

Review

Art Therapy for Alzheimer's Disease and Other Dementias

Bree Chancellor^{a,b}, Angel Duncan^c and Anjan Chatterjee^{a,b,*}

^a*Department of Neurology, University of Pennsylvania School of Medicine, Philadelphia, PA, USA*

^b*Center for Cognitive Neuroscience, University of Pennsylvania, Philadelphia, PA, USA*

^c*Neuropsychiatric Research Center of Southwest Florida, Fort Myers, FL, USA*

Accepted 23 August 2013

Abstract. Patients with dementias commonly experience neuropsychiatric symptoms that diminish their quality of life. Pharmacologic treatments for these symptoms are limited in their efficacy. In the absence of near-future prospects for a cure for degenerative dementias, treatments that improve neuropsychiatric symptoms and quality of life are needed. We explore the hypothesis that art therapy is useful in dementia by reviewing the extant literature. With appropriate structure, patients with dementia can produce and appreciate visual art. Case studies and several small trials suggest that art therapy engages attention, provides pleasure, and improves neuropsychiatric symptoms, social behavior, and self-esteem. Whether these benefits generalize beyond the studio remains unknown. We offer a theoretical framework that motivates the use of art therapy and propose that clinical enquiry to establish methods, assess efficacy, and define optimal conditions for the use of art therapy in Alzheimer's and other dementing disorders is timely.

Keywords: Alzheimer's disease, art therapy, behavioral neurology, flow theory, frontotemporal dementia, neuropsychiatry

With an estimated prevalence of ~5.4 M in the US and 36 M people globally, dementia has a major impact on healthcare. Global prevalence of dementia is expected to double by 2030 to 66 M and more than triple by 2050 to 115 M [1]. Unfortunately, options to treat dementia are limited and their efficacy is marginal. Without treatments to arrest or reverse degenerative dementias, interventions to improve the quality of life of patients and their caregivers remain of prime importance. In this paper, we examine the potential of one such intervention, art therapy.

Neuropsychiatric symptoms are among the most distressing clinical features experienced by people with dementia and their caregivers. Apathy, depression, delusions, hallucinations, aggression, psychomotor

agitation, inappropriate sexual behavior, and sleep impairment [2, 3] are common and tend to increase over time [4]. These symptoms impair activities of daily living [5], worsen quality of life [6], lengthen hospital stay [7], and are associated with more rapid cognitive decline [8]. Caring for people with dementia imposes its own burden on caregivers' emotional and physical health. The severity of neuropsychiatric symptoms strongly predicts caregiver distress [9], which includes depression, anxiety, and increased mortality [10].

Medications such as cholinesterase inhibitors, memantine, antipsychotics, and antidepressants do not substantially improve neuropsychiatric symptoms or relieve caregiver burden [11]. Cholinesterase inhibitors have limited efficacy in treating neuropsychiatric symptoms [12]. Atypical antipsychotics like risperidone and olanzapine can provide modest short-term improvement [12] but are associated with non-trivial side effects [13].

*Correspondence to: Anjan Chatterjee, Department of Neurology, University of Pennsylvania, 3400 Spruce Street 3 Gates, Philadelphia, PA 19104, USA. Tel.: +1 215 662 4265; Fax: +1 215 349 5579; E-mail: Anjan@mail.med.upenn.edu.

In the absence of near future prospects for a cure for Alzheimer's disease (AD) and other degenerative dementias, symptomatic interventions would be useful. Since pharmacologic interventions have limited efficacy for behavioral symptoms, we consider the potential use of art therapy. We begin with a discussion of art and dementia, then review empirical evidence for the usefulness of art therapy, propose a framework supporting its use, and finally discuss methodological considerations for investigations designed to assess its efficacy.

ART AND DEMENTIA

The hypothesis that art therapy is an effective intervention in dementia is rooted in observations that some patients can and do produce art. William Utermohlen, Carolus Horn, Danae Chambers, Hilda Gorenstein, and Willem de Kooning are all artists that painted well into the course of AD. Over the course of his dementia, Utermohlen created a series of haunting self-portraits. Over time they showed increasing distortions in form and spatial organization and a flattening of perspective, while retaining originality and an ability to express complex emotions [14]. Carolus Horn, a Swiss magazine illustrator, created paintings from the time he was diagnosed with AD at age 58. His work exhibited distortions in perspective and spatial relations, a primitive flat style, a lack of personal characteristics in subjects, and a preference for reds and yellows [15]. Danae Chambers, a professional painter, diagnosed with AD at age 49, continued to paint with creativity after her mental status severely deteriorated [16]. Hilda Gorenstein, an accomplished artist, continued to paint through the last years of her life despite the severity of her illness. Her artistic production is well documented in the film "I Remember Better When I Paint" [17]. Willem de Kooning stopped painting a decade before he was diagnosed with AD. With the support of his wife, he returned to painting in the 1980s. These paintings are large lyrical abstract works in primary colors. Some critics regard them as among the great achievements in 20th century painting [18].

People without formal art training can also produce art after being diagnosed with dementia. The actress Rita Hayworth experienced paranoia and psychosis early in her dementia. She had never been a painter, but painting helped her relax and restored her peace of mind [17]. Lester Potts was a sawmill worker who had not painted before his diagnosis. After joining an adult day program, he created over 100 watercolors

of scenes from his childhood and abstract images of family members even after he was unable to speak [19].

Patterns of neural degeneration in dementia can lead to changes in the style of their art [20]. Emergent artistic behavior has been described in patients with semantic dementia [21, 22] and primary progressive aphasia [23]. Their art tends to be obsessive, realistic, surrealist, and sometimes bizarre [24]. By contrast, the art of AD patients becomes more abstract [24, 25], less precise with fewer, more muted colors [26], less attention to spatial relationships [27], less realistic, and possibly more symbolic [19].

