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Does psychological therapy improve the mental health of people with borderline personality disorder and substance abuse disorder?

¿Mejora la terapia psicológica la salud mental de las personas con trastorno límite de la personalidad y trastorno por abuso de sustancias? Una revisión sistemática

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Abstract:

Introduction: People with comorbid borderline personality disorder (BPD) and substance abuse disorder (SUD) show great affectation and poorer treatment outcomes. *Objective*: The aim was to examine useful psychological treatments for people with co-morbid BPD and SUD. *Method*: The Cochrane Library, ISOC, Psychodoc, ProQuest Central, Pubmed, Web of Science and Scopus databases were consulted using a systematic literature review following PRISMA standards. A 185 articles were obtained, of which 12 were selected taking into account the inclusion criteria. The process was carried out by two independent evaluators and the level of agreement was excellent. *Results*: there are a variety of therapeutic options that, in general, improve the symptoms associated with BPD but not with SUD. *Conclusion*: more research is needed to evaluate the usefulness of psychological therapies in these patients.

Keywords: borderline personality disorder, substance use disorder, psychological treatment, systematic review.

Resumen:

Introducción: Las personas con trastorno límite de la personalidad (TLP) y trastorno por uso y abuso de sustancias (TUS) muestran una gran afectación emocional y peores resultados en el tratamiento psicológico. *Objetivo*: El objetivo fue examinar los tratamientos psicológicos útiles para las personas con TLP y TUS. *Método*: Se consultaron las bases de datos Cochrane Library, ISOC, Psychodoc, ProQuest Central, Pubmed, Web of Science y Scopus mediante una revisión bibliográfica sistemática siguiendo las normas PRISMA. Se obtuvieron 185 artículos, de los cuales se seleccionaron 12 teniendo en cuenta los criterios de inclusión. El proceso fue realizado por dos evaluadoras independientes y el nivel de acuerdo fue excelente. *Resultados*: existe una variedad de opciones terapéuticas que, en general, mejoran los síntomas asociados al TLP pero no al TUS. *Conclusión*: se necesita más investigación para evaluar la utilidad de las terapias psicológicas en estos pacientes.

Palabras clave: trastorno límite de la personalidad, trastorno por uso de sustancias, tratamiento psicológico, revisión sistemática..

Introduction

Borderline personality disorder (BPD) is a mental health problem involving difficulties in four main dimensions: (a) interpersonal instability, such as intense relationships and a strong fear of abandonment;

(b) cognitive disturbances such as dissociation, identity disturbance and obsessive and paranoid ideas; (c) emotional and affective dysregulation; and (d) behavioural problems, including impulsivity and self-injurious and suicidal behaviours (American Psychiatric Association [APA], 2013). The prevalence of this pathology ranges from 0.50% to 5.90% of people (Grant et al., 2008; Tomko et al., 2014), although the data may vary depending on the assessment methods used and where the studies are conducted. In Spain, the prevalence is 0.017% of those surveyed, with a higher prevalence in young people than in adults, and a significant percentage of these individuals also suffer from another mental health problem (Aragonès et al., 2013). Although people with BPD manifest great suffering (Slotema et al., 2019), especially due to affective instability (Zimmerman et al., 2017) and emotional regulation problems (Fitzpatrick et al., 2021), they often seek treatment for other mental health problems or repeated suicide attempts (Gunderson et al., 2018). People with BPD often present anxiety disorders, mood disorders, stress disorders, other personality disorders, neurodevelopmental disorders such as attention deficit hyperactivity disorder and substance use disorders (SUD) (Grant et al., 2008; Tomko et al., 2014).

The literature indicates that a large proportion (25%) of people with BPD also suffer from a SUD (Trull et al., 2018), with 70.60% of them presenting alcohol use disorder, 62.70% cocaine use disorder, 45.80% cannabis use disorder, 26.80% opiate use disorder and 22.20% sedative use disorder (González et al., 2019). This comorbidity is associated with a worse course and outcome of the disorders (Kienast et al., 2014).

To date, specific treatments have been proposed for BPD and SUD individually (Meuldijk et al., 2017; Lo Coco et al., 2019), but few studies have addressed the joint treatment of both conditions and shown high rates of improvement (Trull et al., 2000). This group is particularly vulnerable due to their difficulties with emotional regulation, and the high incidence of self-injurious and suicidal behaviour.

Objective

The present study aims to find out which psychological treatments have been applied and obtained benefits in people with co-morbid BPD and SUD by means of a systematic review which can help to promote and disseminate the use of the treatments with the greatest benefits for patients with the characteristics described above.

Method

This qualitative systematic review was conducted according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) standard (Shamseer et al., 2015). The protocol for the systematic review was registered in PROSPERO (CRD42021228860) (Booth et al., 2012).

Bibliography search

The Cochrane Library, ProQuest Central, ISOC, Web of Science, Pubmed, Psicodoc and Scopus databases were consulted by two independent authors (MLM, LLT) for relevant records published up to 1 October 2020. Based on the PICO approach (Mamédio et al., 2007), the following question was asked: Is psychological therapy helpful in reducing psychological symptoms in people with borderline personality disorder and substance abuse disorder comparing them to the control group (active or inactive one, when it exists)?

