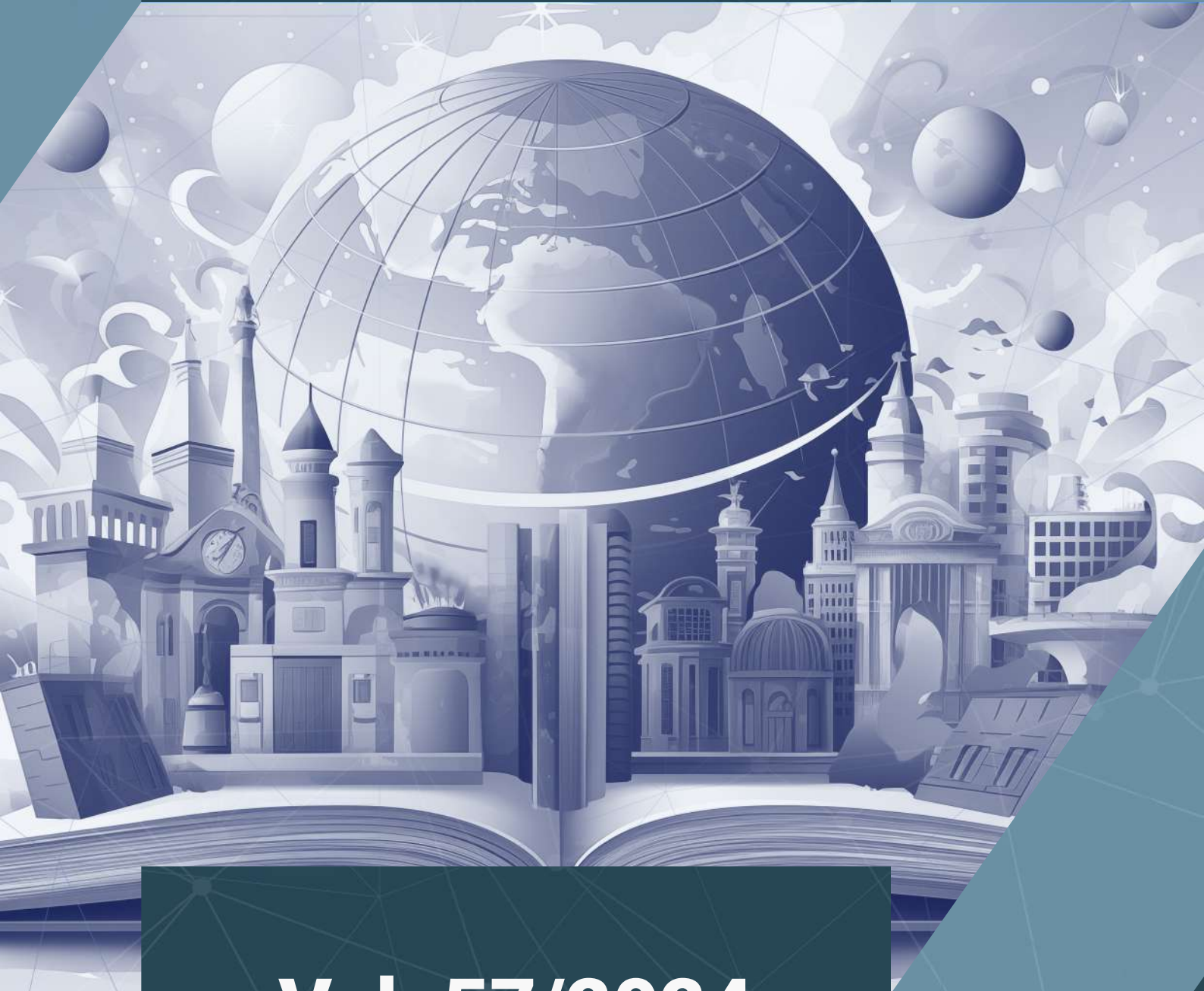




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Person-Centered Expressive Arts Therapy in Clinical Settings: A Systematic Review of Quantitative Interventions

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Abstract. Background: Person-Centered Expressive Arts Therapy (PCEAT) integrates the core concepts of humanistic psychology with the expressive arts to improve mental health and well-being. Its efficacy is substantiated by research across varied demographics for multiple psychological conditions. This review critically evaluates the effectiveness of PCEAT in clinical settings, employing quantitative research methods. Methods: The review followed PRISMA guidelines, and was registered at PROSPERO (CRD42023457126) searching eight databases for studies up to November 2023. Inclusion criteria were quantitative evaluations of PCEAT's effectiveness in clinical settings. Studies were assessed for risk of bias and categorized into three levels of evidence. Results: Three studies were included, focusing on dementia patients. These studies utilized various arts activities and showed improved emotional functioning and quality of life. However, all studies had high risk of bias, and the review did not perform a meta-analysis due to the heterogeneity of studies. Conclusions: Although PCEAT demonstrates potential benefits for dementia patients, the existing evidence remains limited and lacks robustness. Future research should incorporate more comprehensive and diverse studies to thoroughly assess PCEAT's efficacy in various populations and settings.