From these anecdotal observations, it is clear that patients with dementia can produce artwork. Their art can retain considerable aesthetic value despite profound changes in their style and content [20].

ART THERAPY

In the 1940s, the artist Adrian Hill coined the term "art therapy." Art therapy has origins in both art and psychotherapy. It is framed as a therapeutic process to enhance well-being ("art as therapy") and as a psychotherapeutic relationship between therapist and patient. Hill initially used art therapy in people with tuberculosis [28]. It was then used in patients unable to engage in traditional talk therapy and more recently has helped people with cancer and post-traumatic stress disorder [29–31]. Elderly participants in the arts feel better and less lonely and need fewer medications and doctor visits [32].

While the evidence suggests that art therapy can help many kinds of patients, its efficacy in diseases that directly affect the nervous system is less clear. If psychiatric symptoms arise directly from neural pathology, rather than as a reaction to a devastating illness like cancer, could art therapy help?

Empirical evidence

We conducted a database search between January 1, 2013 and April 30, 2013 using Pubmed Plus, Ovid MEDLINE, CINAHL, ISI Web of Science, PSYCinfo, The Cochrane Database, ALOIS, Google Scholar for the years 1980 to 2013 using the terms: art, art therapy, painting, visual stimulation, art appreciation, Alzheimer's disease, dementia. From this search we reviewed clinical trials, case reports and qualitative observations that used art therapy. Four randomized controlled trials (RCT) of art therapy reported clinically relevant outcomes in treating behavioral, social,

cognitive, and/or emotional problems of dementia patients and/or their caregivers.

The evidence to date, limited as it is, suggests that artistic engagement may improve behavioral symptoms and the quality of life in patients with dementia. Music and dance may also provide benefits [33, 34]. However, a Cochrane review found that the methodological quality of most music studies prevented final conclusions from being drawn [35]. Here, we focus on visual art therapy.

Art therapy for AD

Art therapy for dementia is typically provided by art therapists, artists, or facilitators to small groups of patients in a clinical or care setting. Art therapy has traditionally emphasized qualitative (e.g., [36, 37]) over quantitative evidence. Observationally, art therapy engages attention, provides pleasure, and improves behavior and affect in patients with dementia [37–41]. Other benefits include enhanced self-esteem and improved communication [42] and reduced anxiety, agitation, and depression [40].

Two small trials of *Memories in the Making* (MIM), a fine arts program designed for people with early or moderate dementia, report improved attention, affect, and self-esteem during art therapy sessions. MIM is a weekly art-making program led by artist facilitators. A trial of MIM in 41 participants at six sites during art therapy [43] found that 83% of participants sustained attention for 30–45 minutes; 80% expressed pleasure (smiles, laughter) with 39% verbalizing pleasure and 78% verbalizing positive self-esteem. This study, while encouraging, was limited by the lack of a control group, the fact that raters also served as facilitators, and unknown inter-rater reliability. Long term benefits were not assessed in this study.

A follow-up investigation of MIM included a structured control activity [44]. Once a week for 5 weeks, twelve mild/moderate dementia patients engaged in an hour of art therapy, which was immediately followed by an hour of control activities (e.g., discussion of current events, crafts). Trained raters evaluated concentration, smiling, and positive verbalizations at 10-minute intervals during both interventions. Participants demonstrated more interest, sustained attention, pleasure, and self-esteem during art therapy than during the control activity. Negative affect or sadness did not differ across the groups.

The MIM findings are encouraging, but the sample sizes and number of sessions in the studies were limited and the study populations were heterogeneous (demen-

tia type and stage). The impact of art therapy over time was not determined and neither study assessed the impact on quality of life outside the studio.

A few case studies suggest that art therapy might improve behavioral symptoms outside the studio. In one patient with moderate AD and no previous artistic experience, art therapy reduced behavioral disturbances while making art and at home [45]. In another patient with severe AD, collage and coloring on pre-drawn line drawings once or twice a week reduced neuropsychiatric symptoms during and following art therapy [39].

Two small trials assessed the effects of art therapy to life outside the studio. A randomized controlled trial conducted in Japan reported that art therapy diminished apathy and improved patients' quality of life [46]. Thirty-nine mild AD patients were randomized to art therapy (coloring abstract shapes) or a control activity (calculation exercises) once weekly, with instructions to practice their activity for 15 minutes daily. Cognitive status, depression, vitality, behavior, and caregiver symptoms were assessed before and after the 12-week intervention. The art therapy group was less apathetic following the intervention, but did not improve on other measures. Mental status improved for the calculation group following the intervention. More art therapy patients showed a 10% or greater improvement in mental quality of life (QOL) compared to the calculation group. There were no group differences for other outcomes. The authors attribute the modesty of their findings to baseline variability, small number of patients, and the short duration of the study. Reassessment of a few patients 12 weeks after the intervention showed worse vitality and cognitive function for both groups, suggesting that the improvements seen initially were not sustained.

A UK study found in-session behavioral improvements, but no measurable improvements outside the sessions [47]. Forty-five dementia patients (12 mild/moderate, 33 severe) of mixed etiology (18 AD, 19 multi-infarct, 8 unspecified) were randomized to art therapy or control group (recreational activities) with up to 6 patients per group. Groups met for an hour, once a week for 40 weeks. Fewer than half the patients ($n=21$) completed the trial: 10 died, 5 moved, 9 had incomplete data. Over the 40 weeks, the art group showed improvements in physical competency, mental acuity, sociability, and calmness, while the control group declined in the same categories. Cognition and behavior were assessed at baseline, 10, 20 and 40 weeks, and 1 month and 3 month follow-up. Quantitative improvements to behavior (e.g.,

self-care, sociability, disorientation, irritability) relative to control were not found. The investigators reported anecdotal behavioral and communication improvements and speculated that their outcome instrument was insensitive to these changes. Cognition, memory, or attention did not improve in either group.

In summary, making art in a structured setting might benefit AD patients during therapy sessions. Whether these benefits generalize to life outside the studio is not clear.

