Disagreements were resolved by consensus or after review by the supervisor author (A.D.) of the study, when necessary. Data were obtained from tables, graphs, and text. When data were presented in percentage, the absolute values were calculated. For each study, the following data were collected: first author, year of publication, country of publication, type of study (prospective, retrospective or randomized), total number of patients included, total number of patients undergoing outpatient treatment, mean follow-up, basic demographic data (gender, age), comorbidities, type of mental disorder, type of outpatient treatment, risk factors for criminal recidivism.

Recidivism is defined as a report of delinquency or a new criminal charge during the follow-up period (Probst et al., 2020). Delinquency is defined as any conduct relevant under criminal law (i.e., including punishable violations of instructions issued by the court)—regardless of official registration and/or sanctioning. The following types of recidivism were recorded when data was available (Lussier et al., 2023; Tollenaar & van der Heijden, 2013):

- *General recidivism*: Any type of criminal offense.
- *Sexual recidivism:* Any sexual offense with a contact or not contact act against a person.
- *Violent recidivism:* Any violent offense committed against another person.

2.4. Quality assessment

Three authors independently reviewed study eligibility and quality. Disagreements were resolved by consensus or after review by the senior author of the study, when necessary. The quality of each study was assessed using established criteria evaluating the risk of bias for non-randomized studies (Ottawa-Newcastle criteria), specifically evaluating: selection, comparability, and outcomes. The quality of each study was evaluated and reported as high, medium or low, based on the design and methodology of the study, according to the aforementioned criteria

(Stang, 2010).

2.5. Statistical analysis

Pooled effect sizes were calculated for each outcome using the StatsDirect® statistical software (StatsDirect Ltd., Merseyside, UK). Values were expressed as proportions and 95 % confidence intervals (CIs). Pooled odds ratio (OR) was calculated to evaluate the association of outcomes between groups. Der Simonian-Laird weights of random-effects model were applied and expressed as percentages. Heterogeneity was calculated using the I^2 test. Publication bias was assessed using the Egger test (Michael, 2025).

3. Results

Overall, twelve clinical studies (Aebi et al., 2021; Bingham et al., 1995; Carpentier & Proulx, 2021; Du et al., 2013; Franke et al., 2021; Hoogsteder et al., 2018; Klinger et al., 2020; Lothstein, 2001; Lovatt et al., 2022; Prins et al., 2015; Swinkels et al., 2023; Van der Put et al., 2013) were identified as eligible for analysis, and overall, 2752 studies were excluded (Fig. 1). All included studies were published between 1995 and 2023. These studies were conducted in Germany, Canada, the USA, Turkey, the Netherlands, and Switzerland. Overall, 3721 patients were included in the studies, out of which 3048 patients were under an outpatient treatment program. The rest of the patients ($n = 673$) either failed to complete the outpatient treatment program as defined in each study, or were evaluated as a control group (no treatment or treatment as usual).

The outpatient treatment programs described in these studies included cognitive-behavioral therapy (CBT) in either individual or group formats (Bingham et al., 1995; Carpentier & Proulx, 2021; Hoogsteder et al., 2018; Van der Put et al., 2012). Interventions also included techniques aimed at enhancing positive behaviors, managing anger, and improving interpersonal skills. Other types of interventions were intensive outpatient programs. These ranged from standard intensive care to legally mandated interventions, such as Assisted Outpatient Treatment (AOT), which emphasizes treatment adherence within a court-ordered framework (Prins et al., 2015).

Furthermore, standard treatments such as CBT, forensic flexible assertive community treatment (FACT), pharmacotherapy, and structured social support were included in the study of Swinkels et al. (2023).

One study reported methadone maintenance therapy (MMT) for substance use, though no further outpatient treatment was specified (Du et al., 2013). Functional Family Therapy (FFT), Parent Training (PT), and Aggression Replacement Training (ART) were included as structured approaches targeting youth and familial dynamics (Van der Put et al., 2012). Some studies described a combination of interventions such as individual, family, and couples therapy; pharmacological interventions; sex offender-specific protocols; and behavioral supervision strategies (Lothstein, 2001).

Programs such as Responsive Aggression Regulation Therapy (*Re*-ART), combined with individualized CBT components were also applied