Keywords. Person-Centered Expressive Arts Therapy, Dementia Patients, Quantitative Evaluation

Introduction

Person-Centered Expressive Arts Therapy (PCEAT) constitutes a holistic psychotherapeutic approach that synthesizes the principles of humanistic psychology with a spectrum of expressive arts modalities and techniques (Rogers, 2011). This integrative method employs diverse expressive arts media and techniques to facilitate individuals in expressing, exploring, integrating, and transforming their internal feelings and experiences, thereby fostering their psychological well-being and self-actualization (Rogers, 1993).

Over the past several decades, a substantial body of research has consistently validated and reinforced the application and effectiveness of PCEAT in clinical contexts. Notably, PCEAT has been utilized in addressing a range of psychological conditions, including Post-Traumatic Stress Disorder (PTSD), depression, anxiety disorders, substance abuse, eating disorders, and self-harm. Additionally, it has contributed to the enhancement of various psychological health metrics, such as creativity, confidence, self-esteem, and life satisfaction (LAI et al, 2017;

McDonald, 2023; Soon, 2018; Malchiodi, 2005; Miller, 2014; Perryman et al., 2015; Byun & Hwang, 2009). Furthermore, the utilization of PCEAT across diverse populations and backgrounds – encompassing children, adolescents, the elderly, immigrants, refugees, prisoners, cancer patients, and victims of domestic violence – underscores its extensive applicability and therapeutic potential across a wide demographic spectrum (Malchiodi, 2005; Rogers, 2011; Kim & Kim, 2020;).

Research has substantiated and supported the application and efficacy of PCEAT from a clinical psychological perspective. However, there is still a need for more empirical assessments. These should systematically employ quantitative methods to evaluate the effects of PCEAT. The significance of quantitative assessments lies in their capacity to provide an objective, reliable, and scientific evidence base for the effectiveness and applicability of PCEAT, thus facilitating its scientific and standardized incorporation into therapeutic practices (Hinz, 2019; Rogers et al., 2012). This study aims to address this gap by conducting a systematic review and evaluating existing quantitative intervention research to ascertain the effectiveness and applicability of PCEAT within clinical settings.

One of the challenges this article confronts is the definition of effectiveness, as different studies may adopt varied outcome measures and assessment methodologies. This article adheres to Hill et al.'s (1979) definition of effectiveness: "the attribute of an intervention or operation whereby the benefits conferred upon its recipients exceed any detriments incurred." The focus herein is on the effects of PCEAT, as reported in quantitative research, rather than on the subjective experiences or perceptions of the clients. This review adopts an empiricist perspective (Holton, 1993), concentrating on the measures of efficacy reported within the quantitative research studies conducted in the field. Given that the field of PCEAT is still in its developmental stages, with a limited scope of studies and varying levels of research quality, constructing a comparative review that presents the knowledge within the field and draws thorough conclusions is challenging. Consequently, following the hierarchy of evidence proposed by Case-Smith (2013), the related literature is categorized into three levels. Level I evidence refers to randomized controlled trials with the highest validity and credibility. Level II evidence refers to non-randomized two-group studies. Level III evidence refers to non-randomized single-group studies.

Based on this premise, the principal objective is to examine the effects of PCEAT on clients, drawing upon various published quantitative studies and classified according to the hierarchy of evidence delineated by Case-Smith (2013) as level I, II, and III evidence. A secondary goal is to procure an overview concerning (1) the characteristics of patient populations that may benefit from person-centered expressive art therapy; (2) the specific forms of person-centered expressive art therapy that have been employed; and (3) the mechanisms of action that have been reported and postulated.

Methods

The methodology for this systemic review was registered in the International Prospective Register of Systematic Reviews (PROSPERO) on September 3, 2023 (registration code: CRD42023457126). This systematic review adhered to the guidelines outlined in the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement established by Moher et al. (2019).

Search Procedures and Study Selection

We conducted a comprehensive search of electronic databases, including MEDLINE/PubMed, Embase, Web of Science, ProQuest, Scopus, and the Cochrane Central Register of Controlled Trials (CENTRAL), as well as the Chinese databases, including CNKI (China National Knowledge Infrastructure) and Wan Fang Data, to identify eligible studies published up to November 1, 2023. Additionally, we searched for grey literature in Google Scholar and attempted to identify further studies from the references cited in these sources. Our search strategy used "art* therapy" and "person-centered" in conjunction with "outcome," "measurement," "treatment," "intervention," "efficacy," and "effectiveness." This strategy was tailored to the specific subject headings or structures of each electronic database, with search terms adjusted according to the search functionalities of each database.