ART APPRECIATION

In the past decade, museums have initiated art appreciation programs for AD patients and their caregivers. Meet Me at MoMA is the largest such program. MoMA's Alzheimer's Initiative has supported similar programs in more than 60 other museums [48]. Other structured arts appreciation programs for people with dementia include ARTZ: Artists for Alzheimer's, Arts for Alzheimer's in New York, Arts for the Aged in Maryland [49], and tours at Boston's Museum of Fine Arts [50].

The Meet Me at MoMA program consists of monthly 90-minute sessions of group (7-8 patient/caregiver dyads) discussions led by museum curators of four or five artworks from the Museum's collection. One (not peer reviewed) study of the Meet Me at MoMA program found that patients' and caregivers' mood improved during and after the visits [51]. Early-stage dementia patients and caregivers ($n=37$ dyads) were evaluated over 9 months. Assessments included pre and post-session self-report mood scales, observer-rated instruments, take-home evaluations, and follow up focus groups. The mood of both patients and caregivers improved during sessions. Caregivers reported improved mood in 55% of patients and self-esteem in 27% of patients that lasted days. Caregivers also reported that they themselves felt a greater social connection and fewer emotional problems.

In addition to viewing art, some gallery programs incorporate making art. The Walker's "Contemporary Journeys" is one such program. Following 3-months of program participation, they found (also not peer reviewed) that the mood of patients and caregivers improved [48]. A UK gallery-based art viewing and making program (3 weekly 90-minute sessions) for 6 mild/moderate dementia patient/caregiver dyads reported better episodic memory that was still evident 4 weeks later [52]. Caregivers in the study reported that family members with dementia showed better mood,

greater confidence, and reduced sense of isolation during sessions.

THEORETICAL FRAMEWORK

The evidence to date suggests that art therapy might help patients with dementias. To understand why this intervention might be useful, we propose a framework with three components. First, art therapy relies on preserved abilities rather than attempting to correct disabilities. Second, art therapy provides a vehicle for emotional expression in patients who have trouble communicating verbally. Finally, creating visual art can engender a state of 'flow', which is associated with a sense of well-being. We review each component in turn.

1. The ability to appreciate and produce visual art is relatively preserved in AD. Art appreciation encompasses visual and emotional processes and the assignment of meaning [25]. Severe deficits in visuospatial function occur later in the sequence of neuropsychological deficits (except in the posterior cortical atrophy variant of AD). Typically, episodic memory declines first, then semantic impairments, followed by attention and executive dysfunction. Early visual cortex is relatively preserved in AD, supporting low and intermediate vision: contour, color and location identification, segregation, and grouping of components [53]. The occipitotemporal ventral stream involved in recognition of 'what' is less affected than the dorsal parietal, or 'where' pathway involved in localizing objects in space [54]. Characteristic 'dorsal stream' deficits in AD include visual attention, motion-detection, depth perception, and angle-discrimination [15]. While AD pathology makes the capacity to produce highly realistic or conceptually rich art less likely, the preservation of basic visual and motor function supports the abilities needed to produce art.

Art appreciation involves assigning emotional and cognitive significance to artworks. AD produces subtle dysfunction in emotional processing [55], but preserves basic emotional processing, expression, and reward functions until late in the disease [56, 57]. Patients with AD can rank paintings according to their own aesthetic preferences. Despite not remembering having seen the artworks, their preferences are stable over two-weeks [58]. These findings suggest that AD patients can enjoy art. Memory or language abilities are not essential for their art appreciation.

Art production relies on procedural memories. Procedural learning and memory are relatively preserved in AD [59]. AD patients can learn new motor, perceptual, and cognitive procedures, suggesting that they can learn art skills [60, 61]. Patients with mild dementia can convey depth and proportion and detail in their artwork. Most moderately demented patients are able to create representational forms and figures [40]. Of 41 mild and moderate stage dementia patients studied in Memories in the Making program, 78% were able to draw or paint from a personal memory some of the time [43]. Patients who have lost the ability to create representational images still produce art using color and composition, making abstract looking, often geometric images [27].

In summary, while art is often conceptual or meaning laden, it need not be. While art can be realistic and made with great graphic skill, it need not be. Art draws on different neural capacities in a flexible manner. Preserved sensory and motor cortices enable patients to see and produce art. Relatively intact limbic systems mean that art can serve as a vehicle for emotional expression and enjoyment. The primary deficits in early to moderate AD of impaired episodic memory, learning, and language are not impediments to producing art. Semantic and visuospatial deficits may alter the content of art, but does not prevent its production. Given proper support, most patients with AD can create art. De Kooning's wife and students stretched his canvases and mixed his paints. Art therapists can provide similar support and structure for patients.

2. Art as expression. Humanist scholars often emphasize the role of art as a medium for emotional expression. In *What is Art?* Tolstoy wrote, "art is a human activity consisting in this, that one man consciously by means of certain external signs, hands on to others feelings he has lived through, and that others are infected by these feelings and also experience them" [62]. In *Principles of Art* Collingwood asserted that "the artist's business is to express emotions; and the only emotions he can express are those which he feels, namely his own" [63] (pp. 314–315). He also said "art is the community's medicine for the worst disease of mind, the corruption of consciousness" (p. 336).

These humanist views are relevant to the experience of people with AD. Non-verbal communication is typically less affected than verbal abilities. Patients with AD can have intense emotional lives [64] that might not find verbal expression. Most patients display a wide range of facial emotions even into the middle to late

stages [57]. Art provides a way for patients to organize and express their emotions [65]. The opportunity for patients to say something without words, through line, form, and color is often met with enthusiasm and relief [66].

3. Artistic engagement can induce 'flow.' What happens to people in general, and AD patients in particular, who are absorbed by making or viewing art? The philosopher John Dewey wrote, "aesthetic experience is experience in which the whole creature is alive" [67]. A patient from the MIM program stated, "In here I feel like a person again" [43].

