

Review

## Art therapy in eating disorders. A systematic review of controlled trials

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### SUMMARY

Art therapy is able to improve well-being and adherence to treatment, but its effectiveness in eating disorders (ED) is poorly understood. We systematically reviewed clinical studies evaluating the effect of art therapy on clinical, psychological and behavioural indicators of ED. Article search was conducted on PubMed, Embase and clinicaltrials.gov according to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement, and included all controlled studies published up to March 2024 that used art therapy as an intervention for patients with ED. Included publications should report the effects of art therapy on at least one psychopathological, behavioural, and/or clinical dimension of ED. Six studies were finally included, examining the effects of art therapy, music therapy, writing therapy and DMT on patients with ED. Music therapy was effective in reducing post-meal anxiety, while DMT reduced body dissatisfaction. The limited number of studies, the high heterogeneity of participants, interventions, and measures, and the overall poor quality of essays restrict the conclusions that can be drawn. In order to better assess the potential of art therapy on symptoms and dimensions of ED, the use of comparable instruments, on homogeneous samples, with high methodological approaches (such as randomization) should be a priority.

**Key words:** eating disorders, psychotherapy, therapeutics, art therapy, anorexia nervosa

### Introduction

Art therapy is a psychotherapeutic technique which uses art media as the primary vehicle of expression and communication <sup>1</sup>. This term first appeared in the work of Adrian Hill, *Art versus Illness* <sup>2</sup>, and its first applications are traced in the 19<sup>th</sup> century <sup>1</sup>. However, the first approaches of using art in psychotherapy were developed around the middle of the last century in the United States and in Europe <sup>3</sup>. In the context of treatment, art therapy is considered as a form of support and complementary therapy, which is meant to be integrative and to promote personal change and development in a safe environment mediated by a therapeutic relationship <sup>1</sup>. The combination of creative process, making of art, applied psychology, and phenomenology of the human experience accounts for the diversity of interventions, practitioners and applications of art therapy. The expected consequences of this intervention are the improvement of cognitive and sensorimotor functions, the raise of self-esteem, self-awareness, emotional resilience, insight, and social skills, and the resolution of conflicts and distress <sup>4</sup>. The main artistic media employed are: drawing and painting, dance-movement therapy, drama, and music therapy. Media such as video or writing can also be used. Sessions are supervised by a therapist specialized in this form of intervention.

The efficacy of art therapy has been explored in mental illnesses such as schizophrenia <sup>5</sup>, mood disorders, and trauma<sup>6</sup>. Despite most reviews deplore high heterogeneity and inconsistency of results, it is universally recognized that this type of intervention is highly acceptable and beneficial to

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treatment adherence and psychological well-being. The psychopathological dimensions that are better targeted by art therapy are quality of life, compliance to treatment<sup>7</sup>, emotional awareness<sup>8,9</sup>, communication, and self-esteem<sup>10</sup>. According to the model of the expressing therapy continuum, the effects of art therapy are meant to span over a continuum of three dimensions, that are the kinesthetic/sensory, the affective/perceptual, and the cognitive/symbolic<sup>8</sup>. These three dimensions are affected at different extents in most psychiatric disorders. Eating disorders (ED) are characterized by the disruption and/or the dissociation of these three axes.

ED are frequent and potentially severe psychiatric illnesses, whose prevalence reaches 8.6% of females and 2.2% of the male population<sup>11</sup>. ED are distinguished into anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorders (BED), avoidant/restrictive food intake disorder (ARFID), and other specified feeding and eating disorders (OSFED)<sup>12</sup>. All these entities are characterized by a severe and invalidating perturbation of feeding behaviour, underpinned by cognitive, psychological and emotional dysfunctions. The impact on quality of life, physical health, and mental wellbeing is significant<sup>13</sup>. This represents a burden for patients, caregivers, and the public health system. The management of ED is a multidisciplinary approach that involves normalizing feeding behaviour and addressing its consequences on the body and health. According to the severity of the disease, treatment can be provided in the inpatient setting, at day hospitals, or in the outpatient setting. Psychological interventions play a central role in addition to refeeding, and pharmacological treatment is employed when necessary<sup>13-15</sup>. Cognitive Behavioural Therapies (CBT) for ED (Enhanced-CBT) are particularly widespread and supported by a significant level of efficacy<sup>16</sup>. Family therapy is widely recommended for the youngest patients with AN<sup>17</sup>. Other effective techniques include the Maudsley Anorexia Therapy for Adults (MANTRA)<sup>13</sup> and third-wave interventions<sup>18</sup>, such as acceptance and commitment therapy, compassion-focused therapy, dialectical behaviour therapy, mindfulness-based interventions, and schema therapy<sup>18</sup>. Despite the diversity of therapeutic facilities, a significant number of patients with ED fail to achieve lasting clinical remission<sup>19</sup>. One of the main factors contributing to this failure is the high drop-out rate during treatment, particularly in the inpatient setting<sup>20</sup>. Premature discontinuation of treatment is influenced by various factors, including the severity of ED dimensions and personality traits<sup>21</sup>. Compliance with treatment can be challenging for patients with ED due to denial of the disorder, which is particularly pronounced in AN, and feelings of shame<sup>13</sup>. Therefore, it is important to reinforce the acceptability of treatment beyond its effectiveness.