To thoroughly assess the effectiveness of person-centered expressive arts therapy in clinical settings, we created an extensive EndNote file comprising references from various databases and eliminated all duplicate records. Two researchers (ZB and WJ) independently conducted the screening process. In the initial screening phase, researchers preliminarily reviewed the title of each document to determine its potential relevance to the inclusion criteria of this systematic review. Those studies whose titles remained relevant underwent further assessment by carefully reading their abstracts to confirm their applicability. Only those studies whose abstracts met the inclusion criteria were selected for full-text evaluation. During the full-text review phase, the two researchers independently assessed each article based on pre-established inclusion and exclusion criteria. Any disagreements regarding a document's eligibility were resolved through discussion between the researchers or, if necessary, with consultation from a third researcher (AA). This rigorous screening process ensured the quality and relevance of the literature ultimately included in the systematic review.

Study Inclusion and Exclusion Criteria

The titles, abstracts, and full texts of articles retrieved through database searches were reviewed meticulously. Studies were selected for inclusion based on the following criteria: (1) The literature must report a quantitative evaluation of the effectiveness of PCEAT in clinical settings, including randomized controlled trials, non-randomized two-group studies, and non-randomized single-group studies. (2) Articles describing comprehensive therapeutic intervention techniques using a variety of art mediums, particularly those not limited to visual arts. Studies were excluded: (1) Articles that only provided case studies, methodological descriptions, qualitative analyses, or literature reviews that failed to meet our inclusion criteria. (2) one-time art therapy intervention session. (3) Articles with duplicate, incomplete, or inaccessible data (unavailable from the original authors).

Articles meeting these inclusion criteria were defined as those examining the effectiveness of PCEAT. These criteria ensured that the selected studies could measurably assess the effects of PCEAT. Furthermore, these eligible articles were classified according to the evidence-level system proposed by Case-Smith (2013).

Data Extraction

A specialized electronic data extraction spreadsheet was employed for data collection to assess the quantitative intervention effects of PCEAT in clinical settings. This spreadsheet was based on the Cochrane Collaboration's data collection form for intervention reviews (identified as Table 1). The form was carefully made to collect essential details, such as the study's design

methodology, the characteristics of the participants, the number of people receiving PCEAT treatment, and the number of people in the control group. It also asked for a detailed description of the PCEAT intervention, including how long and how often it happened, and specific details about the control conditions and the measured outcomes.

Adhering strictly to a pre-established protocol, two independent reviewers (ZB and WJ) extracted the selected studies' data. A third author (AA) intervened in data interpretation or extraction discrepancies, and consensus was reached through discussion to resolve these differences.

Study Quality

This study employed the Cochrane Collaboration's recommended bias risk tool for the quality assessment of each included study (Higgins & Thomas, 2019). Two additional researchers independently reviewed the initial assessment to ensure objectivity and accuracy in the evaluation. Any inconsistencies in the assessment results were resolved through team discussion until a consensus was reached. The quality assessment of the studies primarily focused on several key areas: selection bias, performance bias, detection bias, attrition bias, reporting bias, and a comprehensive category encompassing all other identifiable biases. Based on these criteria, each study was categorized as "low risk," "unclear," or "high risk."

Specifically, considering that the bias risk tool was originally designed for pharmacological research, we adapted it for the context of psychotherapy outcome studies, as suggested by Munder and Barth (2018). In this adaptation, performance bias was defined as "studies that did not use an active control group or did not assess patient expectations or treatment credibility." This definition extends beyond the original focus on the "blindness of participants and personnel," encompassing a broader range of potential biases.

Analysis

The primary outcome measure was reducing patient symptoms before and after treatment. Differential results were presented between the intervention and control groups. Furthermore, the results within each group were displayed to identify potential therapeutic effects and formulate hypotheses for future research.

Data from at least two studies with comparable research populations and treatment methods assessing identical outcomes were pooled for meta-analysis to estimate an overall effect size. Study heterogeneity was evaluated using the I^2 statistic and chi2 test. Significant heterogeneity, indicated by an I^2 statistic greater than 50% and a p-value below 0.10, led to an investigation into its sources (Higgins & Thompson, 2002). Subgroup analyses, based on clinical relevance, reported only aggregated subgroup or individual study results. In the meta-analysis, publication bias was assessed by creating funnel plots based on the primary outcomes of all trials. Additionally, content analyses were performed to study the characteristics of the PCEAT utilized, the target populations, and the hypothesized mechanisms of action.

Results

Study selection

Database searches yielded 278 articles initially considered for inclusion in this meta-analysis, as of November 1, 2023. Among these, 29 duplicates were identified and removed, leaving 249 unique references. Further screening of titles and abstracts led to the exclusion of 236 references for failing to meet inclusion criteria.

Thirteen full-text articles were initially assessed, with ten subsequently excluded due to being qualitative studies (Deygout & Auburtin, 2020; Braš et al., 2013; Baumann et al., 2012), PCEAT not being the sole intervention method (Pretorius & Pfeifer, 2010), intervention methods did not include PCEAT (Flitton & Buckroyd, 2002; Gunnarsson et al., 2018), or being mixed-method case studies (Rasmussen, 2014; Clute, 2022; Edwards, 2018; Esparza, 2015). This resulted in three studies being included in the systematic review, as depicted in Figure 1.