One reason that art therapy can lead to a greater sense of well-being is that making art can produce a state called "flow" [68]. Csikszentmihalyi developed flow theory by first studying artists among other groups. Flow refers to a state of intense concentration, satisfaction, and enjoyment that is experienced when one is engaged in an intrinsically rewarding activity. People in flow describe feeling strong, alert, in control, unselfconscious, and at the peak of their abilities. Flow is achieved by setting clear goals that challenge but do not exceed ones' abilities. The activity typically gives the person immediate feedback. A person in "flow" is so deeply absorbed that awareness of time and concern for one's self disappears. Yet, a strong sense of self emerges after the flow experience is over.

Art making fits the conditions—an activity that is challenging, goal oriented, with immediate feedback—to elicit 'flow'. Elderly artists and non-artists engaged in art making describe feeling challenged, purposeful, and totally absorbed in the sensuality of the activity [69].

AD patients creating art under proper conditions probably have the neural capacity to experience flow. The neural correlates of flow have not yet been identified, but implicit knowledge systems are likely engaged when released from control by explicit cognitive systems [70]. A state of hypofrontality may enable temporary suppression of analytical and other explicit capacities [70], which when present in AD might even predispose them to enter flow states.

METHODOLOGICAL CONSIDERATIONS IN ESTABLISHING EFFICACY OF ART THERAPY

We have made the case that art therapy is a plausible intervention for dementia. However, rigorous clinical investigations are needed to demonstrate its efficacy.

Here we discuss some considerations in designing such investigations.

One consideration is selection of the study population. Of the trials discussed, only the Japanese study [46] assessed AD patients specifically; the other trials included patients with mixed dementias [43, 44, 47]. Given the differences in artistic predisposition and abilities across the dementias, the efficacy of art therapy needs to be investigated by dementia type. Even within AD, the relative effects of art therapy in clinical variants such as posterior cortical atrophy or logopenic progressive aphasia would need to be determined.

Disease stage is also relevant given differences in abilities as the disease progresses. Evidence for the efficacy of art therapy in advanced dementia patients is limited. Flow theory emphasizes the importance of matching challenges with abilities. Patients with mild disease may be able to work independently, while those with severe dementia likely require greater structure. Dose-response is an important area of investigation. Most research has investigated weekly 1-hour sessions. Hattori [46] reported vitality and quality of life benefits from encouraging 15 minutes of daily art making in addition to weekly group sessions. Improvements in mood, anxiety, and cognitive function resulting from a 4-session per week (for 3 weeks) multisensory intervention (art, music, cognitive) were maintained 3 weeks after the intervention [71]. These reports suggest that benefits might be better maintained over time with frequent sessions.

A critical issue is the role of the art therapist or facilitator. Anecdotal reports stress the importance of the art therapist's methods of engagement and personality in creating a comfortable environment for patients creating art. Therapists' abilities to communicate with patients can influence outcomes [72]. Unresolved questions are: how should the therapist open a session (e.g., discuss a famous artist, provide a theme or a sensory experience)? How much direction, if any, is optimal? Engaging the patient in conversation about the work—asking the patient to title the work or encouraging reminiscence or free association—may help patients connect to their emotions and memories [73].

The choice of artistic media may be relevant. Art therapists typically use media with particular diagnoses or treatment goals in mind. For example, watercolor, a flowing media, is often used for AD or Parkinson's disease to promote freedom of expression. Encouraging patients to choose their own media provides patients with milder disease an opportunity to exercise personal choice and control [74].

Combining music and other sensory stimuli might facilitate art therapy [75, 76]. Ambient music can reduce agitation [77]. Multisensory stimulation (lights, sounds, tactile sensations) may reduce agitation and apathy and improve mood, particularly for late stage patients [78, 79].

Given the difficulties of "blinding" raters, interrater reliability assessments are needed. Third party raters may avoid potential biases introduced by raters who believe in the efficacy of their own intervention. Controlled studies to date have primarily assessed the effects of art therapy on patients' affect and behavior during or immediately following art therapy sessions. While in-session benefits are important, future studies need to assess the impact of art therapy outside the studio.

Several potential domains can be evaluated: cognitive, functional (e.g., activities of daily living), neuropsychiatric, and overall quality of life. Impact on cognitive function is likely to be minimal [47]. We also would not expect functional abilities to improve because of art therapy.

Primary outcomes of interest are neuropsychiatric symptoms, quality of life, and levels of caregiver stress. An example of an instrument that would be appropriate to use in this setting is the Neuropsychiatric Inventory (NPI). Caregivers report on ten behavioral (delusions, hallucinations, agitation, depression, anxiety, elation, apathy, disinhibition, irritability, aberrant motor behavior) and two neurovegetative dimensions (sleep/nighttime behavior, appetite/eating disorders). A key consideration in selecting specific instruments is the cognitive status of the patient group in question. If patients cannot accurately remember or assess their behavior or mental status, caregiver-rated inventories would be needed. The NPI and Cohen-Mansfield agitation scale [80] are examples of caregiver-rated instruments.

Health Related Quality of Life is a multidimensional construct that incorporates physical, psychological, and social functioning. Dementia specific quality of life measures encompass daily activities, health and well-being, cognitive functioning, social relationships, and self-concept [81]. Measuring quality of life in dementia can be challenging because of patients' poor recall, sense of time, insight, and communication abilities. However, meaningful data can be acquired using both patient and proxy measures [81, 82]. The QOL-AD is specific to AD and has both patient and proxy rated elements [83].