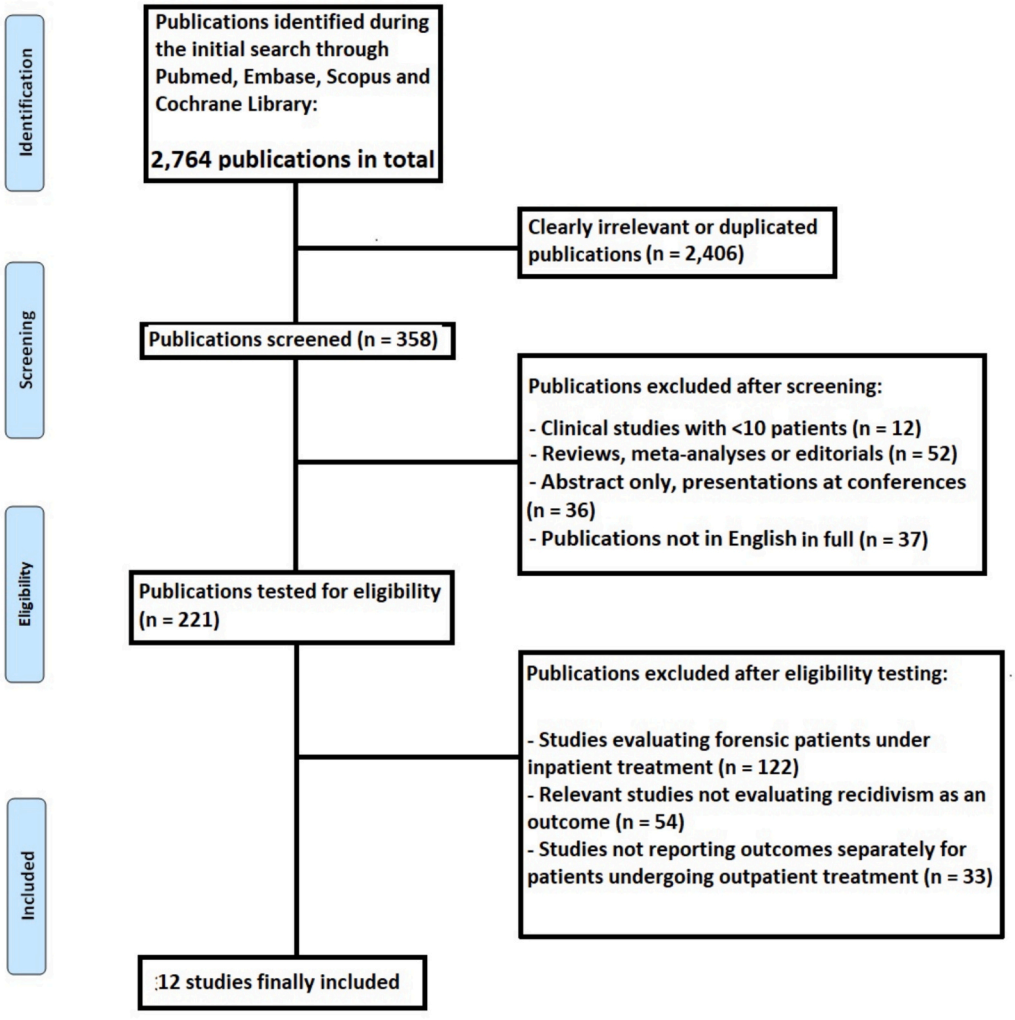

Fig. 1. Flowchart of the present review.

(Hoogsteder et al., 2018). Some studies referred to psychological treatment or outpatient services in general terms, without detailed program descriptions (Franke et al., 2021; Lovatt et al., 2022). Outpatient treatment was not described in two of the included studies, preventing further classification or comparison of these interventions (Aebi et al., 2021; Klinger et al., 2020).

Regarding design, ten studies were retrospective studies, one was prospective, and one was a randomized controlled trial (RCT). There were five comparative studies and seven cohort studies (Table I).

The mean age of all patients was 23.4 years (SD = 6.3) and male gender rate was 79.7 % (2246/2819). Mean follow-up was 33.82 months. The type of mental disorder and the type of outpatient treatment are reported in Table I. The studies included a wide range of mental disorders among participants.

The most commonly reported categories were substance use disorders (SUDs), including alcohol, marijuana, and illicit drug use, with over 1600 cases identified across studies. Mood disorders, such as depression and bipolar disorder, were also highly prevalent (~1255 cases), followed by externalizing disorders like conduct disorder, ADHD, and oppositional defiant disorder (~430 cases). Psychotic spectrum disorders, including schizophrenia, schizoaffective disorder, and other psychotic conditions, were reported in approximately 500 participants. Anxiety disorders accounted for around 170 cases.

Several studies included individuals with sexual offending behaviors and paraphilic disorders (~249 cases). A smaller number of participants were diagnosed with neurodevelopmental conditions, including autism spectrum disorders and mild intellectual disabilities (~30–40 cases). Impulse control difficulties and general psychiatric disorders were also noted, although some studies did not report detailed diagnostic information or described multiple co-occurring conditions without further specification.

Overall, the pooled proportion rate for general recidivism was 39.1 % (95 % CI: 25 %–54.3 %). Among the four studies that reported violent recidivism rates, the pooled proportion rate for violent recidivism was 21.7 % (95 % CI: 2.6 %–52.3 %). When comparing groups, there was no difference between patients under treatment and the control groups in terms of general recidivism (OR = 0.489; 95 % CI [0.202–1.183]; P = 0.112) and violent recidivism (OR = 0.283; 95 % CI [0.056–1.416]; P = 0.124) were concerned. Heterogeneity was high when comparing groups ($I^2 > 80$ %). (Figs. 1 and 2). In the study by Van der Put et al. (2012), no formal control group was specified. However, comparisons were made between patients who completed the treatment (n = 192) and dropouts (n = 49), as well as between different treatment types and time periods (e.g., participants receiving therapy in earlier years versus later years). Additionally, comparisons were drawn between Dutch and non-Dutch participants. (See Fig. 3.)

In contrast, Hoogsteder et al. (2018) included a control group that received treatment as usual (TAU). TAU consisted of cognitive therapy (14.3 %), EQUIP (39.3 %), and various art therapies, including creative, drama, and music therapy (85.7 %). Similarly, in the study by Franke et al. (2021), participants in the control group were released from prison without receiving any treatment. These individuals were selected from the same judicial districts as the treatment group and included those released on probation, early parole, or supervised release after serving a prison sentence.

Furthermore, Lovatt et al. (2022) did not employ a formal control group; however, comparisons were conducted based on pre- and post-treatment assessments to analyze the influence of risk and protective factors on recidivism. This study examined changes in the Violence Risk Scale-Youth Version (VRS-YV) dynamic factors before and after treatment, which were significantly associated with a reduction in nonviolent recidivism.

Finally, all the associated risk factors reported by the studies are included in Table I.

4. Discussion

In this study, we evaluated the effect of outpatient treatment among forensic patients with mental health problems on recidivism during follow-up. We observed a quite high pooled rate of general and violent recidivism in this population. However, a non-significant trend toward lower recidivism risk was observed in patients under outpatient treatment versus controls.