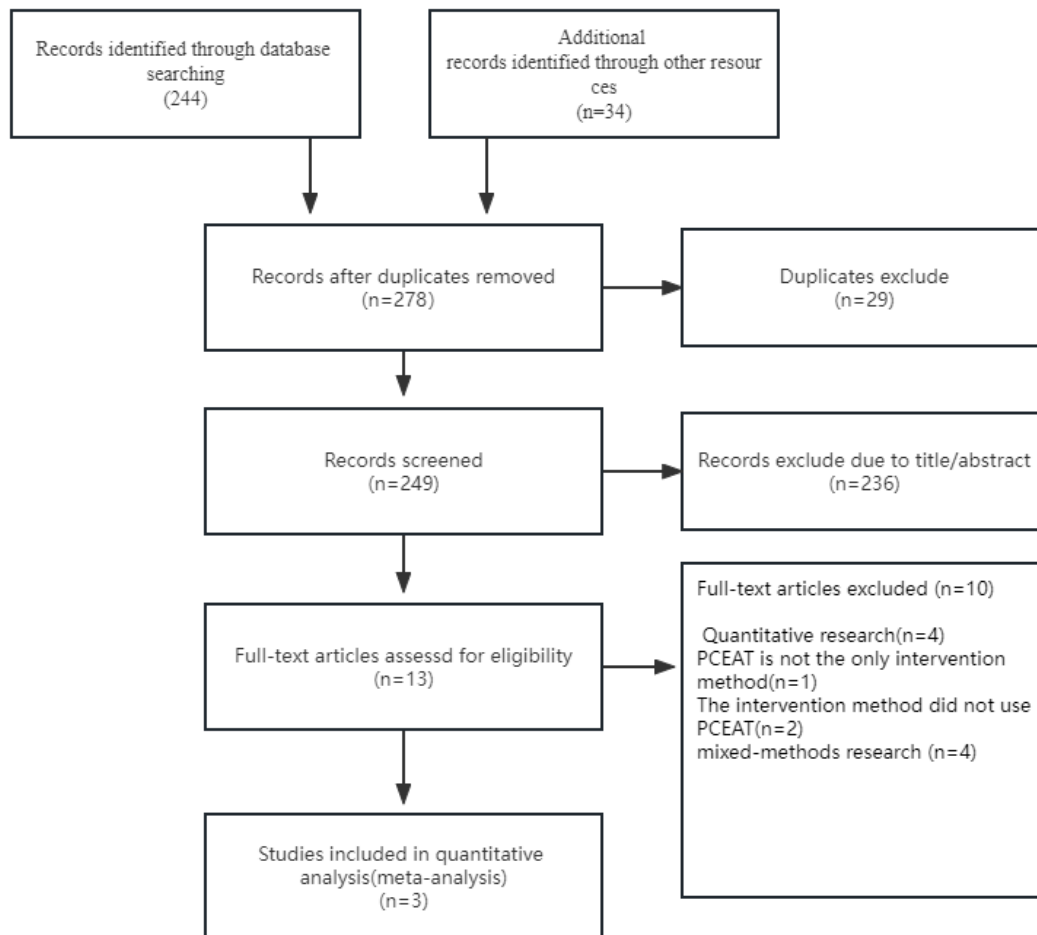


Figure 1. The flow of the systematic procedure

Study characteristic

As shown in Table 1, this systematic review included three different intervention measures of PCEAT for patients with dementia. Two of the articles employed non-randomized controlled experiments (Level 2) (Keating et al., 2020; Sauer et al., 2016), and one used a single group without a comparison group (Level 3) (Shoesmith et al., 2021). The study populations were diverse, involving participants from adult day care centers, assisted living facilities, and nursing homes, highlighting PCEAT's applicability in various settings. Sample sizes in these trials ranged from small to medium, with participant numbers varying from 11 to 75, totaling 134 individuals across the three studies. Interventions included structured visual art activities like painting, crafts, drawing, singing, and playing instruments, featuring various content

tailored to individual and group needs. The duration of these sessions varied, some designed as brief 60-minute interactions and others extending up to two hours, reflecting the flexibility of PCEAT to accommodate participants' needs and institutional schedules, and the therapeutic periods in the studies ranged from structured six-week, twelve-week, to twenty-four-week plans, demonstrating PCEAT's flexibility in clinical settings.

Regarding control conditions, one study did not implement a traditional control group; instead, it focused on the individualized experience of PCEAT (Shoesmith et al., 2021). Another study used regular visual art activities as a comparison (Sauer et al., 2016), and the third employed passive activities, such as sitting comfortably without engaging in any specific task, as a non-active control (Keating et al., 2020). The setting of these studies was primarily inpatient, located in nursing facilities that provide supportive intervention environments.

Table 1. Characteristics of the included studies of PCEAT.