Given caregiver morbidity associated with the care of AD patients, the impact of art therapy on caregivers

Table 1
Qualitative studies: Art therapy for Alzheimer's and other dementias

| Author | Year | Type | Patient(s) | Intervention | In session results | Out of session results |
|---------------------------|------|--|---|---|---|--|
| Kahn-Denis [38] | 1997 | Qualitative article with examples | 3 patients: 82 yo woman with AD, no art training; 83 yo woman with multi-infarct dementia, expressive aphasia, no art training; 85 yo woman with AD | Art therapy over several years (e.g., painting) | Improved mood; sustained attention for 55 min; active reminiscence; awareness of self | Not reported |
| Mcfadden and Basting [36] | 2010 | Qualitative article with examples | "Leo" institutionalized with advanced dementia; "Mrs. G" moderate dementia, community dwelling | Artist led group art therapy, mixed media (e.g., painting, clay, mosaic) for 10 weeks | Leo: sustained attention, improved concentration; Mrs. G: concentration, verbal communication; community engagement | Leo: anticipated sessions |
| Meguro and Meguro [84] | 2010 | Case study | 79 yo woman with AD, former professor of Japanese flower arrangement | Donepezil + flower arranging | Improved verbal communication and mood | Increased cerebral glucose metabolism in thalamus and frontosubcortical networks |
| Mimica and Dubravka [45] | 2011 | Case study | Croatian man with moderate AD, behavioral disturbances, no art training | Drawing at daily care center | Calmer, more satisfied; fewer neuropsychiatric disturbances | Fewer behavioral disturbances; less psychiatric medication; better communication |
| Pesiah et al. [39] | 2011 | Case study | 82 yo woman with severe dementia, frontal deficits, expressive aphasia, behavioral symptoms, no formal art training | 1-2 h sessions 1-2 days per week for 3-4 weeks; collage, color pre-drawn lines | Sustained attention; calm and focused; pleasure (e.g., smiling) | Not reported |
| Safar and Press [37] | 2011 | Case study | 57 yo woman with corticobasal dementia (apraxia, spatial deficits progressed to Balints), former artist | Monthly 2-3 h 1-on-1 sessions (art as therapy and psychotherapy) | Experienced pleasure; expressed feelings in art and verbally; worked calmly and reminisced | Improved mood and anxiety; showed self awareness |
| Shore [85] | 1997 | Qualitative article with example | 89 yo man with AD, institutionalized, frequent aggression, agitation | 1-on-1 and group art therapy | Reminiscence elicited; Emotions expressed in art and verbally | Not reported |
| Stallings [42] | 2010 | Case study with reminiscence objective | 3 patients with dementia | 2 sessions of collage | Patients communicated and reminisced through collage and verbally | Not reported |
| Sterritt and Pokorny [86] | 1994 | Qualitative article with examples | 8 patients with dementia or other neuropsychiatric illnesses (Parkinson's, schizophrenia) | Weekly art therapy; cutting shapes, collage | Elicited reminiscence; emotional expression in art and verbally; increased socialization (e.g., sharing, empathy) | Not reported |
| Stewart [40] | 2004 | Qualitative article with examples | 4 patients with dementia of mixed etiology, severity including 2 patients with severe dementia | Mixed media | Sustained concentration for 1 h; reduced restlessness, wandering; improved affect; reminisced in art and verbally | Not reported |
| Wald [41] | 1993 | Qualitative article with examples | Mel, a former architect with dementia and psychosis | Pencil drawing | Improved anxiety, less psychosis | Improved self esteem |
| Wald [76] | 1983 | Qualitative article with examples | 6 patients with dementia (4 with AD) | Group art therapy (e.g., fall leaves, tree drawing) | Showed pleasure; expressed emotion; improved coping, self esteem | Not reported |

Table 2
Quantitative studies: Art therapy for Alzheimer's and other dementias

| Author | Year | Study design | Patients (# diagnosis) | Intervention | Dose/Duration | Outcome | In session results | Out of session results |
|-----------------------|------|--|---|--|--|--|--|---|
| Hattori et al. [46] | 2011 | Randomized, controlled (calculation group) | 39, community dwelling, mild AD (MMSE = 20–24) | Coloring pre-drawn abstract shapes, collage; groups of 5 patients, each accompanied by a family member | 45 min once per week for 12 weeks with instructions to practice 15 min per day | Cognitive status, depression, vitality, behavioral symptoms, caregiver burden pre/post outcome; some patients evaluated at 12 weeks follow up | Not evaluated | Post-intervention: apathy benefit for art therapy; mental status benefit for calculation group; differences not significant. More patients with >=10% improvement in QOL for art versus control |
| Kinney and Rentz [44] | 2005 | Randomized, control condition (current events) | 12 mild/moderate dementia, mixed etiologies | Drawing and painting on paper, canvas (Memories in the Making) | 1 h once per week for 5 weeks | In session: 7 well-being metrics evaluated at 10 min intervals | Increased interest, sustained attention, pleasure, self-esteem, normalcy for art therapy versus control | Not evaluated |
| Rentz [43] | 2002 | Outcome; no control | 41 mild/moderate dementia, mixed etiologies | Drawing and painting on paper, canvas (Memories in the Making) | 1 h once per week for 12 weeks | In session; 7 well-being metrics. Each patient evaluated during single session | Enhanced well-being, pleasure, attention | Not evaluated |
| Rusted [47] | 2006 | Randomized, controlled (activities group) | 45 dementia, mixed etiologies (12 mild/moderate, 33 severe); 21 completed trial | Group (~6 patients) art therapy led by art therapist | 1 h once per week for 40 weeks | In session (e.g., mood, mental acuity) and out-of session (e.g., mood, cognition, behavior) at baseline, 10, 20, 40 weeks, 1 mo. 3 mo. follow up | Improvements in mental acuity, physical competency, calmness, and sociability for art therapy versus control over time | Anecdotal improvements to communication, mood; no quantitative improvement to behavior for art therapy versus control; no change to cognition, memory, attention |

should also be evaluated. One question is what form of art therapy benefits caregivers most? Do caregivers benefit directly from patients' improvements? Does caregiver participation (e.g., arts appreciation patient-caregiver dyads) result in further benefit? The NPI Caregiver distress scale (NPI-D), a subscale of the NPI, could be used to assess changes in caregiver distress [10].