We found a quite high proportional rate of general recidivism in a mean follow-up of almost three years. In contrast, studies of patients receiving inpatient treatment report a lower recidivism rate. Sivak et al. found a cumulative incidence of recidivism in patients discharged from treatment of 13.5 % at 12 months (95 % CI 10.6–16.2) and 19.5 % at 24 months (95 % CI 16.0–22.8) (Sivak et al., 2023). Additionally, Krona et al. reported a 24 % recidivism rate after a 10-year follow-up (Krona et al., 2017). These findings may reveal an effectiveness difference between inpatient and outpatient programs in terms of reoffending.This is not surprising since inpatient treatment includes constant supervision, frequent interaction with mental health staff, and improved medication adeherence.

Additionally, the included studies reported the following risk factors contributing to recidivism: age, gender, cocaine abuse, history of migration, length of treatment, number of sessions, number of prior arrests, and other factors. This concurs with the findings of a prior review where dynamic risk factors such as low income, employment problems, and substance misuse were strongly associated with recidivism (Yukhnenko et al., 2020). Pflueger et al. also found that the number of prior convictions, age at examination, type of index offense, diversity of criminal history, and substance abuse were risk factors for general criminal recidivism (Pflueger et al., 2015).

The study sample was relatively young, with a mean age of 23.4 years. Previous studies have consistently identified younger age as a significant risk factor for violent reoffending and overall recidivism. In particular, studies focusing on delinquent adolescents have shown a strong relationship between age and the impact of risk factors on the likelihood of recidivism (Van der Put et al., 2011; Van der Put et al., 2012). These findings suggest that age should be considered an important variable when assessing recidivism risk and should be considered when designing tailored intervention strategies.

The difference in reconviction rates between men and women is not surprising since women offending is much lower overall (Noland et al., 2022). Finally, risk factors in mentally disordered offenders seem to mirror those found in the general population, with the most prominent risk factors being the presence of an antisocial personality disorder and/or a high degree of psychopathic traits (Delfin et al., 2019).

In the present review, we identified a variety of outpatient treatment protocols including intensive coaching, functional family therapy, cognitive behavioral therapy, parent training and Aggressive Regulation Therapy (*Re*-ART). Besides the interventions derived from models of forensic psychiatric patients rehabilitation, such as the Risk Need Responsivity model (Bonta et al., 2014) and the Good Lives model (Ward & Gannon, 2006), several specific programs have been developed that are mostly based on cognitive behavioral methods and aim at improving forensic psychiatric patients' awareness for risk factors and their behavioral control (Craig et al., 2013). Additionally, medication-based interventions, such as testosterone-lowering medication have also been applied (Franke et al., 2021). In a recent review, the authors concluded that psychological interventions had a small effect on major outcomes among patients with antisocial personality disorder (ASPD) (Gibbon et al., 2020); ASPD has been identified as an important risk factor (Delfin et al., 2019). This may partially explain why we did not find a significant difference on the effect on recidivism between the treatment and control groups since it is certain that groups of forensic psychiatric patients will include a large percentage of ASPD individuals.

Furthermore, previous research has shown that pharmacological interventions are also important in reducing violent crimes and

Table I
Characteristics of the included studies.

Study (Year of publication)	Country	Total n of patients (males) – Groups (n)	Type of mental disorder (n)	Mean Follow-up/Maximum Follow-up	Type of outpatient treatment	Recidivism rates	Prognostic factors reported	Type/Quality of study
Klinger et al. (2020)	Germany	61 (61) Single cohort	45 Psychotic disorder 16 Other disorder*	NR	NR	General (36/61)	**Pro-social leisure activities** (exp(b) 8.45 $p = 0.005$ [1.89–37.85]) **Migration** (Exp(b) 0.165 $p = 0.017$ [0.038–0.721])	Retrospective/ Medium
Carpentier and Proulx (2021)	Canada	323 (323) - Completed: 62 Dropped: 84 No treatment: 177	99 Conduct disorder 87 ADHD 134 Alcohol/ Drug abuse 161 Deviant sexual behavior	15.8 years, SD = 1.9) / NR	CBT; group/individual treatment	**General:** Completed (24/62) Dropped (39/84) No treatment (78/177)	**Victim age** [$\chi 2$ (2,$N = 327$) = 6.247, $p = 0.044$] for violent recidivism	Retrospective/ Medium
Prins et al. (2015)	USA	183 (110) Single cohort	32 Bipolar disorder 13 Major depression 57 Schizoaffective 71 Schizophrenia spectrum disorder 3 Substance abuse	34.5 months (21–55) / 55 months	Intensive outpatient; (AOT)	General (31/183)	NR	Retrospective/ Medium
Swinkels et al. (2023)	Turkey	102 (90) Single cohort	41 oSUD 19 Schizophrenia and psychotic disorders 7 Bipolar and depressive disorders 7 Autism spectrum disorders	18 months / 18 months	Coaching TAU (CBT, FACT, meds)	General (76/102)	NR	RCT/High
Du et al. (2013)	USA	1444 (829) Single cohort	726 Depression 157 Anxiety 111 Attention disorder 339 Psychotic disorder 429 Bipolar disorder 19 Other disorders 985 Drug abuse (Meth, cocaine, heroin) 347 Alcohol or Marijuana abuse	12 months/ 12 months	MMT; outpatient /residential (unspecified)	General (866/1444)	**Age 18–24** OR = 2.42 (1.47–3.98) **Age 25–34** OR = 1.89 (1.26–2.85) **Females** OR = 0.63 (0.47–0.85) **Cocaine use** OR = 1.72 (1.06–2.79) **drug severity** OR = 1.02 (1.00–1.03) **Residential treatment** OR = 0.50 (0.29–0.86) **Total number of arrests prior to admission** OR = 1.04 (1.03–1.06)	Retrospective/ Medium
Van der Put et al. (2012)	Netherlands	241 (205) Treated: 192 Dropout: 49	Multiple disorders (not reported in detail)	24 months/ 24 months	FFT; CBT; PT; ART	General: Treated (120/192) Dropout (27/49) Violent: Treated (62/192) Dropout (15/49)	**Total number of sessions** $r = 0.16$ $P < 0.05$ **Length of treatment** $r = 0.17$ $P < 0.05$	Retrospective/ Medium
Bingham et al. (1995)	USA	202 (202) Completed: 150 Failed: 52	202 sexual offenders Mental disorders not reported in detail	NR / 60 months	Psychoeducation; CBT	General (4/150)	NR	Retrospective/ Medium
Lothstein (2001)	USA	109 (109) Single cohort	52 Psychiatric disorder 36 Alcohol or drug abuse 47 Paraphilic behavior	2.4 years / NR (duration of the program 10 years)	Group/ individual therapy; family and couples therapy; CBT; pharmacological; alcohol and	General (18/109)	NR	Retrospective/ Medium