Art therapy can be an effective management tool for ED due to its ability to address psychological symptoms such as self-body image<sup>22</sup>, flexible thinking<sup>23</sup>, and low self-esteem<sup>24,25</sup>, while also providing motivational support<sup>26</sup>. Art therapy appears to be a promising method for addressing difficulties in treating patients with ED, Non-verbal, artistic media can help circumvent common ED processes, such as over-rationalization at the expense of emotional expression and difficulties in verbalization<sup>27</sup>. However, there is currently no conclusive evidence on its effectiveness or mechanisms, and no comparison has been made among the different forms of art therapy to clarify its indications for individual clinical conditions. This limitation complicates the use of the treatment and the decision-making process when treating patients. To address this issue, we conducted a systematic literature review of clinical studies that employed art therapy in the treatment of ED. The aim of this work was to review the effects of art therapy interventions on core psychopathological symptoms and dimensions of ED, nutritional status, and psychological distress related to ED.

## Methods

This study was conducted following the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement for systematic literature reviews<sup>28</sup>. A search was conducted on the Pubmed, Embase, and Clinicaltrials.gov databases using the corresponding algorithms outlined in supplementary table S1. All articles written in English or French and published prior to March 2024 were considered, with no further temporal constraints imposed upon the search engine.

Two authors (FT and LDL) performed the selection process manually by independently screening for titles, abstracts and full texts, and by comparing the results at the end of each screening phase. Any discrepancies were discussed and resolved, with a third-party evaluator consulted if necessary.

The inclusion criteria for the articles, according to the "PICOS" framework<sup>29</sup>, were as follows:

1. Population/problem: patients with ED (AN, BN, BED, OSFED, ARFID), male and female, adolescents (> 12 years) and adults.
2. Intervention: Art therapy, including either sessions led by an art therapist, or according to a program based on a theoretical corpus presented with references. Art therapy could be employed as a standalone intervention, integrated into existing treatment protocols, or tested in combination with other therapeutic modalities.
3. Controls: a group of patients with ED in one of the following conditions: a) on a "waiting list", b) receiving the "usual treatment" protocol, c) receiving another form of psychotherapy.

4. Outcome criteria: body mass index (BMI), weight, intensity of eating symptoms (e.g. food restriction, frequency of binge eating) and/or level of psychological distress associated with ED symptoms (anxiety associated with eating, obsessive thoughts, etc.), and/or the 11 dimensions of ED assessed by the Eating Disorder Questionnaire-2 (EDI-2)<sup>30</sup> (the use of this specific questionnaire was not mandatory): drive for thinness, bulimia, body dissatisfaction, feeling of inefficiency, perfectionism, interpersonal distrust, interoceptive awareness, fear of maturity, asceticism, impulsivity, social insecurity.
5. Study type: controlled clinical trials and observational studies.

In compliance with the Ottawa recommendations for systematic literature reviews<sup>28</sup>, the risk of bias of each article selected for analysis was assessed according to the criteria of the Consolidated Standards of Reporting Trials (CONSORT) 2010 checklist for randomized clinical trials<sup>31</sup> and the “Risk Of Bias In Non-randomized

Studies - of Interventions” (ROBINS-I) tool for non-randomized clinical trials<sup>32</sup>. Two independent assessors (FT and LDL) conducted the analysis in a blind fashion. Any discrepancies between the evaluation grids were discussed and resolved, with a third-party evaluator consulted if necessary.