The final search combined the proposed key elements. The following Boolean (using MeSH terms) expression was therefore used in WOS, Cochrane, ProQuest and Scopus: TITLE-ABS-KEY ("borderline personality disorder" AND "substance use disorder" OR "addiction" OR "dependence" OR "drug abuse"

AND "treatment" OR "therapy" OR "intervention"), in PubMed; TITLE/ABS ("borderline personality disorder") AND ("substance use disorder" OR "addiction" OR "dependence" OR "drug abuse") AND ("treatment" OR "therapy" OR "intervention"), and in Psicodoc and ISOC; ("borderline personality disorder" AND "substance use disorder" OR "addiction" OR "dependence" OR "drug abuse" AND "treatment" OR "therapy" OR "intervention") en Psicodoc e ISOC.

All the recovered items were uploaded to Covidence (*Covidence systematic review software* , 2018), the online screening and data extraction tool. Duplicate articles were eliminated, after which two authors (MMG and MPM) reviewed the titles and abstracts of all the papers and excluded the articles that did not meet the inclusion criteria based on reading the title and abstract. The articles that were selected by either of the two authors, or which contained differences between their blinded decisions, were read in depth individually and blinded, and re-evaluated to judge their eligibility according to the inclusion and exclusion criteria. The same authors (MMG and MPM) inspected the reference lists of the selected studies to assess the inclusion of quality references that had not appeared in the initial searches. Handsearching followed a snowball sampling procedure to identify relevant articles in the reference lists of potentially useful documentation. Finally, as all disagreements were resolved by discussion between (MMG and MPM), it was not necessary for the third reviewer (LLT) to break the tie.

Cohen's Kappa (κ) (Orwin, 1994) was used to assess the index of inter-judge agreement, taking into account that values between -1 and 0.40 are considered unsatisfactory, values between 0.41 and 0.75 are considered satisfactory and ≥ values of 0.76 are considered satisfactory (Hernández-Nieto, 2002). Figure 1 shows the flow chart of the information used to answer the review question. Due to the highly heterogeneous nature of our results, and specifically the differences in the variables taken into account and the instruments used to evaluate them, we did not consider it appropriate to perform a subsequent meta-analysis of these data, since they could not be combined.

Inclusion and exclusion criteria

Studies that met the following criteria were included in the present systematic review: (a) The study evaluated the impact of psychological therapy on the improvement of mental health of people with borderline personality disorder and substance abuse disorder; (b) The average age of the participants was between 18 and 65; (c) the study was published in impact articles; (d) the full text of the article was accessible. The following were excluded: (a) patients whose treatment or therapy was not specified; (b) when the interventions were only pharmacological; (c) publications prior to 31 December 2004; (d) the language of publication was not English or Spanish, and (e) papers, books and works published in congresses or in reviews or any other publication that was not an original scientific article.

Finally, all the selected articles had to have appeared in the databases mentioned above (Cochrane Library, ProQuest Central, ISOC, Web of Science, Pubmed, Psicodoc and Scopus), taking into account the criteria mentioned above, without applying any time limit.

Quality assessment

Two authors (LLT and MMG) independently and blindly assessed the quality of the included studies using an adapted version of the Quality Assessment Tool for Quantitative Studies developed by the Effective Public Health Practice Project (Wermelinger-Ávila et al., 2017). This tool consists of 19 items that assess 8 criteria: (a) study design, (b) blinding, (c) representativeness – selection bias, (d) representativeness – withdrawals and dropouts, (e) confounders, (f) data collection methods, (g) data analysis, and (h) reporting. The rating for each criterion ranges from 1 (low risk of bias; strong) to 5 (high risk of bias; weak). Based

on the study by McMullan (McMullan et al., 2019), studies can have between 4 and 8 component ratings based on the 8 criteria. An overall rating is assessed according to the component ratings. For example, a study with 6 ratings could be rated as "strong" if there are no WEAK ratings and at least 3 STRONG ratings, "moderate" if there is one WEAK rating and less than 3 STRONG ratings, or "weak" if there are two or more WEAK ratings.

Data extraction

Tree authors (MMG, MPM and LLT) developed a data extraction form that was used to obtain relevant information from the included studies. This information included the first author and year of publication, participants, variables and instruments, study design, treatment and control, main results and conclusions and quality assessment rating (Table 1 and 2).