(*continued on next page*)

Table I (*continued*)

Study (Year of publication)	Country	Total n of patients (males) – Groups (n)	Type of mental disorder (n)	Mean Follow-up/Maximum Follow-up	Type of outpatient treatment	Recidivism rates	Prognostic factors reported	Type/Quality of study
					substance abuse; sex offender program			
Aebi et al. (2021)	Switzerland	142 (142) Single cohort	105 Psychiatric disorder 20 affective disorder 16 anxiety disorder 32 ADHD 73 Conduct disorder 25 AUD 44 oSUD	NR / 12 Months	NR	General (55/142)	**Being drunk more than once** 2.17 (1.17–4.03) $p < 0.05$ **Other substance use disorders (not involving alcohol or tobacco)** 3.30 (1.76–6.19), $p < 0.001$	Retrospective/ Medium
Hoogsteder et al. (2018)	Netherlands	91 (79) reART: 63 TAU: 28	38 Conduct disorder 36 ODD 13 ADHD 45 Poor impulse control 23 Mild intellectual disabilities 34 Substance abuse	3 years / 3 years	*Re*-ART; CBT; Individualized treatment	**General:** reART (28/63) TAU (23/28) **Violent:** reART (15/63) TAU (15/28)	None found	Prospective/ High
Franke et al. (2021)	Germany	566 (566) Treated: 283 Without treatment: 283	All sex offenders Other mental disorders not reported in detail	52.58 months (SD, 20.77) / (3–99) 99 months	Psychological treatment (unspecified)	**General:** Treated: (38/283) Without treatment: (105/283) **Violent:** Treated: (2/283) Without treatment: (31/283) **Sexual:** Treated: (13/283) Without treatment: (17/283)	NR	Retrospective/ Medium
Lovatt et al. (2022)	Canada	257 (197) Single cohort	Mental disorders not reported in detail	9.4 years / NR	Substance, anger & sexual offense treatment; other or unspecified services	General (156/257) **Violent** (114/257)	**Pre−/posttreatment measurements of change on the VRS-YV dynamic factors were significantly associated with decreased nonviolent recidivism**	Retrospective/ Medium

VRS-YV, Violence Risk Scale-Youth Version; NR, Not reported; SD, standard deviation; TAU, treatment as usual; OR, odds ratio; RCT, randomized controlled study. ADHD, attention-deficit hyperactivity disorder; AUD, alcohol use disorders (alcohol abuse and dependency); oSUDs, other substance use disorders. (not involving alcohol or tobacco); ODD, Oppositional defiant disorder.

* included personality disorders, sexual preference disorders, substance related disorders, affective disorders, and mental disability.

recidivism. Antipsychotic and mood-stabilizing medications have been significantly associated with reduction in violent crime rates among psychiatric patients (Fazel et al., 2014; Fazel et al., 2016). Similarly, Chang et al. (2016) reported 42 % lower rate of violent reoffending among former prisoners receiving pharmacological treatment. Considering these findings, the lack of data on pharmacological interventions in the studies, in this review is staggering.

Additionally, Chiappini et al. (2024) addressed the issue of drug misuse within correctional settings. Their review highlights the misuse of over-the-counter (OTC) drugs, prescription-only medications (POM), and new psychoactive substances (NPS) among incarcerated individuals. Synthetic cannabinoid receptor agonists (SCRAs) and opioids are among the most commonly misused substances in prisons (Chiappini et al., 2024).

Kastelic et al., 2012 suggest that the prescription of buprenorphine/naloxone formulation should be preferred as naloxone could help prevent intranasal and intravenous buprenorphine misuse. Long-term use of this formulation could help to reduce accidental overdoses (Molero et al., 2018) and criminal recidivism (Chang et al., 2016). This emphasizes the need for structured and well-monitored pharmacological interventions in this population.