## Results

### Descriptive results

The flow chart that reports the selection process is shown in Figure 1. The review includes six articles (Tab. I), all of which are controlled trials. Only three of the trials were randomized<sup>33-35</sup>.

In total, 180 patients were included in the six studies reviewed, including 61 with AN, 85 with BN, 5 with OS-FED, 4 with BED, and 25 for whom no ED diagnosis was specified<sup>35</sup>. Different techniques were used in these studies: DMT<sup>36</sup>, music therapy<sup>37</sup>, therapeutic writing<sup>34,35</sup>, and visual arts<sup>33,38</sup>.

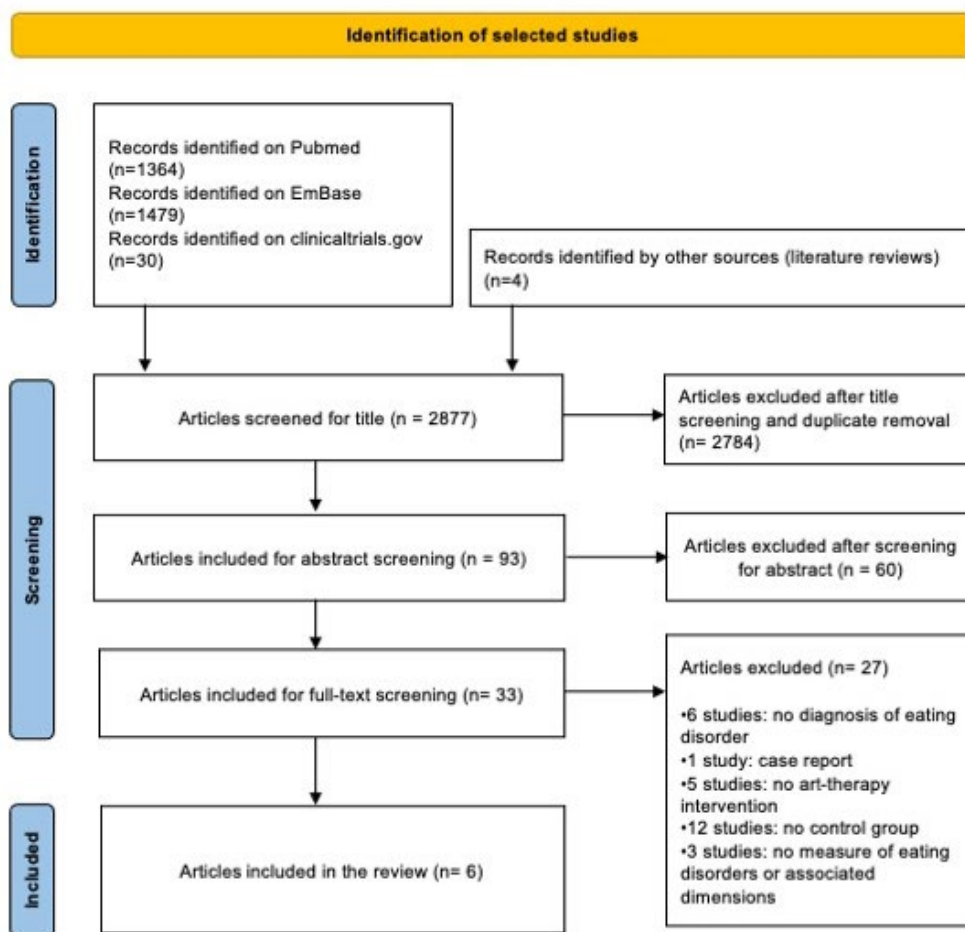


FIGURE 1. Flowchart of the study selection process.