No	Article Title	Author (year)	Study type	Number/ (treated/ control)	Study population	Art therapy characteristics	Treatment duration, frequency, type (group or individual)	comparator	Outcome measures	Assessment Points	Results
1	Acceptability and feasibility study of a six-week person-centered, therapeutic visual art intervention for dementia patients.	Shoesmith et al. (2020).	A mixed-methods, quasi-experimental, pre/post design	11	Sex: Male and female Age:79-90 Population: People with dementia	Person-centered, therapeutic visual art	Duration: 60min Frequency: Once a week for a total of six weeks Type: Group	N/A	QoL-AD, SF-DEM, and Activities of Daily Living scale	Three timepoints (T0: baseline, T2: post-intervention, T3: one-month follow-up)	Enhanced social functioning and QoL scores

2	An Evaluation of Group Reminiscence Arts Sessions for People with Dementia Living in Care Homes	Keating et al.,(2020)	Comparative and time series design	75(39/36)	Sex: Male and female Age:69-100 Population: People with dementia living in care homes	Reminiscence arts sessions	Duration: 1-2h Frequency: Once a week in total 24 weeks Type: Group	the routine care	QoL-AD, SF-DEM, Activities of Daily Living scale and Dementia Care Mapping	Three time points (T0: baseline, T2: post-intervention, T3: one-month follow-up)	QoL and positive behaviors rose incrementally
3	Person-centered versus traditional visual arts activities for people with dementia	Sauer et al. (2014)	Mixed-methods quasi-experimental, pre/post design	48(38/10)	Sex: Female Age: N/A Population: People with dementia	person-centered and intergenerational arts activity program called OMA	Duration: 1h Frequency: Once a week for total 12 weeks Type: Group	Traditional visual arts activities	GCWBT	Each 5-min observation	38 participants demonstrated considerable well-being with little to no ill-being during OMA.

OMA: Opening Minds through Art.

SF-DEM: Social Functioning in Dementia scale

QoL-AD: Quality of Life in Alzheimer's Disease scale

GCWBT: the Greater Cincinnati Chapter Well-Being Observation Tool.

Risk of bias within studies

Based on the Cochrane Collaboration's tool for assessing the risk of bias, an estimation of bias was conducted. Table 2 indicates that all studies exhibited a high risk of bias (RoB).

Table 2. Summary of ROB

Study	Selection bias	Performance bias	Detection bias	Attrition bias	Reporting bias	The overall risk of bias
Shoesmith et al.(2021)	High	High	Unclear	Low	Low	High
Keating et al.(2020)	High	High	Unclear	low	High	High
Sauer et al.(2016)	High	High	Unclear	Unclear	High	High

Selection Bias: In intervention studies, randomization is crucial for reducing selection bias. The absence of this step implies uncertainty about the comparability of participants allocated to intervention and control groups at baseline. All three articles in question did not employ a randomization procedure, introducing a high risk of selection bias.

Performance Bias: In art therapy research, implementing blinding for participants and therapists is often challenging. Consequently, all three studies reviewed exhibited a high risk of performance bias. There is insufficient information to determine whether the lack of blinding affected the study outcomes. Moreover, none of the studies assessed treatment expectations or credibility before or at the early stages of the therapy.

Detection Bias: All three studies utilized validated self-report questionnaires, allowing for a low-risk rating of response bias. However, the lack of detailed descriptions regarding the exact circumstances of using these measurement tools could lead to bias. The presence of therapists or concerns about anonymity could influence the scores, potentially leading to confirmation bias. This situation renders the risk of detection bias "unclear."

Attrition Bias: Shoesmith et al. (2021) and Keating et al. (2020) provided comprehensive data on participant attrition, indicating a lower risk of attrition bias. However, Sauer et al. (2016) did not offer information regarding whether all participants completed the study, leaving the risk of attrition bias unclear.

Reporting Bias: Shoesmith et al. (2021) reported all pre-specified outcome measures, suggesting a lower risk of reporting bias. However, Keating et al. (2020) and Sauer et al. (2016) may not have fully reported all pre-specified clinical endpoints, indicating a higher risk of reporting bias.

Overall Risk: Since all studies exhibited a high risk of bias in one or more domains, the overall risk of bias is considered high. This implies that the reliability and validity of the study results are limited and should be interpreted with caution.

The outcome of individual studies

This systematic review included studies focusing on populations with dementia. The measurement methods used in these studies are illustrated in Table 1. Both Shoesmith et al. and Keating et al. utilized the Social Functioning in Dementia scale (SF-DEM), Quality of Life in Alzheimer's Disease scale (QoL-AD), and Activities of Daily Living scale to assess patients'

levels of social functioning, quality of life, and daily living abilities, respectively. Sauer et al. (2016) employed the Greater Cincinnati Chapter Well-Being Observation Tool (GCWBT) to measure their subjects' positive and negative components of well-being.