CONCLUSIONS

For physicians and family members caring for patients with AD, the question of what can be done is a persistent one. Disease modifying therapies are limited and a cure is not immediately forthcoming. With AD's long course from diagnosis to death, treatments that alleviate neuropsychiatric symptoms and improve quality of life and caregiver distress would be helpful. Visual art may be such an intervention given the characteristic mix of abilities and deficits experienced by patients. Carefully designed clinical studies are desperately needed if arts programs tailored to patients' talents and symptoms are to be common in the treatment armamentarium for AD.

DISCLOSURE STATEMENT

Authors' disclosures available online (<http://www.jalz.com/disclosures/view.php?id=1928>).

REFERENCES

- [1] World Health Organization and Alzheimer's Disease International (2012) Dementia: A public health priority, http://www.who.int/mental_health/publications/dementia_report_2012/en/, Accessed October 22, 2012.
- [2] Lopez OL (2011) The growing burden of Alzheimer's disease. *Am J Manag Care* **17**, S339-S345.
- [3] Steinberg M, Shao H, Zandi P, Lyketsos CG, Welsh-Bohmer KA, Norton MC, Breitner JC, Steffens DC, Tschanz JT (2008) Point and 5-year period prevalence of neuropsychiatric symptoms in dementia: The Cache County Study. *Int J Geriatr Psychiatry* **23**, 170-177.
- [4] Fernandez-Martinez M, Molano A, Castro J, Zarranz JJ (2010) Prevalence of neuropsychiatric symptoms in mild cognitive impairment and Alzheimer's disease, and its relationship with cognitive impairment. *Curr Alzheimer Res* **7**, 517-526.
- [5] Lyketsos CG, Lopez O, Jones B, Fitzpatrick AL, Breitner J, DeKosky S (2002) Prevalence of neuropsychiatric symptoms in dementia and mild cognitive impairment: Results from the cardiovascular health study. *JAMA* **288**, 1475-1483.
- [6] Gonzalez-Salvador T, Lyketsos CG, Baker A, Hovanec L, Roques C, Brandt J, Steele C (2000) Quality of life in dementia patients in long-term care. *Int J Geriatr Psychiatry* **15**, 181-189.
- [7] Wancata J, Windhaber J, Krautgartner M, Alexandrowicz R (2003) The consequences of non-cognitive symptoms of dementia in medical hospital departments. *Int J Psychiatry Med* **33**, 257-271.
- [8] Stern Y, Tang MX, Albert MS, Brandt J, Jacobs DM, Bell K, Marder K, Sano M, Devanand D, Albert SM, Bylsma F, Tsai WY (1997) Predicting time to nursing home care and death in individuals with Alzheimer disease. *JAMA* **277**, 806-812.
- [9] Bergvall N, Brinck P, Eek D, Gustavsson A, Wimo A, Winblad B, Jönsson L (2011) Relative importance of patient disease indicators on informal care and caregiver burden in Alzheimer's disease. *Int Psychogeriatrics* **23**, 73-85.
- [10] Kaufer DI, Cummings JL, Christine D, Bray T, Castellon S, Masterman D, MacMillan A, Ketchel P, DeKosky ST (1998) Assessing the impact of neuropsychiatric symptoms in Alzheimer's disease: The neuropsychiatric inventory caregiver distress scale. *J Am Geriatr Soc* **46**, 210-215.
- [11] Levy K, Lancot KL, Farber SB, Li A, Herrmann N (2012) Does pharmacological treatment of neuropsychiatric symptoms in Alzheimer's disease relieve caregiver burden? *Drugs Aging* **29**, 167-179.
- [12] Sink KM, Holden KF, Yaffe K (2005) Pharmacological treatment of neuropsychiatric symptoms of dementia: A review of the evidence. *JAMA* **293**, 596-608.
- [13] Hersch EC, Falzgraf S (2007) Management of the behavioral and psychological symptoms of dementia. *Clin Interv Aging* **2**, 611-621.
- [14] Crutch SJ, Isaacs R, Rossor MN (2001) Some workmen can blame their tools: Artistic change in an individual with Alzheimer's disease. *Lancet* **357**, 2129-2133.
- [15] Maurer K, Prvulovic D (2004) Paintings of an artist with Alzheimer's disease: Visuostructural deficits during dementia. *J Neural Transm* **111**, 235-245.
- [16] Fornazzari LR (2005) Preserved painting creativity in an artist with Alzheimer's disease. *Eur J Neurol* **12**, 419-424.
- [17] Hubner B (2011) I Remember Better When I Paint. Ellena E, Huebner B, series eds. French Connection Films and the Hilgos Foundation.
- [18] Espinel CH (1996) de Kooning's late colours and forms: Dementia, creativity, and the healing power of art. *Lancet* **347**, 1096-1098.
- [19] van Buren B BB, Potts D, Miller B, Chatterjee A (2013) Changes in painting styles of artists with Alzheimer's disease. *Psychol Aesthet Creat Arts* **7**, 89-94.
- [20] Chatterjee A (2006) The neuropsychology of visual art: Confering capacity. In *International Review of Neurobiology*, Rose FC, ed. Academic Press, pp. 39-49.
- [21] Miller BL, Cummings J, Mishkin F, Boone K, Prince F, Ponton M, Cotman C (1998) Emergence of artistic talent in frontotemporal dementia. *Neurology* **51**, 978-982.
- [22] Schott GD (2012) Pictures as a neurological tool: Lessons from enhanced and emergent artistry in brain disease. *Brain* **135**, 1947-1963.
- [23] Seeley WW, Matthews BR, Crawford RK, Gorno-Tempini ML, Foti D, Mackenzie IR, Miller BL (2008) Unravelling Bolero: Progressive aphasia, transmodal creativity and the right posterior neocortex. *Brain* **131**, 39-49.
- [24] Rankin KP, Liu AA, Howard S, Slama H, Hou CE, Shuster K, Miller BL (2007) A case-controlled study of altered visual art production in Alzheimer's and FTLD. *Cogn Behav Neurol* **20**, 48-61.
- [25] Chatterjee A (2004) The neuropsychology of visual artistic production. *Neuropsychologia* **42**, 1568-1583.
- [26] Crutch SJ, Rossor MN (2006) Artistic changes in Alzheimer's disease. *Int Rev Neurobiol* **74**, 147-161.