The significance of continuity of care deserves to be highlighted, as it plays a crucial role in the rehabilitation of incarcerated individuals, particularly those with co-occurring substance use disorders (SUD) and mental health conditions. The transition from incarceration to community-based services should be taken into account as it is a critical

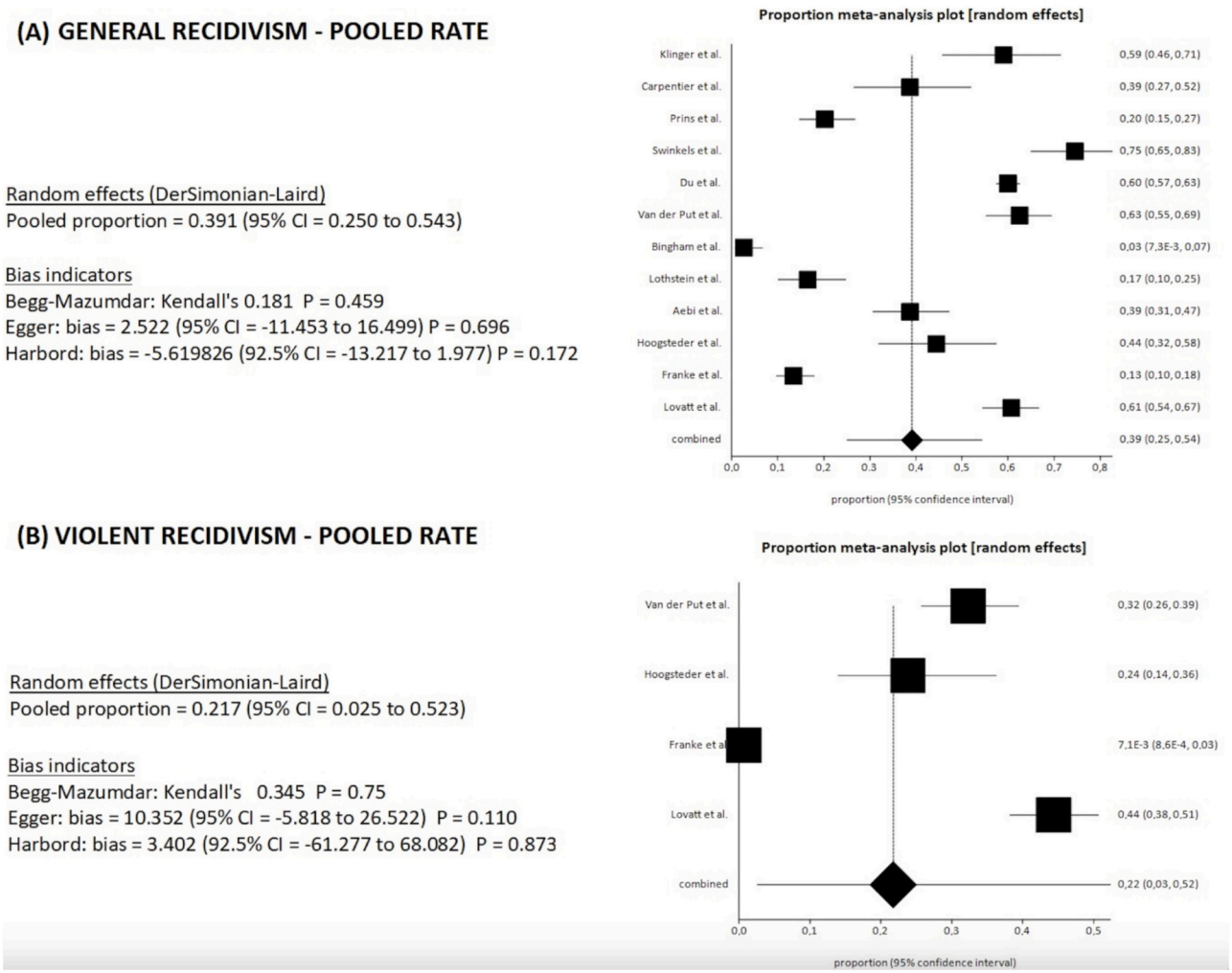

Fig. 2. (A) Evaluation of the pooled general recidivism rate; (B) Evaluation of the pooled violent recidivism rate.

phase in reducing relapse, overdose, self-harm, and recidivism. Previous research across the European Union has identified significant limitations and inefficiencies in the implementation of the programs that focus on that in several member states (MacDonaldet al., 2012). At present, there is no established framework for defining, funding, and evaluating throughcare services. Additionally, there is no agreement on the core components of these services (Jamin et al., 2021; Majeed et al., 2023)

This review points out the need for studies focusing on outpatient treatment for forensic psychiatric patients. Mental health disorders are associated with higher risk of violent reoffending. Schizophrenia spectrum disorders, personality disorders, and substance use disorders are significantly associated with violent reoffending (Yukhnenko et al., 2023).

If this review is taken face value, it leads to the wrong or biased assumption that forensic psychiatric patients should be treated exclusively as inpatients. Such a conclusion not only violates fundamental human rights, but is also impractical, as forensic psychiatric inpatient units cannot provide care for all individuals with mental disorders who have committed an offense.

The findings of this meta-analysis underline the importance of tailored outpatient treatment strategies in forensic psychiatric care. It is crucial that treatment and care address the needs, consider the risk factors, and strengthen the protective factors of forensic psychiatric patients. Individualized treatment should take into account the unique psychological, environmental, and social challenges faced by these individuals. Such approaches are likely to improve patient engagement, adherence to treatment and limit criminogenic needs. This will lead to better clinical outcomes, improved quality of life, and reduced recidivism rates.