Shoesmith et al. (2020) and Sauer et al. (2016) both conducted mixed-methods quasi-experimental research, demonstrating the impact of PCEAT-based interventions on aspects such as emotional functioning, quality of life, and participant engagement in activities. Shoesmith et al. (2020) demonstrated significant improvements in emotional functioning and quality of life levels after the intervention, with the statistical results for social functioning being $F(2, 30) = 12.39$, $p = .000$. For quality of life being $F(2, 30) = 10.40$, $p = .000$. However, these gains receded at a one-month follow-up, though they remained above baseline levels. There was no significant change in activities of daily living abilities, with an $F(2, 30) = 0.011$, $p = .989$. Sauer et al. (2016) used the Greater Cincinnati Chapter Well-Being Observation Tool (GCWBT) to observe and record participants' behaviors during art activities. Subsequently, they assessed their well-being based on these behaviors. A paired sample t-test comparing Opening Minds through Art (OMA), a person-centered and intergenerational arts activity program, with traditional visual art activities revealed that OMA had significantly higher intensity scores in engagement and pleasure and significantly lower intensity in disengagement.

Keating et al. (2020) utilized a comparative and time series design in their study. They reported significant improvements in emotional functioning and quality of life following the intervention. The statistical results indicated $F(2, 30) = 12.39$, $p = .000$ for social functioning, and $F(2, 30) = 10.40$, $p = .000$ for quality of life. Additionally, they employed the Dementia Care Mapping (DCM) method to record positive behaviors and quality of life data at three-time points before and after the intervention. The statistical model results indicated a significant upward trend in positive behaviors and quality of life levels over 24 weeks among the intervention group.

Summary of Outcome. The results of Keating et al. (2020) and Shoesmith et al. (2020) are consistent, showing significant improvements in emotional functioning and quality of life following the intervention, with no significant changes in activities of daily living abilities. Furthermore, the Dementia Care Mapping (DCM) method revealed a notable upward trend in positive behaviors and quality of life levels during the intervention. The study by Sauer et al. (2014) indicated that clients had significantly higher scores in engagement and pleasure and significantly lower scores in disengagement.

Meta-Analysis. Given the variability among the included studies regarding research subjects, control treatment methods, types of PCEAT applied, and the assessment scales used, the data lacked sufficient comparability. Therefore, a meta-analysis was not conducted.

Narrative Synthesis

Benefiting Population. Despite growing attention to Person-Centered Expressive Arts Therapy (PCEAT) and studies in clinical psychology confirming its effectiveness, research systematically assessing its impact using quantitative methods remains limited. Only three quantitative studies on patients with dementia were identified in this systematic review. This indicates, on the one hand, that PCEAT is beneficial for dementia patients across a wide age range, regardless of whether they reside at home or in care centers. These therapies can enhance their social functioning and quality of life and increase their positive behaviors and overall well-being. On the other hand, it also suggests that there needs to be more research assessing its application and effectiveness in other populations.

Characteristic of PCEAT for People with Dementia. Shoemith et al. (2021) implemented a therapeutic visual arts intervention program for individuals with dementia. This person-centered, evidence-based program included six weekly one-hour sessions, each co-led by two trained facilitators. The sessions were conducted in spacious rooms at daycare centers. The goal was to have a maximum of six participants per group to minimize confusion and anxiety and to enhance the group process. The program was strength-based and process-oriented, emphasizing the creative process over the final product. It involved diverse weekly activities inspired by themes, using various materials and techniques to encourage participants' choice and independence. The session structure included an introduction, a 5-10 minute warm-up exercise to relax participants before the art process, 40 minutes of art activity, and a 5-10 minutes reflective exercise for reflection and social interaction. Before the six sessions, there was an informal Getting to Know You meeting to set personalized artistic goals, which were reviewed mid-intervention to ensure fulfillment and action plans were made for adjustments if needed.

The project in Keating et al.'s (2020) study is titled *Reminiscence, Arts, and Dementia: Impact on Quality of Life (RADIQL)*. This intervention was designed to enhance communication and well-being in individuals with dementia. It aimed to connect them with their immediate environment, social spaces, and people around them, using creative art forms and reminiscence techniques. The intervention included a series of activities tailored to individual and group needs, primarily featuring ice-breaking activities such as ball throwing or tug of war. Other activities encompassed singing, playing/touching musical instruments, painting, crafting, cooking, gardening, dancing, and viewing photographs. Each session incorporated reminiscence elements and was customized according to the preferences, needs, abilities, and interests of individuals in the group. Reminiscence art acknowledges and values embodied sensory memories and verbal or narrative recollections (Dempsey et al., 2014). Group sessions typically lasted one to two hours. Two Reminiscence Arts Practitioners (RAPs) trained in various disciplines (such as reminiscence, dance, and creative arts) were assigned to each intervention group. Additionally, two nursing home staff members were expected to participate to support the residents' needs in the group. Each of the six intervention sites received a weekly RA group session for a duration of 24 weeks.

