

Doll therapy in dementia: Facts and controversies

Kala Chinnaswamy, BA
Dominic M. DeMarco, BS
George T. Grossberg, MD

Department of Psychiatry and
Behavioral Neuroscience
Saint Louis University School of Medicine
St. Louis, Missouri, USA

BACKGROUND: The management of major neurocognitive disorder (MNCD), formerly known as dementia, is of increasing concern as the elderly population continues to grow. Doll therapy (DT) is a controversial method observed in clinical practice that has both promising benefits and potential ethical concerns. To date, little research has been done on this therapy.

METHODS: A PubMed search was performed using the keywords “dementia,” “elderly,” “dolls,” “doll therapy,” and “Alzheimer’s disease.” A list of pertinent articles was assembled, with irrelevant articles excluded. References from these articles were also reviewed and additional articles were included in the final list.

RESULTS: Research on the utility of DT for patients with MNCD is limited. Current literature suggests that DT may be beneficial in decreasing the use of pharmacologic interventions and alleviating symptoms such as agitation and anxiety. However, most studies consisted of small, unrepresentative sample populations.

CONCLUSIONS: Preliminary studies favor DT as an effective management strategy for behavioral symptoms of MNCD. However, the few existing randomized controlled trials are limited in size and demographics. Further research involving larger, more diverse study samples with more male patients is needed. Additionally, the exact parameters to guide this therapy have not been established and require investigative study.

CORRESPONDENCE

Dominic M. DeMarco, BS
Department of Psychiatry and
Behavioral Neuroscience
Saint Louis University School of
Medicine
1438 South Grand Blvd.
St. Louis, MO 63104 USA

E-MAIL

dominic.demarco@health.slu.edu



INTRODUCTION

Millions of Americans are currently living with major neurocognitive disorder (MNCD), and as the elderly population continues to grow, the number of patients with MNCD is expected to rise.¹ The global prevalence of MNCD has been postulated to be 5% to 7% of people age >60.² The management of MNCD is multifaceted and includes pharmacologic interventions to stave off cognitive decline and address psychiatric disturbances, education of family members and caregivers, and lifestyle management to preserve patient normalcy and dignity.³ Behavioral management is often described as the most challenging aspect of dementia care, and nonpharmacologic methods are often preferred as initial therapy because they avoid potential adverse effects and drug interactions associated with pharmacologic therapy.⁴ Despite this preference, pharmacologic interventions are frequently used to manage agitation and aggression in patients with MNCD. Various studies have shown that caregiver and prescriber attitudes toward the pharmacologic management of behavioral disturbances are mixed, and pharmacotherapy currently remains a controversial and tenuous subject.⁴⁻⁷

In an effort to reduce the burden of medical interventions on people with MNCD, many institutions have utilized doll therapy (DT) as a means to minimize the use of pharmacotherapy in these patients. Despite the use of DT in dementia for more than a decade, there has been minimal study of this unique intervention.^{8,9} This paper aims to review the current literature regarding the use of DT in patients with MNCD in order to evaluate the landscape of formal research studies, describe the current uses of DT for MNCD in practice, and discuss its ethical implications.

Theory and applications

Doll therapy in the treatment of MNCD is a largely controversial, although it is used in various elder care settings throughout the world. Doll therapy is defined as the process of engagement between a patient with MNCD and a doll. Engagement may include holding, cuddling or hugging, talking to, feeding, and dressing the doll.¹⁰ This therapy is thought to promote various benefits in attachment and behavior. It is one of several nonpharmacologic strategies, such as aromatherapy, musical therapy, and massage therapy, used to redirect behavior in patients with MNCD.¹¹ One theory behind DT stems from Bowlby's theory of attachment (1969) in which adults and infants