Finally, this review has some limitations. First of all, the number of included studies and patients was low, possibly affecting the significance of results. Second, most of the studies were of retrospective design, which reduced their quality. Third, there was a high heterogeneity of studies and populations due to the different control groups, the different types of outpatient treatments as well as the different type of forensic patients among studies. Additionally, maybe there is a limitation of the outcomes of the research, regarding the search terms that we used in the databases. The focus on the term ‘outpatient’ in relation to treatment and the association with criminal recidivism may have restricted the inclusion of relevant studies that do not involve this term. This focus may exclude research studies that address broader treatments or settings. Additionally, the included studies focus on psychotherapeutic treatments, whereas pharmacotherapy, which is also a common treatment option in forensic settings, was not addressed in relation to outpatient treatment and criminal recidivism. Studies that refer to pharmacotherapy as a treatment for forensic psychiatric patients primarily focus on inpatient forensic psychiatric patients (Chang et al., 2016). An additional limitation of this review is the wide range of confidence intervals observed in some odds ratios, which may indicate variability among studies and reduced precision in effect size estimation. Moreover, the evidence is limited to studies conducted in the USA, Canada and Europe.

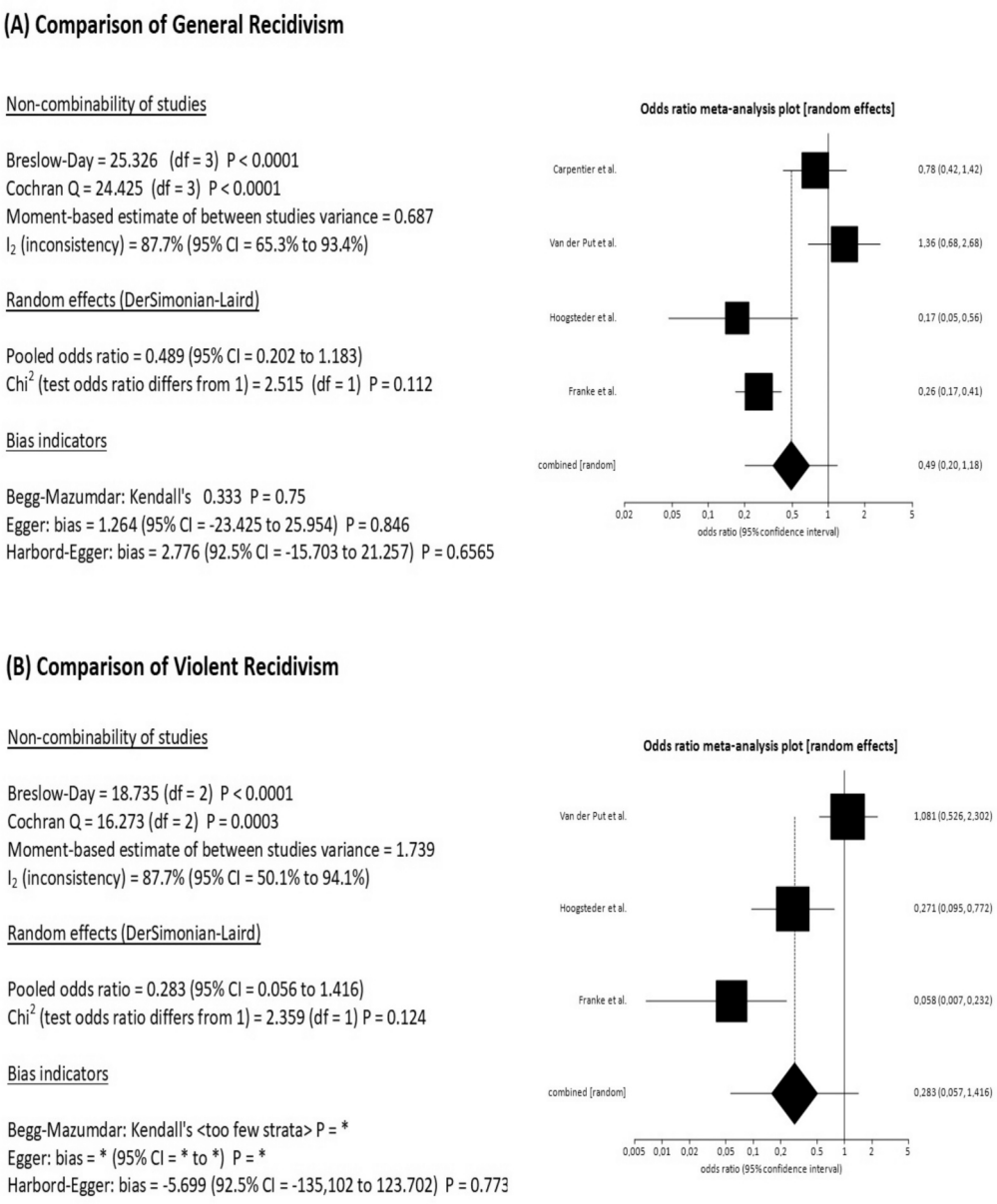

Fig. 3. Comparison of general recidivism (A) and violent recidivism (B) rates, between outpatient treatment group and control group.

In conclusion, the general and violent recidivism rates are high among forensic patients undergoing outpatient treatment for mental health disorders. There was no difference between outpatient treatment and control groups regarding their effect on recidivism. More studies focusing on pharmacotherapy in forensic psychiatric outpatients are needed to verify any benefits of outpatient treatment.

Software

StatsDirect Ltd. (n.d.). *StatsDirect statistical software* (Version 3.3.5) [Computer software]. https://www.statsdirect.com/

CRediT authorship contribution statement

Panagiota Bali: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Fotios Chatzinikolaou:** Writing – review & editing. **Evangelia Karachaliou:** Writing – review & editing, Investigation. **Jakub Lickiewicz:** Writing – review & editing. **Tella Lantta:** Writing – review & editing. **Konstantinos Tasios:** Writing – review & editing. **Vasiliki Efstathiou:** Writing – review & editing, Investigation. **Athanasios Douzenis:** Writing – review & editing, Writing – original draft, Supervision, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Declaration of competing interest

There was no conflict of interests.