Sauer et al.'s (2016) research project was named the *Opening Minds through Art (OMA)* program, featuring failure-free, structured weekly art creation sessions (typically 60 minutes, with approximately 40 minutes dedicated to actual art creation), lasting about 12 weeks. OMA aims to fulfill individuals' psychological needs for attachment, comfort, inclusion, identity, and ownership. Each person with dementia was paired with a student volunteer who had received basic training in dementia care and OMA. These student volunteers learned the program's implementation methods at the beginning of each semester. Their role was to assist and encourage people with dementia rather than complete the art pieces. Every week, they featured different art activities inspired by abstract art, utilizing various materials (such as rice paper, canvas, dyes, various types of paint, ink, mesh, and bubble wrap) and painting techniques (like brushes, rollers, droppers), designed to stimulate different senses and curiosity in people with dementia. The art creation sessions culminated in a public gallery exhibition at the end of each semester.

Working Mechanisms of PCEAT. The working mechanisms of PCEAT are meticulously designed for clinical settings to cater to the unique needs of people with dementia. By analyzing the studies of Shoemith et al. (2021), Keating et al. (2020), and Sauer et al.

(2016), we can synthesize and understand the underlying principles of how PCEAT operates.

Shoemith et al.'s (2021) study emphasizes the limitation of group size within the PCEAT setting to maximize participation and reduce confusion. It provides a structured and process-oriented environment, where activities are designed in a no-fail mode, placing less emphasis on the final quality of artistic products and prioritizing the engagement and enjoyment of the creative process. This approach helps alleviate the pressure and fear of failure that patients might experience and promotes choice and independence through artistic activities.

Keating et al.'s (2020) RADIQL project utilizes creative arts and memory techniques to enhance communication and well-being. Engaging in art activities related to past memories helps patients connect with their history, strengthens their sense of personal identity and selfhood, and is beneficial in addressing memory impairments associated with dementia.

Sauer et al.'s (2016) OMA program offers fail-safe art creation sessions, reinforcing patients' existing abilities and strengths rather than focusing on any deficits caused by dementia. Collaborating with student volunteers fulfills patients' psychological needs, and the art activities involve multiple senses, stimulating sensory experiences, which serve as effective cognitive and emotional stimulation for dementia patients. Towards the end of the intervention, recognition and presentation of patients' work through exhibitions or sharing enhance their self-esteem and self-efficacy.

The following summary can be derived from the three types of PCEAT forms mentioned above: (1) PCEAT creates a secure and supportive environment, encouraging patients to express themselves and explore, which helps release negative emotions. A diverse range of artistic activities, such as painting, music, and sensory experiences, effectively stimulates memory and emotions. This aspect is especially crucial for individuals with dementia. (2) Furthermore, the content of these activities is personalized and highly adaptable, prioritizing the individual needs and preferences of dementia patients, thereby reflecting the participants' identities and interests. (3) Personalized attention and social interaction within small groups further promote social engagement and emotional connections, enhancing patients' sense of belonging and self-esteem.

Combining the systems theory perspective, we further hypothesize that PCEAT can improve the quality of life of dementia patients because PCEAT is an open system whose boundary includes the patients, therapists, therapeutic environment, and materials for artistic creation (Midgley, 2000). Within this system, the patient's emotions, memories, and personal experiences are input, and they receive unconditional support, sincere companionship, and empathy from the therapists, forming a creative connection. Through artistic activities, the patients can express their emotions, explore cognition and interact with others, and promote emotional regulation, cognitive function improvement, and social skills enhancement through expression, exploration, integration, and transformation.

The therapists in PCEAT are the support providers and the connectors of various subsystems and the key to different therapeutic activities and patient relationships. Their personalized care ensures the internal consistency of the therapy so that even when facing the unique experiences of different patients, the whole system can operate according to the established therapeutic principles and move towards the goal of promoting mental health. As the therapy progresses, the patient's improvement and the therapist's observation form internal feedback, which further shapes the therapeutic process, forms new input and drives the system's evolution and adaptation.

The therapy output manifests as improved social skills and enhanced quality of life,

which not only give feedback to the patients themselves but also affect the therapeutic environment and the broader social environment, promoting the dynamic interaction between the system and the environment. Moreover, the structure of PCEAT ensures personalized attention and social interaction within the group, which deepens the patients' social participation and emotional connection and strengthens their sense of belonging and self-esteem. The system's openness allows it to receive new stimuli and resources from the external environment, and the emergent properties generated within the system, such as the increased sense of community, reflect the ability of PCEAT to facilitate positive changes in the patients on multiple dimensions. This multifaceted effect results from the interaction of the elements of the whole system, embodying the holism of systems theory.

Discussion

Currently, there is a paucity of comprehensive information pertaining to the efficacy of PCEAT interventions, the characteristics inherent to these interventions, the potential beneficiary populations, and the delineation or hypothesized mechanisms of action. Therefore, this study conducted a systematic review of quantitative studies focusing on the effectiveness of PCEAT interventions.