TABLE 1
Descriptive staticstics of the variables studied

FIRST AUTHOR AND YEAR	DESIGN	SAMPLE	VARIABLES AND INSTRUMENTS	TREATMENT AND CONTROL	MAIN RESULTS AND CONCLUSIONS
Kaltenegger (2020)	-Randomized controlled feasibility study. Longitudinal evaluation (start of treatment, 6, 12 and 18 months).	n=46 (37 women) between 20 and 54 years of age	-Autism-Spectrum traits: Autism-Spectrum-Quotient (AQ) -BPD traits: Severity Index-IV (BPDSI-IV) -Frequency of consumption: Timeline Follow-Back (TLFB) -Self injury self-report scale Deliberate Self-Harm Inventory (DSHI-9) -Psychopathology: Symptom Checklist-90-Revised -Interpersonal Problems: Inventory of Interpersonal Problems (IIP) -Reflective Functioning: Reflective Functioning Scale	For 18 months: Experimental group (EG): MBT and and regular treatment for SUD. Control Group (CG): regular treatment for SUD.	Those with more features of the autism spectrum also show lower consumption, but these features do not complicate treatment. The AQ score is therefore not associated with changes in the severity of BPD symptoms, but with the number of days drinking alcohol in the MBT group. However, autistic features are not clearly associated with binge drinking. MBT treatment increased the mental capacity of people with a high level of AQ.
Flynn (2019)	Mixed methods study (quantitative and qualitative analysis). Explanatory sequential design. Longitudinal evaluation (start of treatment, 6, 12 and 18 months).	n=63 (39 women) between 18 and 44 years of age. n=17 (26.5%) had BPD n=47 (73%) had been in treatment for addiction.	-Difficulties in Emotional Regulation: Difficulties in Emotional Regulation Scale (DERS) -Mindful capacity: Five Facet Mindfullness Questionnaire (FFMQ) -DBT elements: Dialectical Behaviour Therapy Ways of Coping Checklist (DBT-WCCL) -Substance Use: Cork Impact of Substance Misuse Scale (CISMS) -Ad hoc qualitative questions.	All participants attended weekly group sessions for 24 weeks that were drawn from the standard DBT protocol and psychoeducation.	Improvements in emotional regulation, mindfulness, DBT skills and dysfunctional coping. Reduction in substance use, suicide attempts and impulsivity.
Philips (2018)	Randomized controlled trial. Longitudinal evaluation (start of treatment, 6, 12 and 18 months).	n=46 (37 women) between 20 and 54 years of age	-Diagnosis: Structured Clinical Interview for DSM-IV Disorders I (SCID-I) and II (SCID-II). -Intelligence: Vocabulary and Block Design from Weschler Adult Intelligence Scale. -Autism-Spectrum traits: Autism-Spectrum-Quotient (AQ) -BPD traits: Severity Index-IV (BPDSI-IV) -Frequency of consumption: Timeline Follow-Back (TLFB) -Self injury self-report scale Deliberate Self-Harm Inventory (DSHI-9) -Psychopathology: Symptom Checklist-90-Revised -Interpersonal Problems: Inventory of Interpersonal Problems (IIP) -Reflective Functioning: Reflective Functioning Scale	For 18 months: Experimental group (EG): MBT and and regular treatment for SUD. Control Group (CG): regular treatment for SUD.	There was low adherence to treatment, QA was given 4 suicide attempts (0 in the experimental). There was improvement in the severity of TLP symptoms in both groups and worsening of substance use in both groups. MBT in combination with treatment for TUS for patients with BPD+TUS has no harmful effects and may be helpful in reducing suicide attempts.
Penzenstadler (2018)	Secondary analysis of two randomized controlled studies.	n=99 (68 women), all with BPD (51 with SUD 48 without	-Diagnosis: Structured Clinical Interview for DSM-IV Axis II Disorders and Mini Neuropsychiatric Interview for co-morbid psychiatric disorders	10 weekly sessions based on the principles of Good Psychiatric Management	Through GPM, a decrease in BPD symptoms was observed, with the improvement being greater in those patients who initially showed worse indicators. The therapeutic alliance was high in
Philips (2017)	Discovery-oriented exploratory study (patients were randomized). Longitudinal analysis (pre-post intervention).	n=46 (37 women) Age range 26-50, all with dual pathology, two with BPD.	-Diagnosis: Structured Clinical Interview for DSM Disorders I (SCID-I) and II (SCID-II) -Intelligence: Vocabulary and Block Design from Wechsler Adult Intelligence and Scale–3rd Edition (WAIS-III) -Autism-Spectrum traits: Autistic-Spectrum Quotient (AQ) -Psychopathy: Psychopathy Checklist Screening Version (PCL-SV) -Psychotherapy Process: Psychotherapy Process Q set (PQS).	Individual and group therapy was carried out for 18 months. Experimental group (EG): MBT and and regular treatment for SUD. Control Group (CG): regular treatment for SUD.	Those who completed the therapy sessions noted that the therapist communicated correctly and consistently, referred to changes in mood during therapy, guided the therapeutic process and addressed issues relevant to the patients. However, those patients who dropped out of therapy did so because the therapist was paternalistic, gave explicit advice, or behaved like a teacher, as well as encouraging patients to be independent and feeling that the therapist's personal conflicts were addressed in the sessions. Patients felt disassociated and uncomfortable with having their issues addressed in a public way and needed affection and approval from the therapist.
Lana (2016)	Longitudinal analysis (Pre-post therapy, 6 months, 12, 18 and 32 months later)	n=51 (16 women). Age range: 18-55. 28 with BPD and SUD, 23 with BPD without SUD.	-Need for psychiatric hospitalisation: admission to hospital treatment, number of admissions, days of hospitalisation. -Diagnosis: Structured Clinical Interview for DSM-IV Personality Disorders (SCID-II) and DSM-IV.	A group and individual multi-component programme was carried out for 6 months (DBT, MBT, psychoeducation and stress management).	The therapeutic approach employed reduced hospitalisations and psychiatric visits for patients with both comorbid LDS and BPD alone. These gains were maintained over time. It is concluded that specialized therapies for personality disorders can be effectively applied to patients with dual pathology. It was even found that the size of the treatment effect may be larger in this group.