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References

Aebi, M., Bessler, C., & Steinhausen, H. C. (2021). Predicting recidivism in juvenile offenders: The role of mental disorders. *European Child & Adolescent Psychiatry, 30* (4), 563–574.

Bingham, R. P., Turner, W. L., & Piotrowski, C. (1995). Psychopathology and recidivism among adolescent male sex offenders. *Journal of Offender Rehabilitation, 22*(3–4), 113–123.

Bonta, J., Blais, J., & Wilson, H. A. (2014). A theoretically informed meta-analysis of the risk for general and violent recidivism for mentally disordered offenders. *Aggression and Violent Behavior, 19*, 278–287.

Carpentier, J., & Proulx, J. (2021). Recidivism rates of treated, non-treated and dropout adolescent who have sexually offended: A non-randomized study. *Frontiers in Psychology, 12*, Article 757242.

Chang, Z., Lichtenstein, P., Långström, N., Larsson, H., & Fazel, S. (2016). Association between prescription of major psychotropic medications and violent reoffending after prison release. *JAMA, 316*(17), 1798–1807. https://doi.org/10.1001/jama.2016.15380

Chiappini, S., Vaccaro, G., Mosca, A., Miuli, A., Stigliano, G., Stefanelli, G., & Schifano, F. (2024). New trends of drug abuse in custodial settings: A systematic review on the misuse of over-the-counter drugs, prescription-only-medications, and new psychoactive substances. *Neuroscience & Biobehavioral Reviews, 162*, Article 105691.

Craig, L. A., Beech, A. R., & Cortoni, F. (2013). What works in assessing risk in sexual and violent offenders. In *What works in offender rehabilitation: An evidence-based approach to assessment and treatment* (pp. 94–114). Wiley Blackwell.

Delfin, C., Krona, H., Andiné, P., Ryding, E., Wallinius, M., & Hofvander, B. (2019). Prediction of recidivism in a long-term follow-up of forensic psychiatric patients: Incremental effects of neuroimaging data. *PLoS One, 14*, Article e0217127.

Du, J., Huang, D., Zhao, M., & Hser, Y. I. (2013). Drug-abusing offenders with co-morbid mental disorders: Gender differences in problem severity, treatment participation, and recidivism. *Biomedical and Environmental Sciences, 26*, 32–39.

Fazel, S., Fimińska, Z., Cocks, C., & Coid, J. (2016). Patient outcomes following discharge from secure psychiatric hospitals: Systematic review and meta-analysis. *British Journal of Psychiatry, 208*, 17–25. https://doi.org/10.1192/bjp.bp.114.149997

Fazel, S., Zetterqvist, J., Larsson, H., Långström, N., & Lichtenstein, P. (2014). Antipsychotics, mood stabilisers, and risk of violent crime. *The Lancet, 384*(9949), 1206–1214. https://doi.org/10.1016/S0140-6736(14)60379-2

Franke, I., Streb, J., Leichauer, K., Handke, S., Dudeck, M., & Tippelt, S. (2021). Efficacy of outpatient treatment of sex offenders. *International Journal of Law and Psychiatry, 79*, Article 101738.

Gibbon, S., Khalifa, N. R., Cheung, N. H., Völlm, B. A., & McCarthy, L. (2020). Psychological interventions for antisocial personality disorder. *Cochrane Database of Systematic Reviews, 9*, Article CD007668.

Hoogsteder, L. M., Stams, G. J. M., Schippers, E. E., & Bonnes, D. (2018). Responsive aggression regulation therapy (re-ART): An evaluation study in a Dutch juvenile justice institution in terms of recidivism. *International Journal of Offender Therapy and Comparative Criminology, 62*, 4403–4424.

Jamin, D., Vanderplasschen, W., Sys, O., Jauffret-Roustide, M., Michel, L., Trouiller, P., … Stöver, H. (2021). My first 48 hours out": drug users' perspectives on challenges and strategies upon release from prison. *Harm reduction journal, 18*(1), 32. https://doi.org/10.1186/s12954-021-00480-w

Janković, M., Van Boxtel, G., & Bogaerts, S. (2024). Violent recidivism and adverse childhood experiences in forensic psychiatric patients with impaired intellectual functioning. *International Journal of Offender Therapy and Comparative Criminology, 68*(13–14), 1357–1379.

Kastelic, A., Pont, J., & Stöver, H. J. (2012). *Opioid substitution treatment in custodial settings*. In *European Monitoring Centre for Drugs and Drug Addiction (EMCDDA)*. & United Nations Office on Drugs and Crime (UNODC).

Klinger, K., Ross, T., & Bulla, J. (2020). Forensic outpatient variables that may help to prevent further detention. *Frontiers in Psychiatry, 11*, 42.

Krona, H., Nyman, M., Andreasson, H., Vicencio, N., Anckarsäter, H., Wallinius, M., … Hofvander, B. (2017). Mentally disordered offenders in Sweden: differentiating recidivists from non-recidivists in a 10-year follow-up study. *Nordic journal of psychiatry, 71*(2), 102–109. https://doi.org/10.1080/08039488.2016.1236400

Liberati, A., Altman, D. G., Tetzlaff, J., Mulrow, C., Gøtzsche, P. C., Ioannidis, J. P. A., et al. (2009). The PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate healthcare interventions: Explanation and elaboration. *BMJ, 339*, Article b2700.

Lothstein, L. M. (2001). Neuropsychiatric vulnerabilities in sex offenders: An overview. *Journal of Psychiatry & Law, 29*(4), 483–502.

Lovatt, K. M., Stockdale, K. C., & Olver, M. E. (2022). Dynamic violence risk, protective factors, and therapeutic change in a gender and ethnoculturally diverse sample of court-adjudicated youth. *Psychological Assessment, 34*, 105–124.