Summary of evidence and limitations at study level

In a systematic review of quantitative interventions targeting person-centered expressive arts therapy (PCEAT), we conducted a search and screening process from a pool of 249 literature sources. Given the limited number of studies available, quantitative research on the efficacy of PCEAT is in its nascent stages and still evolving. All three studies selected from the literature focus on applications for dementia patients. While the sample sizes in these studies varied, ranging from 11 to 75 individuals, they collectively reveal the potential benefits of person-centered expressive arts therapy in enhancing the social functioning and quality of life of dementia patients. However, high-quality evidence remains relatively scarce due to the limited number of studies, varying sample sizes, and the absence of long-term follow-up. Nevertheless, existing evidence supports the possibility that PCEAT may enhance the well-being of dementia patients by fostering social engagement and emotional expression. In summary, the positive impact of PCEAT on dementia patients in clinical settings warrants further research to ascertain its precise role and potential for widespread application in treatment.

Strengths and limitations of this review

This review presents several strengths. Firstly, it is the first systematic quantitative research evaluation on the effectiveness of Person-Centered Expressive Arts Therapy (PCEAT) interventions. Secondly, it demonstrates high methodological quality by adhering to the Cochrane Systematic Review methodology, registering the research protocol with PROSPERO before the commencement of the review, utilizing tools from the Cochrane Collaboration for assessing bias risk, and reporting results following the PRISMA guidelines. The third strength lies in the comprehensiveness of the search strategy, which encompasses a long timeframe up to November 2023 and includes a substantial number of databases (7 in total). Lastly, the review offers an innovative perspective by employing a systems theory approach to elucidate the mechanisms of action underlying PCEAT.

This review is also subject to several limitations. Firstly, only three quasi-experimental studies met the inclusion criteria, all of which exhibited relatively low validity and credibility in the literature, introducing potential bias and affecting the interpretability of the results. Secondly, all three studies focused exclusively on elderly dementia patients, thus restricting the scope of this review to a specific subgroup that can benefit from PCEAT interventions. Thirdly, the relatively small sample sizes in these three studies, ranging from 11 to 75 participants, may limit the generalizability of the findings and the statistical power of the research outcomes. Lastly, data collection occurred at limited time points without sustained follow-up, resulting in a lack of long-term perspective on the durability and trends of the intervention effects. Future research endeavors should aim to incorporate larger sample sizes, more controlled trials, and extended follow-up periods to comprehensively assess the effectiveness and applicability of PCEAT in clinical settings.

Future perspectives

While this systematic review does not yield conclusive evidence regarding the effectiveness of PCEAT in treating elderly dementia, it should not be construed as negating its potential efficacy. Art therapists and other healthcare professionals attest to the significant promise of PCEAT in clinical practice. Nevertheless, establishing methods to objectify these real-world experiences proves to be a challenging endeavor. The findings of this systematic review underscore the current dearth of high-quality trials assessing the effectiveness and mechanisms of action of PCEAT interventions. More robust research efforts are imperative to substantiate the efficacy of PCEAT with robust evidence. Beyond dementia, further investigation is warranted to explore the effectiveness of PCEAT in conditions such as depression, anxiety disorders, substance abuse, eating disorders, and self-harm.

One crucial aspect for researchers in PCEAT studies when developing, conducting, and reporting quantitative research is the issue of bias risk. It is advisable to provide more specific guidance on minimizing RoB in the design and execution of research. A scientific challenge lies in assessing performance bias in PCEAT assessments. Due to the impossibility of blinding therapists and patients in art therapy, considering only "lack of blinding of patients and personnel" would result in a high-performance bias risk for every art therapy trial, elevating the overall RoB significantly. This implies that even if all other study aspects are of high quality, such interventions can never attain high-quality or moderate-quality evidence. Psychotherapy and other complex interventions face similar challenges. Munder and Barth (2018) discussed using Cochrane's bias risk tools in psychotherapy outcome research. We fully support the recommendations of Grant et al. (2016). Therefore, we endorse the suggestion to develop and employ bias risk and evidence-quality assessment tools tailored to art therapy and other complex interventions, especially when blinding is unfeasible. Future work should focus on enhancing these assessment tools to more accurately reflect the value and effectiveness of art therapy in clinical practice.

Conclusion

The efficacy of Person-Centered Expressive Arts Therapy (PCEAT) interventions has been insufficiently investigated in current randomized controlled trials (RCTs), and the existing evidence quality ranges from low to very low, offering only preliminary indications of potential benefits for elderly dementia patients. Within the conducted quantitative studies, the application of PCEAT has exhibited diversity, encompassing various types of art therapy, treatment

frequencies, and durations of sessions. This suggests the flexibility in implementing PCEAT but highlights the need for more high-quality trials in current research to assess its effectiveness and underlying mechanisms. Consequently, to gain a deeper understanding of the potential value and therapeutic mechanisms of PCEAT, a pressing need exists for additional high-quality research to explore its specific outcomes across different intervention types.

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