Santisteban (2015)	Randomized controlled trial. Longitudinal analysis (baseline, 4, 8, and 12 months)	n=40 (25 women). Age range: 14 to 17 years. At least one caregiver was also involved. All patients had BPD and SUD, 38% also had a depressive disorder.	-Diagnosis: Revised Diagnostic Interview for Borderlines, Millon Adolescent Clinical Inventory (MACI) and Diagnosis Interview Schedule for Children—Predictive Scales (DPS). - Frequency of consumption: Timeline Follow-Back (TLFB) and urine toxicology -Therapeutic performance: Working Alliance Inventory	Group 1: *Integrative borderline personality disorder–oriented adolescent family therapy* (I-BAFT) family, individual and skill development therapy was provided in a format of two sessions per week for 7 months. Group 2: *Individual Drug Counseling* (IDC): two individual sessions per week for 7 months and a family meeting per month were provided. All patients recived individual therapy for 6 months: Dual-Focused versus Single-Focused or Individual Therapy for Personality, and conventional treatment of the therapeutic community.	An association between depression and more severe symptoms was observed during the study, as well as a greater impact on emergency residential treatment and an interaction with the effects of treatment conditions. There were no differences between the two groups in the partnership. The high volume of treatment that participants received highlights the complex needs of this population. The only subgroup with substantial improvement in indicators of substance use was that of adolescents with BPD, LDS and depression who received I-BAFT. I-BAFT treatment was not helpful for participants without depression. In fact, they continued to deteriorate in terms of their substance use. BPD symptoms improved in both conditions, regardless of whether they had depression or not. Symptoms decreased in both groups, but this decline was not sustained over time in the case of the Dual-Focused versus Single-Focused therapy group.
Ball (2011)	Randomized clinical trial. Longitudinal study	n=105 (21 women, 30% with BPD). Average age of 26.5 years. All were financially rewarded for the evaluations.	-Diagnosis: Structured Clinical Interview for DSM-IV, Personality Diagnostic Questionnaire-version 4 revised (PDQ-4R), Brief Symptom Inventory (BSI) -Affect: Multiple Affect Adjective Checklist-Revised (MAACL-R). -Interpersonal Problems: Inventory of Interpersonal Problems-Circumplex (IIP) -Adherence: Adherence /Competence Rating Scale		
Gregory (2008)	Randomized controlled trial. Longitudinal analysis (Pre-post therapy, 3, 6, 9 and 12 months).	n=30 (26 women) Average age of 28.30 years.	-Diagnosis: Structured Clinical Interview for DSM-IV Axis I and II, Addiction Severity Index (ASI) and Beck Depression Inventory Severity over Time (BEST). -Intelligence: Vocabulary subtest of the Wechsler Adult Intelligence Scale -Suicide: Lifetime Parasuicide Count (LPC) -Adherence: Treatment History Interview (THI) -Dissociative Experiences: Dissociative Experiences Scale (DES) -Perceived social support: Social Provisions Scale (SPS).	All patients received individual dynamic deconstructive psychotherapy or conventional treatment for 12 or 18 months.	The dynamic deconstructive pyschotherapy is useful for addressing people with BPD and SUD. It improves suicidal behaviour and decreases substance use and doctor visits, as well as symptoms associated with BPD, depression, and dissociation. In addition, social support is increased.
Ball (2007)	Randomized clinical trial	n=30 (15 women). 57% with BPD. Everyone had to be an adult and maintain a stable dose of methadone for at least one month before starting treatment. All were financially rewarded for the evaluations.	-Diagnosis: Structured Clinical Interview for DSM-IV Axis II (SCID-II), Brief Symptom Inventory (BSI) -Addiction severity: Addiction Severity Index (ASI) - Frequency of consumption: Substance Use Time-Line Calendar -Affect: Multiple Affect Adjective Checklist-Revised (MAACL-R) -Alliance: Working Alliance Inventory (WAI)	Patients attended group therapy 1-4 times a month and individual therapy twice a week for 6 months (Dual-Focus Schema Therapy (DFST) or 12 Step Facilitation Therapy (12FT)).	Most participants had experienced psychological (90%), physical (53%) or sexual (33%) abuse. The average duration of abuse of the main substance was almost 12 years. Although no differences between the groups were observed in treatment adherence and reduction of psychosocial and psychiatric symptoms, DFST participants reduced their use more than those in 12FT. However, those in the 12FT group saw a greater reduction in dysphoria.
Ball (2005)	Randomized clinical trial. Longitudinal analysis (Pre-post therapy and 3 months).	n=52 (4 women). Average age of 38.30. They were all from a homeless center. All were financially rewarded for the evaluations.	-Diagnosis: Structured Clinical Interview for DSM-IV substance use disorders (SCID), Personality Diagnostic Questionnaire-Fourth Edition Revised (PDQ-4R) and Brief Symptom Inventory (BSI) -Addiction severity: Addiction Severity Index (ASI) -Interpersonal problems: Inventory of Interpersonal Problems (IIP) -Cognitive Schemas: Early Maladaptive Schema Questionnaire-Research (EMSQ-R)	They went to psychoeducational group therapy (SAC) or individual (Dual-Focus Schema Therapy (DFST)) for 24 weeks.	Only 12 participants finished the therapy, and adherence to it was very low, which makes analysis of the results difficult. Patients used DFST better than SAC, as in the first condition they could attend only once a week by appointment, and in the second condition they had multiple groups and could attend whichever one they wanted. The difference in symptomatology between the two groups could not be evaluated.
van den Bosch (2005)	Randomized controlled trial. Longitudinal analysis (Pre-post therapy and 6 months later).	n=58 women with BPD (53.88% with SUD) Age range: 18 to 65 years.	-Diagnosis: Structured Clinical Interview for DSM-IV Axis II (SCID-II) and BPD Severity Index (BPDSI) -Addiction severity: European version of the Addiction Severity Indez (EuropASI) -Suicide behavioural: Lifetime Parasuicide Count (LPC)	Patients received the usual therapy or Dialectical Behaviour Therapy (DBT) which was a combination of group and individual therapy for 12 months.	Impulsivity, self-harm and alcohol consumption decreased in the DBT group after treatment and the effects were maintained. In addition, a statistically non-significant decrease in self-harm attempts was seen in this group.