are biologically programmed to form secure attachments that facilitate their interactions with the environment around them.¹² This interaction is thought to provide patients with MNCD a sense of purpose and promote attachments to others. The primary application of DT has been observed in the treatment of behavioral symptoms of MNCD, mainly of the Alzheimer's disease type. Patients with this disorder, particularly in the later stages, often experience symptoms such as agitation, anxiety, apathy, and detachment from others.^{1,4,5} Agitation that is unresponsive to verbal redirection often requires pharmacologic intervention such as antipsychotics or benzodiazepines. The adverse effects of these medications are numerous and particularly concerning in elderly patients, although they are frequently used in long-term care and inpatient settings. Some of these adverse effects include sedation and increased risk of falls.¹³ This concern brings about the need for other nonpharmacologic strategies to address this problem, although little clinical research has been done on the application of these methods.

Controversies and DT

The use of DT for elderly patients with MNCD has been wrought with controversy since its first applications >20 years ago.^{9,10,14} The most frequently cited point of controversy is the argument that DT "infantilizes" elderly patients with MNCD by providing them with an object that is routinely associated with children. Staff and caregivers may treat elderly patients who are given dolls as children, which may diminish their inherent rights of dignity and autonomy by being viewed as non-autonomous decision-makers. This "infantilization" of patients with MCND was first discussed by Tom Kitwood¹⁵ in 1997. Kitwood¹⁵ detailed a series of behaviors he observed in caregivers of patients with MNCD that he termed "malignant social psychology." Some of these behaviors include infantilization, stigmatization, mockery, invalidation, and objectification.¹⁵ Based on Kitwood's principle, some may argue that DT worsens the stigma and objectification of patients with MNCD.

Another concern is that introducing a doll may further disorient patients with MNCD as to reality vs non-reality, which may worsen their already altered cognition.¹⁶ Patients may view the doll as a real infant that requires daily care such as feeding, bathing, and clothing, which although primarily beneficial in most patients, may actually worsen stress, anxiety, and fatigue in certain patients.¹⁰

In addition, some patients may experience such a strong connection to the doll that any attempts to

TABLE 1
Doll therapy as an intervention for patients with MNCD^a

Study	Goals	Type/duration	Population/setting	Active vs control group (N)
Balzotti et al ¹⁷ (2019)	Comparison of GVT and DT	RCT 3 months	30 (5 male, 25 female) NH	DT (10), GVT (10), vs routine therapies alone (ie, exercise, art, occupation, etc.) (10)
Moyle et al ¹⁸ (2019)	Effect of lifelike baby dolls on reducing anxiety, agitation, or aggression	RCT 3 weeks	35 (all female) NH	DT (18) vs usual care (17); 2 dropped out prior to data collection
Cantarella et al ¹⁹ (2018)	Impact of DT on BPSD scores, caregiver distress, and eating behavior	RCT 1 month	32 (24 female, 6 male) NH	DT (16) vs hand-warmer (16); 3 excluded from final analysis
Alander et al ²⁰ (2015)	Opinions of doll users and non-doll users within a NH on the use of DT	Grounded theory approach Focus group (5) followed by individual interviews (11)	16 (12 female, 4 male) Focus group: 5 non-doll users (3/5 had MNCD) Interviews: 3 doll users, 8 non-doll users (8 /11 had MNCD) NH	N/A
Braden and Gaspar ²¹ (2014)	Impact of protocol for use of DT on resident behavior and reactions	Single cohort 1 week	16 (all female) NH	N/A
Shin et al ²² (2015)	Effect of DT on mood, behavior, and social interactions	One-group, pretest–posttest design 3 months	51 (44 female, 7 male) NH	N/A
Pezzati et al ²³ (2014)	Can DT promote attachment?	RCT 24 months DT	10 (9 female, 1 male) NH	Already on DT for at least 24 months (5) vs never exposed to DT (5)
Bisiani and Angus ²⁴ (2013)	Examine effect of DT on symptoms of MNCD	Single case study 1 week	1 female NH	N/A
Stephens et al ²⁵ (2013)	Relationships patients with MNCD have with physical objects	Ethnographic study 2 months	21 NH	N/A
Green et al ²⁶ (2011)	Effects of DT on need for PRN haloperidol in patients with preceding negative behaviors	Cohort 3 months	115 (72 female, 43 male) MNCD, 39%; depression, 30%; schizophrenia/psychotic, 23%; BP, 6%; other, 2%. IP	Patients with ≥1 preceding negative behaviors with DT (22) vs patients with ≥1 preceding negative behaviors with no DT (3)
Cohen-Mansfield et al ²⁷ (2015)	Efficacy of different nonpharmacologic interventions in managing behavioral symptoms of MNCD	Exploratory study Initial 30-week trial of DT; 2-week continued intervention	Initial trial: 83 (21 male, 62 female) Continued intervention: 64 (13 male, 51 female) NH	N/A
Cohen-Mansfield et al ²⁸ (2010)	Do social stimuli improve engagement in patients with MNCD as opposed to nonsocial stimuli?	Single cohort 3 weeks	193 (151 female, 42 male) NH	N/A