**TABLE I.** List and characteristics of the included studies.

Publication	Study type	Objectives	Intervention	Size and population	Outcome measures	Results
Savidaki et al., 2020	Controlled pilot study	To examine the effect of DMT on alexithymia and body image in ED.	DMT 14 weeks of 90-minute sessions	Intervention group: n=4 with EDNOS, n=3 with AN. Control group: n=2 with EDNOS, n=2 with AN, n=1 with BN. Age: 14-32 years old. Female sex.	Subscales of MBSRQ and TAS.	MBSRQ: intervention group had an improvement on : - Appearance evaluation (p<.05) - Body areas satisfaction (p=.03) - Appearance orientation (p=.01). Control group: no significant change. Time-group interaction for appearance orientation and body areas satisfaction. TAS: no significant result (p>.05).
Bibb et al., 2015	Nonrandomized pre-post intervention comparative study.	To examine the effect of music-therapy on post-meal anxiety in AN.	Music therapy 2 one-hour sessions.	N= 18 patients with AN. - 89 music-therapy sessions. - 84 "control" sessions (= general post-meal activities of the unit).	SUDS pre- vs post-intervention.	Post-intervention decreases of SUDS score (2,4+1.9) in the intervention group (p<.05). Controls: No difference (0.93+1.7, p>.05).
Johnston et al., 2010	RCT	To examine the effect of writing therapy on psychological dimensions of BN.	Pennebaker's written emotional disclosure method. 20-minute session on 3 consecutive days.	N= 80 patients with BN. Groups: Intervention (N=40), Control (N=40, emotionally neutral writing).	BITE, HADS, EACS, Linguistic Inquiry and Word Count Software, NMRQ, Beliefs about emotion Questionnaire, COPQ, OBC, TAS.	No differences at the BITE and HADS. Correlations changes in BITE and emotional expression (r=-.23, p=.04), emotional processing (r=-.26, p=.02), negative mood regulation (p<.01), beliefs about emotions (p=.02), frequency of use of insight words (p=.01). Positive opinion on the experience at qualitative analysis.
Lock et al., 2018	Feasibility study of RCT [Protocol number: NCT02054364]	Feasibility of add-on art therapy or cognitive remediation to family therapy in ED treatment. To examine changes in OCD symptoms, BMI, neurocognitive functions, mood, anxiety, and food cognitions.	Art therapy 15 thirty-minute sessions.	N= 30 teenagers (12-18 years) with AN and obsessive-compulsive traits. Groups: cognitive remediation (N=15), art-therapy (N=15).	Feasibility: Recruitment and attrition. HRQ and TPSE. Secondary outcomes: ROCF, WCST, c-YBOCS, EDE, BDI, le BAI, BMI.	Feasibility: 1 participant recruited /month. 5 dropouts: (4 art therapy, 1 cognitive remediation). No difference between groups for HRQ or TPSE. Significant decrease of EDE scores, BMI (p<.01), et YBC-ED scores (p<.03) in both groups. In art therapy group: improvement at the WCST (p<.01) and of the BDI (p=.02), higher decrease of EDE score (p=.03).

TABLE I.

Publication	Study type	Objectives	Intervention	Size and population	Outcome measures	Results
Eren et al., 2023	Pre- vs post-test, quasi-experimental, controlled pilot study	To examine effects of long-term art-based group therapy (ABGT) added to TAU on ED symptoms, anxiety, depression, emotion regulation and global functioning.	ABGT. 30 weekly sessions of 120 minutes.	N= 15 women with AN, BN and BED, Age: 18-55. Groups: Intervention (n=7+1 dropout, 2 BN, 4 AN, 2 BED) vs TAU (n=7, 2 BN, 3 AN, 2 BED).	BDI, DERS, GAF, Group therapeutic factors list, Targeted-Problems Form.	Significant increase in functioning and significant decreases in the targeted problems (including eating, self-perception, socialization, family relations, and emotions), depression, and the DERS impulsivity subdimension ( $p < .05$ ) in the ABGT group.
Gamber al. 2013	Pre- vs post-test RCT [Protocol number: NCT00766558]	To investigate the benefits and linguistic trends of written emotional disclosure in patients with ED.	Pennebaker's written emotional disclosure method. 15-minute writing session on 3 consecutive days.	Female patients in a partial hospitalization program for ED. Age: 16-39 years. Groups: Disclosure (n=13) vs control (n=12, objective writing with no emotional content).	EAT-26, DERS, Eating Disorders Recovery Questionnaire, and Motivational Stages of Change for Adolescents Recovering, meal-time surveillance score, qualitative analyses of the writings (Linguistic Inquiry and Word Count software).	- No difference in ED psychopathology and meal behaviours - Qualitative analysis: Disclosure group ( $p < .05$ ): more negative emotion, cognitive, insight, function, and filler words (every day), more tentative words (day 1, 2), more positive emotion and causation words (day 2, 3), more death-related words (day 1, 3). Control group ( $p < .05$ ): more first personal plural pronouns (day 1), more eating related words (day 1, 2). Changes from first to last essay ( $p < .05$ ): less eating-related words in controls than disclosure group ( $p < .001$ ), more tentative words in control group ( $p = .02$ ).