TABLE 2
Quality assessment

FIRST AUTHOR	STUDY DESIGN	REPRESENTATION	REPRESENTATION II	CONFOUNDING FACTORS	DATA COLLECTION	DATA ANALYSIS	RESULTS	TOTAL
Kaltenegger (2020)	1	3	N/I (no information)	3	1	3	2	Strong
Flynn (2019)	1	3	N/I (no information)	2	1	2	2	Strong
Philips (2018)	1	3	3	2	1	2	4	Moderate
Penzenstadler (2018)	1	3	1	2	1	3	3	Strong
Philips (2017)	1	5	4	2	1	5	4	Weak
Lana (2016)	1	3	1	4	2	2	1	Strong
Santisteban (2015)	1	3	1	3	1	3	2	Strong
Ball (2011)	1	3	3	2	1	4	3	Strong
Gregory (2008)	1	4	1	1	1	1	1	Strong
Ball (2007)	1	4	N/I (no information)	1	1	2	2	Weak
Ball (2005)	1	3	5	1	1	4	4	Weak
Van den bosch (2005)	1	3	2	1	1	1	2	Strong

Results

Study selection and screening

The study selection process is shown in Figure 1. After the literature search, the application of the time criterion and the elimination of duplicate results, the total number of records was 127. The initial selection excluded 105 studies based on the title and abstract, and the full text of the remaining 22 papers were read in a second selection process. The reliability of the prior agreement between the two independent reviewers (MMG and MMP) on the screening of the full text was excellent (κ=0.90). Nine papers were excluded in the second screening (3 for not including treatment, 1 for not referring to BPD, one for focusing only on other disorders, 2 for not meeting the time criterion, 2 for being reviews and one as a proposed intervention that was not carried out) and as such 12 independent studies were eligible for inclusion. The degree of inter-judge agreement was also satisfactory in this second screening (κ=0.52).