Lussier, P., McCuish, E., Chouinard Thivierge, S., & Frechette, J. (2023). *The sexual recidivism drop in Canada: A meta-analysis of sex offender recidivism rates over an 80-year period*. Criminology & Public Policy.

MacDonald, M., Williams, J., & Kane, D. (2012). Barriers to implementing throughcare for problematic drug users in European prisons. *International journal of prisoner health, 8*(2), 68–84. https://doi.org/10.1108/17449201211277192

Majeed, T., Breuer, E., Edwards, L., Remond, M., Taylor, J., Zeki, R., … Sullivan, E. (2023). Developing best practice principles for the provision of programs and services to people transitioning from custody to the community: study protocol for a modified Delphi consensus exercise. *BMJ open, 13*(6), Article e067366. https://doi.org/10.1136/bmjopen-2022-067366

Michael, H. (2025). The power functions of Begg's and egger's tests for publication bias. *Statistica Neerlandica, 79*(1), Article e12364. https://doi.org/10.1111/stan.12364

Molero, Y., Zetterqvist, J., Binswanger, I. A., Hellner, C., Larsson, H., & Fazel, S. (2018). Medications for Alcohol and Opioid Use Disorders and Risk of Suicidal Behavior, Accidental Overdoses, and Crime. *The American journal of psychiatry, 175*(10), 970–978. https://doi.org/10.1176/appi.ajp.2018.17101112

Noland, E., Strandh, M., & Klötz Logan, F. (2022). The reconvictions of mentally disordered offenders—How, when, and where? *BMC Psychiatry, 22*, 264.

Ojansuu, I., Latvala, A., Kautiainen, H., Forsman, J., Tiihonen, J., & Lähteenvuo, M. (2023). General and violent recidivism of former forensic psychiatric patients in Finland. *Frontiers in Psychiatry, 14*, Article 1157171. https://doi.org/10.3389/fpsyt.2023.1157171

Pflueger, M. O., Franke, I., Graf, M., & Hachtel, H. (2015). Predicting general criminal recidivism in mentally disordered offenders using a random forest approach. *BMC Psychiatry, 15*, 62.

Prins, S. J., Skeem, J. L., Mauro, C., & Link, B. G. (2015). Criminogenic factors, psychotic symptoms, and incident arrests among people with serious mental illnesses under intensive outpatient treatment. *Law and Human Behavior, 39*, 177–188.

Sivak, L., Forsman, J., & Masterman, T. (2023). Duration of forensic psychiatric care and subsequent criminal recidivism in individuals sentenced in Sweden between 2009 and 2019. *Frontiers in Psychiatry, 14*, 1129993. https://doi.org/10.3389/fpsyt.2023.1129993

Stang, A. (2010). Critical evaluation of the Newcastle–Ottawa Scale for the assessment of the quality of nonrandomized studies in meta-analyses. *European Journal of Epidemiology, 25*, 603–605.

Swinkels, L. T. A., van der Pol, T. M., Twisk, J., Ter Harmsel, J. F., Dekker, J. J. M., & Popma, A. (2023). The effectiveness of an additive informal social network intervention for forensic psychiatric outpatients: Results of a randomized controlled trial. *Frontiers in Psychiatry, 14*, Article 1129492.

Tollenaar, N., & van der Heijden, P. G. M. (2013). Which method predicts recidivism best?: A comparison of statistical, machine learning and data mining predictive models. *Journal of the Royal Statistical Society: Series A (Statistics in Society), 176*(2), 565–584.

Van der Put, C. E., Asscher, J. J., Stams, G. J., van der Laan, P. H., Breuk, R., Jongman, E., & Doreleijers, T. (2013). Recidivism after treatment in a forensic youth-psychiatric setting: The effect of treatment characteristics. *International Journal of Offender Therapy and Comparative Criminology, 57*, 1120–1139.

Van der Put, C. E., Stams, G. J. J. M., Hoeve, M., Dekovic, M., Spanjaard, H. J., Van der Laan, P. H., et al. (2012). Changes in the relative importance of dynamic risk factors for recidivism during adolescence. *International Journal of Offender Therapy and Comparative Criminology, 56*, 296–316. https://doi.org/10.1177/0306624X11398462

Van der Put, C. E., Van der Laan, P. H., Stams, G. J. J. M., Deković, M., & Hoeve, M. (2011). Promotive factors during adolescence: Are there changes in impact and prevalence during adolescence and how does this relate to risk factors? *International Journal of Child, Youth and Family Studies, 2*, 119–141. https://doi.org/10.18357/ijcyfs21/220115430

Völlm, B. A., Clarke, M., Herrando, V. T., Seppänen, A. O., Gosek, P., Heitzman, J., & Bulten, E. (2018). European psychiatric association (EPA) guidance on forensic psychiatry: Evidence based assessment and treatment of mentally disordered offenders. *European Psychiatry, 51*, 58–73.

Ward, T., & Gannon, T. A. (2006). Rehabilitation, etiology, and self-regulation: The comprehensive good lives model of treatment for sexual offenders. *Aggression and Violent Behavior, 11*, 77–94.

Yukhnenko, D., Blackwood, N., & Fazel, S. (2020). Risk factors for recidivism in individuals receiving community sentences: A systematic review and meta-analysis. *CNS Spectrums, 25*, 252–263.

Yukhnenko, D., Blackwood, N., Lichtenstein, P., & Fazel, S. (2023). Psychiatric disorders and reoffending risk in individuals with community sentences in Sweden: A national cohort study. *The Lancet Public Health, 8*(2), e119–e129. https://doi.org/10.1016/S2468-2667(22)00312-7