- [27] Miller BL, Hou CE (2004) Portraits of artists: Emergence of visual creativity in dementia. *Arch Neurol* **61**, 842-844.
- [28] Hogan S (2001) *Healing Arts: The history of art therapy*. Jessica Kingsley Publishers, London.
- [29] Stuckey HL, Nobel J (2010) The connection between art, healing, and public health: A review of current literature. *Am J Public Health* **100**, 254-263.
- [30] Geue K, Goetze H, Buttstaedt M, Kleinert E, Richter D, Singer S (2010) An overview of art therapy interventions for cancer patients and the results of research. *Complement Ther Med* **18**, 160-170.
- [31] Gray AE (2011) Expressive arts therapies: Working with survivors of torture. *Torture* **21**, 39-47.
- [32] Cohen GD (2006) Research on creativity and aging: The positive impact of the arts on health and illness. *Generations* **30**, 7-15.
- [33] Livingston G, Johnston K, Katona C, Paton J, Lyketsos CG (2005) Systematic review of psychological approaches to the management of neuropsychiatric symptoms of dementia. *Am J Psychiatry* **162**, 1996-2021.
- [34] McDermott O, Crellin N, Ridder HM, Orrell M (2012) Music therapy in dementia: A narrative synthesis systematic review. *Int J Geriatr Psychiatry* **28**, 781-794.
- [35] Vink AC, Scholten BM, RJPM (2003) Music therapy for people with dementia. *Cochrane Database Syst Rev* **4**, CD003477.
- [36] McFadden SH, Basting AD (2010) Healthy aging persons and their brains: Promoting resilience through creative engagement. *Clin Geriatr Med* **26**, 149-161.
- [37] Safar LT, Press DZ (2011) Art and the brain: Effects of dementia on art production in art therapy. *Art Therapy* **28**, 96-103.
- [38] Kahn-Denis KB (1997) Art therapy with geriatric dementia clients. *Art Ther J Am Art Ther Assoc* **14**, 194-199.
- [39] Peisah C, Lawrence G, Reutens S (2011) Creative solutions for severe dementia with BPSD: A case of art therapy used in an inpatient and residential care setting. *Int Psychogeriatrics* **23**, 1011-1013.
- [40] Stewart EG (2004) Art therapy and neuroscience blend: Working with patients who have dementia. *Art Ther J Am Art Ther Assoc* **21**, 148-155.
- [41] Wald J (1993) Art therapy and brain dysfunction in a patient with a dementing illness. *Art Ther J Am Art Ther Assoc* **10**, 88-95.
- [42] Stallings JW, Emporia KS (2010) Collage as a therapeutic modality for reminiscence in patients with dementia. *Art Ther J Am Art Ther Assoc* **27**, 136-140.
- [43] Rentz CA (2002) Memories in the making: Outcome-based evaluation of an art program for individuals with dementing illnesses. *Am J Alzheimers Dis Other Demen* **17**, 175-181.
- [44] Kinney JM, Rentz CA (2005) Observed well-being among individuals with dementia: Memories in the Making, an art program, versus other structured activity. *Am J Alzheimers Dis Other Demen* **20**, 220-227.
- [45] Mimica N, Dubravka K (2011) Art therapy may be beneficial for reducing stress-related behaviours in people with dementia. *Psychiatr Danub* **23**, 125-128.
- [46] Hattori H, Hattori C, Hokao C, Mizushima K, Mase T (2011) Controlled study on the cognitive and psychological effect of coloring and drawing in mild Alzheimer's disease patients. *Geriatr Gerontol Int* **11**, 431-437.
- [47] Rusted J, Sheppard L (2006) A multi-centre randomized control group trial on the use of art therapy for older people with dementia. *Group Analysis* **39**, 517-536.
- [48] Parsa A, Humble L, Gerber C (2010) Two art museum programs for people with dementia. *Museums Soc Issues* **5**, 217-234.
- [49] Basting AD (2006) Arts in dementia care: This is not the end.. its the end of the chapter. *Generations* **30**, 16-20.
- [50] Kennedy R (2005) The Pablo Picasso Alzheimer's Therapy. New York Times, New York, http://www.nytimes.com/2005/10/30/arts/design/30kenn.html?pagewanted=all&_r=0
- [51] Rosenberg F (2009) The MoMA Alzheimer's Project: Programming and resources for making art accessible to people with Alzheimer's disease and their caregivers. *Arts Health* **1**, 93-97.
- [52] Eekelaar C, Camic PM, Springham N (2012) Art galleries, episodic memory and verbal fluency in dementia: An exploratory study. *Psychol Aesthet Creat Art* **6**, 262.
- [53] Fernandez R, Kavcic V, Duffy CJ (2007) Neurophysiologic analyses of low- and high-level visual processing in Alzheimer disease. *Neurology* **68**, 2066-2076.
- [54] Prvulovic D, Van de Ven V, Sack AT, Maurer K, Linden DE (2005) Functional activation imaging in aging and dementia. *Psychiatry Res* **140**, 97-113.
- [55] Klein-Koerkamp Y, Beaudoin M, Baciú M, Hot P (2012) Emotional decoding abilities in Alzheimer's disease: A meta-analysis. *J Alzheimers Dis* **32**, 109-125.
- [56] Bucks RS, Radford SA (2004) Emotion processing in Alzheimer's disease. *Aging Ment Health* **8**, 222-232.
- [57] Magai C, Cohen C, Gomberg D, Malatesta C, Culver C (1996) Emotional expression during mid- to late-stage dementia. *Int Psychogeriatr* **8**, 383-395.
- [58] Halpern AR, Ly J, Elkin-Frankston S, O'Connor MG (2008) "I know what I like": Stability of aesthetic preference in Alzheimer's patients. *Brain Cogn* **66**, 65-72.
- [59] Machado S, Cunha M, Minc D, Portella CE, Velasques B, Basile LF, Cagy M, Piedade R, Ribeiro P (2009) Alzheimer's disease and implicit memory. *Arq Neuropsiquiatr* **67**, 334-342.
- [60] Beaunieux H, Eustache F, Busson P, de la Sayette V, Viader F, Desgranges B (2012) Cognitive procedural learning in early Alzheimer's disease: Impaired processes and compensatory mechanisms. *J Neuropsychol* **6**, 31-42.
- [61] Seifert LS, Baker MK (1999) Procedural skills and art production among individuals with Alzheimer's type dementia. *Clin Gerontol* **20**, 3-14.
- [62] Tolstoy L (1930) *What is Art?* Oxford University Press, Oxford.
- [63] Collingwood RG (1938) *Principles of Art*, Clarendon Press, Oxford.
- [64] Kitwood T (1997) The experience of dementia. *Aging Mental Health* **1**, 13-22.
- [65] Bober SJ, McLellan E, McBee L, Westreich L (2002) The Feelings Art Group: A vehicle for personal expression in skilled nursing home residents with dementia. *J Social Work Long-Term Care* **1**, 73-87.
- [66] Harlan JE (1993) The therapeutic value of art for persons with Alzheimer's disease and related disorders. *Loss Grief Care* **6**, 99-106.
- [67] Dewey J (1987) *Art as Experience*, Southern Illinois University Press, Carbondale.
- [68] Csikszentmihalyi M (1990) *Flow: The Psychology of Optimal Experience*, Harper Perennial Modern Classics, New York.
- [69] Reynolds F (2009) Colour and communion: Exploring the influences of visual art making as a leisure activity on older women's subjective well being. *J Aging Studies* **24**, 135-143.