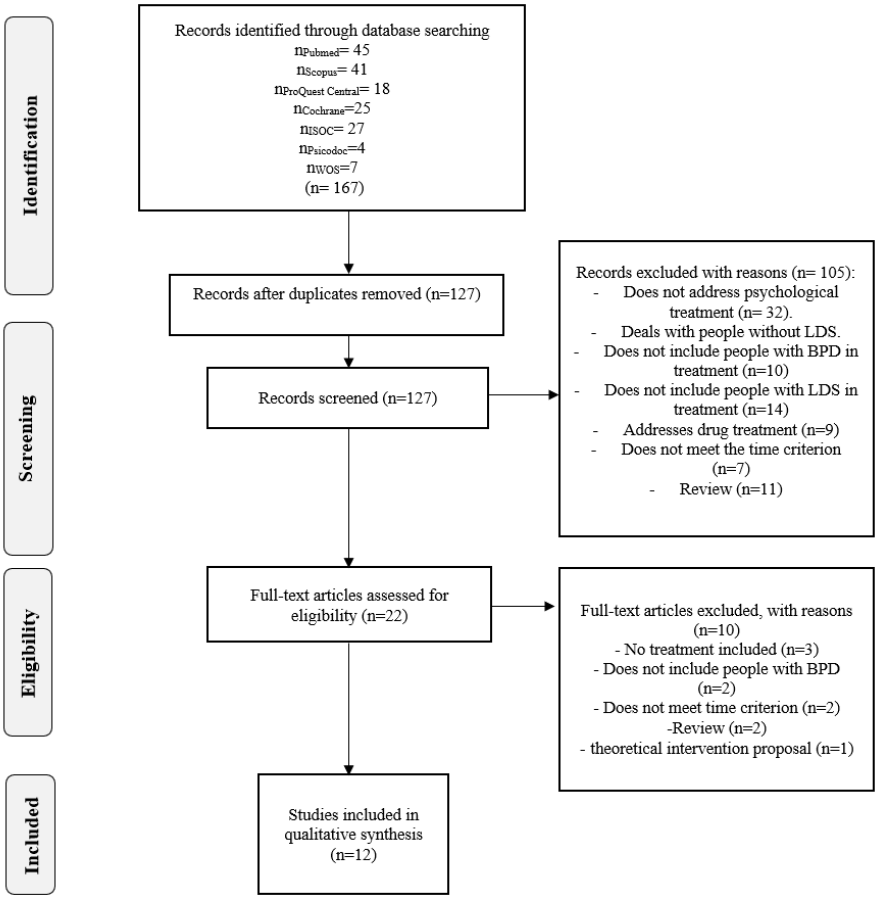

FIGURE 1
Flowchart of selection process

Characteristics of the study

The characteristics of the study are summarized in Table 1. The 12 studies investigated included a total of 597 participants (64.15% women), who ranged in age from 18 to 65 years (M=34.53 years), although one study was considered to include adolescents (Santisteban et al., 2015). The age range was not specified in three articles (Ball et al., 2005; Ball, 2007; Gregory et al., 2008). In terms of diagnoses, 69.23% of participants had co-morbid BPD and SUD (Ball, 2007; Flynn et al., 2019; Gregory et al., 2008; Kaltenegger et al., 2020; Penzenstadler et al., 2018; Philips et al., 2018b; Santisteban et al., 2015; Van den Bosch et al., 2005). 30.77% of the studies indicated that apart from co-morbid BPD and SUD, the participants could have other comorbid personality, mood or anxiety disorders (Ball et al., 2005; Ball et al., 2011; Lana et al., 2016; Philips et al., 2018a).

Sample selection and research desing

As regards the sample, one of the studies did not specify how the participants were selected (Kaltenegger et al., 2020), while in the other studies the participants were selected purposively (98.68%). In specific terms, participants came from substance dependence treatment centres or mental health centres (n= 8) (Ball, 2007; Flynn et al., 2019; Gregory et al., 2008; Lana et al., 2016; Van den Bosch et al., 2005; Philips et al., 2018a; Penzenstadler et al., 2018; Philips, et al., 2018b), from homeless centres (n=1) (Ball et al., 2005) and from

correctional facilities or courts (n=2) (Ball et al., 2011; Santisteban et al., 2015). Ten of the studies were longitudinal in design, and the other two were cross-sectional studies (Penzenstadler et al., 2018; Philips et al., 2018b). In all the longitudinal studies, a follow-up was conducted in addition to the pre-post-treatment assessment.

Variables

The aspects analysed in the participants were psychopathology in general and specifically related to substance use problems, as well as personality disorders, interpersonal problems, suicidal risk and behaviours, affect, characteristics associated with autism, intelligence, neuropsychological variables and therapeutic adherence (Table 1). Instruments with adequate psychometric properties which were well adapted to the topic, target and use were used, as well as semi-structured interviews created on an *ad hoc* basis to complement the data.

Inclusion and exclusion criteria

53.85% of the studies specified age, meeting DSM-IV diagnostic criteria for borderline personality disorder and substance dependence as inclusion criteria (Ball et al., 2005; Gregory et al., 2008; Kaltenegger et al., 2020, Philips et al., 2018a, Philips et al., 2018b; Santisteban et al., 2015; Van den Bosch et al., 2005). Three of the papers did not detail inclusion criteria (Ball et al., 2011; Flynn et al., 2019; Penzenstadler et al., 2018) and two did not specify exclusion criteria (Penzenstadler et al., 2018; Santisteban et al., 2015). Participants were generally excluded if they: a) had a psychotic disorder, an affective disorder with psychotic features, or bipolar disorder type 1; b) cognitive impairment; c) multiple suicide attempts; d) acute violence; and e) near imprisonment.

Main results of the psychological therapy

The articles focus on various psychological therapies that have achieved good results in most cases. First, in relation to Mentalization-Based Treatment (n=4), a reduction in substance use, suicidal behaviour and hospitalisations is observed, as well as an increase in mentalisation capacity (Kaltenegger et al., 2020; Lana et al., 2016; Philips et al., 2018a: Philips et al., 2018b). Meanwhile, the articles focusing on Dialectical Behaviour Therapy (n=2) find that it is useful in reducing substance use, BPD-associated symptomatology, suicide attempts, impulsive behaviours, and increasing participants' confidence and improving their outlook on life, with these changes being maintained over time (Flynn et al., 2019; Van den Bosch et al., 2005). Three articles focused on Dual-Focus Schema Therapy (Ball et al., 2011; Ball, 2007; Ball et al., 2005), and found low adherence to treatment (42% finished treatment). Symptom severity was observed to decline, but these changes were not maintained. However, the changes were maintained with Individual Drug Counselling (Ball et al., 2011). In a comparison between Dual-Focus Schema Therapy and 12 Step Facilitation Therapy, a decline in substance use was observed in the former, but a reduction in emotional symptoms was observed in the latter (Ball, 2007). In the study by Ball et al. (2005) the dropout of participants was so high (83.88%) that the results were inconclusive.