EDNOS (Eating Disorders Not Otherwise Specified), AN (Anorexia Nervosa), BMI (Body Mass Index), BAI (Beck Anxiety Inventory), BDI (Beck Depression Inventory), BITE (Bulimic investigatory Test, Edinburgh), COPQ (Coping Operations Preference Questionnaire), DERS (Difficulties in Emotion Regulation Scale), EACS (Emotional Approach Coping Scale), EAT-26 (Eating Attitudes Test-26), ED (eating disorders), EDE (Eating Disorder Examination), GAF (global assessment of functioning scale), HADS (Hospital Anxiety and Depression Scale), HRP (Helping Relationships Questionnaire), MAIA (Multidimensional Assessment of Interoceptive Awareness Scale), MBSRQ (Multidimension Body Self Relation Questionnaire), NMRQ (Negative Mood Regulation Questionnaire), OBC (Objectified Body Consciousness), ROCF (Rey-Osterrieth Complex Figure), SUDS (Subjective Units of Distress Scale), TAS (Toronto Alexithymia Scale), TAU (treatment as usual), TSPE (Therapy Suitability and Patient Expectancy), WCST (Wisconsin Card Sorting Test), c-YBOCS (children Yale Brown Obsessive Compulsive Scale).

The DMT intervention consisted of sessions inspired to the theories of Marian Chace<sup>39,40</sup>, and incorporated elements of the work of Luise Reddemann<sup>41</sup>. The former is

an American dance therapist who structured her work to improve communication and expression of emotions and ideas through dance and movement. The latter is a

German psychologist who built an imaginative psychotherapy of trauma. Each session consisted of a warm-up, guided imagery, exploration of the space, writing and debriefing.

The music therapy intervention consisted of listening to the music, followed by talking about the feelings and thoughts that arose while listening. Participants were also encouraged to create their own music and discuss it. The therapist's goal was to distract the patients and help them manage their emotions. The intervention was not based on any particular theory.

The therapeutic writing intervention<sup>34</sup> was based on a protocol developed by Pennebaker<sup>42</sup>, involved writing about "*things that those around us don't see or that we hide from them*", for twenty minutes, once a day for three days. In one study<sup>43</sup>, patients were invited to complete these exercises independently at home, following instructions delivered by e-mail, and to return the writings to the therapists by e-mail. In the other study<sup>35</sup>, participants were requested to engage in a process of writing about a traumatic experience and to examine the emotions and thoughts associated with that experience. This was done over a period of three consecutive days, with the writing sessions lasting for 15 minutes each.

Visual art interventions encouraged the expression and understanding of emotions in an objective and clear manner. No theoretical reference was mentioned in the two publications<sup>33</sup>. In one study, ten main themes were provided from one session to the other, such as socialization, emotions, body image, coping skills, and cognitive functions. Patients were provided with different materials, such as paintings, crayons, collage, and clay, and goals such as raising awareness of other people, expressing emotions, and realizing the integrity of the body, were meant to be achieved<sup>38</sup>.

Of the six articles included, only one used weight change as a criterion<sup>34</sup>; three used ED-specific psychometric questionnaires as the Bulimic Investigatory Test Edinburgh (BITE)<sup>34,44</sup>, the Eating Attitudes Test-26 (EAT-26)<sup>35,45</sup> and the Eating Disorder Examination (EDE)<sup>33</sup>. Body image was assessed by the Multidimensional Body Self Relation Questionnaire (MBSRQ)<sup>36,46</sup>, and the Objectified Body Consciousness (OBC)<sup>34,47</sup>. One article assessed several dimensions of ED by the use of the Targeted Problem Scale<sup>38</sup>, in which eating symptoms such as overeating, vomiting, obsessions with eating, and the desire to lose weight fast were all condensed in the category of "first order problems". One study assessed mealtime eating behaviours by recording, scoring and averaging them on a weekly basis<sup>35</sup>. Anxiety symptoms were examined using the Subjective Units of Distress Scale (SUDS)<sup>37,48</sup>, the Hospital Anxiety and Depression Scale (HADS)<sup>34,49</sup>, and the Beck Anxiety