- [70] Dietrich A, Kanso R (2010) A review of EEG, ERP, and neuroimaging studies of creativity and insight. *Psychol Bull* **136**, 822-848.
- [71] Ozdemir L, Akdemir N (2009) Effects of multisensory stimulation on cognition, depression and anxiety levels of mildly-affected alzheimer's patients. *J Neurol Sci* **283**, 211-213.
- [72] Yamaguchi H, Maki Y, Yamagami T (2010) Overview of non-pharmacological intervention for dementia and principles of brain-activating rehabilitation. *Psychogeriatrics* **10**, 206-213.
- [73] Duncan A, Morley T (2007) Recovered memories an arts program designed for patients with dementia. In *Art, Angst and Trauma: Right Brain Interventions with Development Delays*, Arrington DB, ed. Charles C. Thomas, Springfield, IL, pp. 230-242.
- [74] Duncan A (2013) Art therapy with patients who have early-stage Alzheimer's disease and mild cognitive impairment. In *Art Therapy and Health Care*, Malchiodi CA, ed. Guilford Press, New York, pp. 266-274.
- [75] Rosling LK KJ (1992) Music and drawing with institutionalized elderly. *Act Adapt Aging* **1992**, 27-38.
- [76] Wald J (1983) Alzheimer's disease and the role of art therapy in its treatment. *Am J Art Ther* **22**, 57-64.
- [77] Park H, Pringle Specht JK (2009) Effect of individualized music on agitation in individuals with dementia who live at home. *J Gerontol Nurs* **35**, 47-55.
- [78] Bungay H, Clift S (2010) Arts on prescription: A review of practice in the U.K. *Perspect Public Health* **130**, 277-281.
- [79] Kverno KS, Black BS, Nolan MT, Rabins PV (2009) Research on treating neuropsychiatric symptoms of advanced dementia with non-pharmacological strategies, 1998-2008: A systematic literature review. *Int Psychogeriatr* **21**, 825-843.
- [80] Koss E, Weiner M, Ernesto C, Cohen-Mansfield J, Ferris SH, Grundman M, Schafer K, Sano M, Thal LJ, Thomas R, Whitehouse PJ (1997) Assessing patterns of agitation in Alzheimer's disease patients with the Cohen-Mansfield Agitation Inventory. The Alzheimer's Disease Cooperative Study. *Alzheimer Dis Assoc Disord* **11**, S45-S50.
- [81] Smith S, Lamping D, Banerjee S, Harwood R, Foley B, Smith P, Cook J, Murray J, Prince M, Levin E (2005) Measurement of health-related quality of life for people with dementia: Development of a new instrument (DEM-QOL) and an evaluation of current methodology. *Health Technol Assess (Winchester, England)* **9**, 1-93.
- [82] Brod M, Stewart AL, Sands L, Walton P (1999) Conceptualization and measurement of quality of life in dementia: The Dementia Quality of Life Instrument (DQoL). *Gerontologist* **39**, 25-36.
- [83] Logsdon RG, Gibbons LE, McCurry SM, Teri L (2002) Assessing quality of life in older adults with cognitive impairment. *Psychosom Med* **64**, 510-519.
- [84] Meguro M, Meguro K (2010) Activated thalamic glucose metabolism after combined donepezil and psychosocial intervention. *Br J Neurosci Nurs* **6**, 176-180.
- [85] Shore A (1997) Promoting wisdom: The role of art therapy in geriatric settings. *Art Ther J Am Art Ther Assoc* **14**, 172-177.
- [86] Sterritt PF, Pokorny ME (1994) Art activities for patients with Alzheimer's and related disorders. *Geriatr Nurs* **15**, 155-159.