One of the studies (Santisteban et al., 2015) focused on Integrative Borderline Personality Disorder - Adolescent Family Therapy in adolescents, which improved the symptomatology associated with co-morbid BPD and SUD, and the participants who also had depression benefited to a much greater extent. Another study focused on Good/General Psychiatric Management, showing that BPD-associated symptoms were reduced, and a strong therapeutic alliance was achieved (Penzenstadler et al., 2018). Finally, one study

focused on Dynamic Deconstructive Psychotherapy, obtaining improvements in depressive, dissociative and BPD-associated symptoms (Table 1).

Intervention format and therapists

Two of the studies combined individual and group therapy (Kaltenegger et al., 2020; Van den Bosch et al., 2005), three of the studies opted for the group format (Ball et al., 2005; Flynn et al., 2019; Lana et al., 2016) and three others for the individual format (Ball, 2007; Gregory et al.; 2008; Penzenstadler et al., 2018). Finally, two of the studies compared treatments in group versus individual format (Ball et al., 2011; Santisteban et al., 2015). In terms of the therapists involved in the interventions, we observed that the number of therapists in the studies ranged from two to 24. Their profession was not specified in a large proportion of them (66.67%) (Ball et al., 2005; Ball et al., 2011; Flynn et al., 2019; Kaltenegger et al., 2020; Van den Bosch et al., 2005). One study also did not specify who the therapists were (Van den Bosch et al., 2005), one study stated that they were psychologists, but did not specify how many there were (Lana et al., 2016). One study said that there were several therapists but did not specify their profession or the number of therapists (Ball et al., 2005). The studies that mentioned who the therapists were included psychologists, social workers, psychiatric nurses and assistants (Philips et al., 2018b), psychologists and nurses (Philips et al., 2018a), psychiatric residents (Gregory et al., 2008) and clinical psychologists (Ball, 2007). When therapists were combined, there was no analysis of differences in therapy outcomes between them, and this variable was not analysed as a possible confounder.

Difficulties in treatment and representativity

Despite financial rewards for treatment attendance and psychological assessment in some studies, most studies reported high dropout rates (Ball et al., 2005; Philips et al., 2018a; Philips et al., 2018b). Five of the studies did not report any dropout rates (Ball, 2007; Ball et al., 2011; Flynn et al., 2019; Kaltenegger et al., 2020; Penzenstadler et al., 2018). Only four of them reported acceptable or adequate adherence to treatment (Gregory et al., 2008; Lana et al., 2016; Santisteban et al., 2015; Van de Bosch et al., 2005).

Quality assessment

Table 2 shows the scores obtained by the articles analysed, following the assessment of the quality indicators therein. The quality scores range from 1 to 5, with 1 being the highest score (lowest probability of bias and highest quality) and 5 being the weakest score (highest probability of bias or lowest quality). The study quality assessment was conducted by one of the reviewers (LLT). The mean quality score was 2.26, i.e. a high-moderate overall score for most studies (Table 2).

Conclusion

The aim of the present study was to determine the effectiveness of psychological treatments applied to individuals with co-morbid BPD and SUD by means of a systematic review according to PRISMA standards (Shamseer et al., 2015). After an exhaustive search, few studies that met the specified inclusion and exclusion criteria were obtained, and 12 studies were finally analysed. These studies focused on assessing the effects of different psychological and psychiatric treatments in people with co-morbid BPD and SUD. Our results show that there is a wide variety of approaches to the treatment of people with co-morbid BPD and SUD,

and that they generally share a common problem: low adherence to treatment. However, the treatment most frequently referred to in the literature is Mentalization-Based Treatment. This treatment is based on the fact that the symptoms of BPD occur when the person is unable to mentalise, makes decisions and performs behaviours without reflecting, and is detached from reality. This skill is developed in childhood when living in a stimulating and emotionally safe environment. Treatment combining individual and group sessions is therefore generally directed towards increasing reflective thinking, evaluation of one's own and others' emotional situations and flexibility (Bateman & Fonagy, 2004; Choi-Kain et al., 2017). The studies reviewed indicated that this treatment was effective for BPD symptoms, but not for SUD symptoms (Kaltenegger et al., 2020; Lana et al., 2016; Philips et al., 2018a; Philips et al., 2018b).

Dialectical Behaviour Therapy, an individual therapy that aims to improve social skills, emotional regulation, frustration tolerance and attention to the present (Linehan, 1993; May et al., 2016), proved useful over time in reducing BPD and SUD symptoms, suicidal behaviours and consumption, improving management of emotions, and increasing quality of life (Flynn et al., 2019; Van den Bosch et al., 2005).