Inventory (BAI)<sup>33,50</sup>. Depressive symptoms were assessed by the Beck Depression Inventory in two studies (BDI)<sup>33,38,51</sup> and the HADS<sup>34</sup>, while the presence of obsessive-compulsive symptoms was assessed in one study by the Children's Yale-Brown Obsessive Compulsive Scale (c-YBOCS)<sup>33</sup>. Two articles<sup>34,36</sup> assessed alexithymia by the Toronto Alexithymia Scale (TAS)<sup>52</sup>. Other dimensions analyzed were emotion regulation using the Difficulties in Emotion Regulation Scale (DERS)<sup>34,35,38</sup>, cognitive abilities such as central coherence and mental flexibility<sup>33</sup>, global functioning<sup>38</sup>, motivation to recovery<sup>35</sup>, and the quality of the relationship between patient and therapist. This included assessing the degree to which patients felt understood and involved in a collaborative project<sup>33,53</sup>.

### Effect of Art therapy on eating disorders and their dimensions

The impact of art therapy on core symptoms of ED is heterogeneous (Tab. I). The combination of visual arts therapy with family therapy led to a significant improvement in the EDE<sup>54</sup> and weight among patients with AN<sup>33</sup>, seemingly more effectively than the combination of cognitive remediation and family therapy. A significant, general decrease of ED symptoms was also reported in patients who benefitted from visual art therapy<sup>38</sup>. Therapeutic writing only showed a tendency towards decreased BITE scores in patients with BN<sup>34</sup>, with no significant effect on EAT-26 scores or eating behaviours in patients with unspecified ED. A significant improvement in body image-related dimensions was found in the group of patients with AN and OSFED who received DMT<sup>36</sup>, whereas therapeutic writing did not improve OBC<sup>33</sup>.

In relation to comorbidities of mood and anxiety, music therapy proved effective in reducing pre-meal anxiety<sup>37</sup>, but generalized anxiety was unaffected by writing and visual arts therapies. Scores of depression significantly improved in patients receiving visual art therapy compared to controls<sup>38</sup>. Visual art therapy reported a significant effect on obsessive symptoms, cognitive rigidity<sup>33</sup>, and global functioning<sup>38</sup>. None of the two interventions assessing alexithymia reported a significant improvement<sup>33,36</sup>.

Qualitative analyses<sup>34,36</sup> highlighted the positive experiences of users. Therapeutic writing improved avoidance, denial and communication difficulties. It increased motivation for change and insight, and catalyzed a positive reappraisal of their situation<sup>34</sup>. Email writing was reported by 72% of patients as a highly acceptable medium, allowing them to overcome social inhibitions. DMT was recognized as a tool that effectively promoted the analysis of emotional states and changes, and the fine-tuning of movement. The dimensions of pleasure and social experience were also highlighted.

### Analysis of bias

The CONSORT checklist comprises 37 items for randomized controlled trials. The extension of 40 items was used in pilot and feasibility studies (see supplementary tables S2 and S3). It was not possible to identify any of the publications that met all of the criteria set out in this analysis grid. The total number of applicable items fulfilled by Johnston et al.'s publication<sup>34</sup> is 19/28, by Gamber et al.'s publication<sup>35</sup> is 16/28 (see supplementary table S2), and by Lock et al.'s publication<sup>33</sup> is 19/33 (see supplementary table S3). The majority of studies provided satisfactory disclosure of their inclusion methods and defined their outcome measures. However, information on the randomization processes was lacking in all studies.

The three nonrandomized studies analyzed by the ROBINS-I tool showed an overall critical risk of bias, primarily due to the risk of bias associated with confounding and measurement outcomes (see Supplementary Tables S4 and S5).

### Discussion

This systematic review aimed to evaluate the role and effects of art therapy in the management of ED, focusing on key psychopathological dimensions. Six clinical trials were included in our research, evaluating different forms of art therapy: DMT for patients with ED (AN, BN, OSFED), art therapy added to family therapy for patients with AN, and to treatment as usual for patients with ED (AN, BN, BED), writing therapy for patients with ED and with BN, and music therapy for the management of postprandial anxiety in inpatients with AN. The results showed an effect of art therapy plus family therapy on clinical severity, weight, rigidity, and obsessive symptoms, and as an add-on to treatment as usual on ED symptoms, depression, and global functioning. DMT showed an effect on body dissatisfaction, and music therapy reduced postprandial anxiety. Overall, art therapy protocols were well accepted and associated with a positive experience.