In the studies in which it is used (Ball et al., 2011; Ball, 2007; Ball et al., 2005) Dual-Focus Schema Therapy reduces the severity of BPD and SUD symptoms, the results are not sustained over time and there is a high level of experimental mortality. In contrast, General Psychiatric Management achieves adequate therapeutic alliance and symptom reduction (Penzstadler et al., 2018), which helps to improve adherence. Integrative Borderline Adolescent Family Therapy was shown to be effective in reducing adolescent and family distress and adolescent substance use, especially among adolescents who also presented major depression (Santisteban et al., 2015). Finally, Dynamic Deconstructive Psychotherapy was shown to be effective in reducing suicidal behaviour, substance use, hospitalisation, healthcare attendance, and dissociative, depressive and BPD-associated symptoms (Gregory et al., 2008).

A summary of the results shows a wide variety of intervention proposals that generally lead to a reduction in the severity of the symptoms experienced and an improvement in the different variables evaluated, with the most common improvements being related to a reduction in suicide attempts and in hospitalisation and medical care. The results regarding substance use are not so conclusive, and it is difficult to ascertain the best intervention for reducing substance use in people with comorbid BPD.

Despite the contributions of our work, it should be noted that the studies that met the inclusion criteria have small samples, ranging from 17 to 41 participants with co-morbid BPD and SUD, with total samples ranging from 46 to 105 participants (if all the participants are taken into account, regardless of their condition). However, these samples are very heterogeneous, due to the fact that they include patients with different substance use issues, with different types of severity, and with other comorbid pathologies. In addition, the participants come from diverse institutional settings, ranging from institutionalised patients to homeless people to people subject to justice measures. This makes it difficult to compare treatments and conclusions. On the other hand, all the studies selected participants by convenience and there was a high dropout rate in some of them, although attendance was financially rewarded (Ball, 2007; Ball et al., 2005; Ball et al., 2011). We therefore believe that the sample characteristics and the sampling in these studies complicate the generalisability of the results to the general population. Furthermore, few studies report the drop-out rate of participants; and when they do, it is usually quite high. More studies are needed to continue investigating the situation of people with co-morbid BPD and SUD, using probability sampling that adequately represents the characteristics and needs of this population. Similarly, the sample size should be increased and randomised controlled trials should be conducted in order to draw higher quality conclusions. However, access to people with co-morbid BPD and SUD is complex, given the complexity of the situations they generally face, and the continuity of treatment is therefore also difficult.

In terms of the variables and instruments taken into account in the research studied, as well as the data analysis, all the studies use psychometrically appropriate instruments. However, few of them use robust statistics (Gregory et al., 2008; Lana et al. 2016, Santiesteban, et al. 2015) which enable a consistent analysis

of the results obtained. Moreover, some of them do not take into account the analysis of masked variables, such as the severity of the disorders, traumatic experiences, family relationships or social support, or even the assessment of self-injurious behaviours or previous attempts at medical or psychological treatment, among other variables. Furthermore, some of them do not specify the number of dropouts (Flynn et al., 2019; Kaltenegger et al., 2020), or who the therapists were or their sociodemographic variables or profession (Ball et al., 2005; Ball et al., 2011; Flynn et al., 2019; Kaltenegger et al., 2020; Lana et al., 2016; Van den Bosch et al., 2005), despite the fact that all the studies considered in this review are published in impact journals. However, all of them use longitudinal designs, and most of them use randomised studies (Ball et al., 2005; Ball et al., 2011; Ball, 2007; Kaltenegger et al., 2020; Penzenstadler et al., 2018; Philips et al., 2018b; Van den Bosch et al., 2005). On the other hand, only one of the selected studies was conducted in the Spanish population (Lana et al., 2016), and as such we believe that research is still needed to clarify the effectiveness of these interventions in this group in our context.

Future research could also take into account important adjustment variables such as emotional bonds, resilience or emotional intelligence, as studies have generally focused on reducing risk factors, but have not addressed the increase in protective factors. In addition, future research should consider how to reach people in particularly vulnerable situations, such as homeless people, pregnant women and minors with co-morbid BPD and SUD. These at-risk groups often make it more difficult to provide them with treatment or fail to maintain the therapeutic alliance and adhere to therapy. Finally, other studies could apply Eye Movement Desensitisation Reprocessing in this group of patients, as it has been shown to be useful in people with BPD and in people with SUD (Carletto et al., 2018; Slotema et al., 2019).

Systematic reviews in co-morbid BPD and SUD are very scarce, and this applies particularly to those focused on effective interventions for their treatment. As a result of a systematic search of the literature based on precise and systematic inclusion criteria, this review extends knowledge beyond the conclusions of narrative reviews. In addition, our review included two blinded reviewers throughout the process, as well as the rate of agreement between them. Although some literature is available on the topic under investigation, it is not sufficient to draw any conclusions, and we propose that more studies be conducted, using larger samples. It is also essential to develop strategies to reduce experimental mortality, as this was the main problem or limitation in the research reviewed.

The main results of our study indicate that there is a diversity of treatment alternatives for people with co-morbid BPD and SUD, in individual, group or combined settings, carried out by different professionals including psychologists, psychiatrists, nurses and social workers, which have been shown to be particularly effective with the symptoms associated with BPD. We therefore believe that the present review provides professionals responsible for the health of individuals with a guide to the most extensively studied psychological interventions in the literature for co-morbid BPD and SUD. It facilitates decision-making regarding which therapy to apply for patients with these characteristics, as well as providing a summary of the main benefits of these interventions.

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