The body of evidence gathered in this review is insufficient to provide robust answers to the initial questions. There is rarely more than one study for each form of arts therapy, and the heterogeneity of methodological choices prevents any comparison. Some outcome measures, such as the DERS and depression scales, are used in more than one study, but the strong methodological inconsistencies prevent any comparison or quantitative synthesis of the results.

In all trials, art therapy is added to usual care. The intervention group is compared with a control group, or pre-post intervention measures are compared within the intervention group. In some studies there is no control group or other therapeutic approaches are used simul-

taneously, such as family therapy<sup>33</sup> making it difficult to distinguish the effects of the two on ED symptoms, weight change and related dimensions.

The most relevant effect of music therapy is on food-related anxiety. This may be an important finding given the detrimental effect of food-related anxiety on adherence in AN<sup>20</sup>. Improving patient comfort through effective postprandial anxiety reduction would be an interesting and well-accepted strategy to improve tolerability and adherence. What remains unclear is whether this effect extends to generalized anxiety and its management, as seen in patients with severe somatic illness<sup>55</sup>.

DMT demonstrated a statistically significant improvement in body dissatisfaction, a dimension that can predict treatment response in AN<sup>56</sup>. DMT seems to improve body image concerns in obese patients too, in addition to quality of life, body awareness, and mental representations independently of weight<sup>22</sup>.

Visual arts also seem effective on ED symptoms, as underlined by decreases in the EDE scores<sup>33</sup> and the severity of "target problems" such as overeating, purging and obsessive thoughts on thinness<sup>38</sup>. This approach also brought encouraging results on comorbidities, such as obsessive-compulsive and depressive symptoms.

None of the trials met all CONSORT and the ROBINS-I criteria, and all studies present several sources of bias, such as the absence of high-quality randomization techniques. This has an impact on the generalizability of the significant findings, that is further affected by the lack of replication of any of the published essays. Detailed descriptions of the therapeutic protocols, standardized methodologies of evaluation, and replication of studies, are necessary to build a solid basis of evidence to support the use of art therapy in ED management.

This research presents numerous limitations. First, the inclusion criteria we chose are rather broad. Choosing not to focus on a specific ED has increased the heterogeneity of the study population. On the other hand, given the paucity of trials assessing art therapy in ED, this enhanced the number of studies retrieved and provided a more complete overview on the applications of art therapy in ED. We also selected a broad range of outcome measures, not limiting to specific symptoms of ED, to provide a comprehensive overview of the effects of art therapy on patient wellbeing, not merely limiting to the illness, and in accordance with the principles of art therapy<sup>4,57</sup>.

To better clarify the impact of art therapy on ED, some adjustments are indispensable for future research. Outcome measures should more systematically encompass ED-specific and validated scales, such as the EDE or the BITE, to better assess the efficacy of art therapy on specific dimensions of ED. Assessing the specific im-

pact of each form art therapy on the individual dimensions of an ED could pave the way to a better-informed prescription of this promising and highly tolerable form of psychotherapy.

An important field to deepen is the research on factors that predict the efficacy of art therapy on each particular condition. Understanding what patient profiles respond to each specific form of art therapy may support their indication within management protocols and promote personalization of management strategies. Currently, no guidelines exist to orientate the prescription of art therapy protocols in patients with ED and what precise form of mediation should be employed in each specific case. We consider that this represents a missed chance to promote patients' involvement and acceptance of care<sup>58</sup>.

## Conclusion

The limited number of trials, and a high quantity of bias, prevent any generalizable conclusion on the specific effectiveness of art therapy in ED. Art therapy seems

effective on body dissatisfaction and postprandial anxiety, and is highly tolerated by patients. Replication of studies, standardized protocols and outcomes are necessary to support the use of this promising and highly acceptable form of psychotherapy.

## Conflict of interest statement

The authors declare no conflict of interest.

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None.

## Author contributions

FT: proposal, collection of data, data analysis and interpretation, manuscript drafting and editing. PG: supervision, data interpretation, manuscript drafting and editing. LDL: proposal, conception, supervision, data collection, data analysis and interpretation, manuscript drafting and editing.

## Ethical consideration

Not applicable.

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