^aAll studies involved patients with diagnosed MNCD. All studies examined the impact of different variables on patients with MNCD. Most studies took place in a nursing home setting.

BP: bipolar disorder; BPSD: behavioral and psychological symptoms of dementia; DT: doll therapy; GVT: gesture verbal therapy; IP: inpatient facility; MNCD: major neurocognitive disorder; N/A: not applicable; NH: nursing home; OERS: Observed Emotional Rating Scale; PRN: pro re nata (as needed); RCT: randomized control trial.

Conclusions	Pros/Cons
DT improved agitation, irritability, apathy, depression and delusions compared with controls. GVT improved apathy and depression compared with controls. DT was better for agitation, while GVT was better for reducing apathy	Pros: Direct comparison of DT against another frequently used intervention Cons: Patients selected by caregivers, may have selected those more likely to benefit from these approaches
DT did not significantly reduce anxiety, agitation, or aggression when compared with usual care at Weeks 1 and 3 based on researcher-administered OERS. DT showed greater increase in display of pleasure at Week 3 compared with usual care. Staff perceived benefit in emotional comfort, calming effect, and purposeful activity	Pros: Lifelike dolls used Cons: Female participants only
Only the DT group showed a reduction in BPSD scores and related caregiver distress. DT did not benefit eating behavior	Pros: Only study with an active control group with sensory characteristics similar to dolls (hand-warmer), assessment of caregiver distress and eating behavior Cons: No follow-up
All residents (both doll users and non-doll users) generally supported use of DT. Benefits reported included sense of ownership and control, purpose, attachment, occupation, and providing a calming effect	Pros: Included non-doll users' opinions on DT, focus groups Cons: Dolls already in use prior to study. Small sample size
DT increased happiness, activity/liveliness, interaction with staff and others, ease of giving care, and reduced anxiety. Increase in happiness was statistically significant. Positive behavioral changes were not statistically significant	Pros: Detailed illustrative case summaries of 4 participants supplemented the quantified data Cons: Barriers with staff time and knowledge of project. Dolls already in use prior to study. Small sample size. Female participants only
Improvements in verbalization, aggression, obsessive behavior, wandering, appearing comfortable/uncomfortable, and depression at 1 week and 3 months. Residents felt calmer immediately after applying dolls at 1 week and 3 months	Pros: Larger study, Korean demographics Cons: Only 1 NH sample. Outcomes based on observations of care workers
DT provides emotional reassurance to patients with MNCD, which was shown to re-activate caregiving and exploration behaviors. DT may promote a patient's ability to relate to the surrounding world	Pros: Comparison of 2 different objects, including a doll and soft cube, and recorded video sessions Cons: Small sample size, primarily observational. Dolls already in use prior to study
Reduction in appearance of anxiety and agitation, panic, tremors, hyperventilation, and searching for attachment. Improved dining experience, social interaction, communication, and self-esteem	Pros: Qualitative and quantitative Cons: Effects monitored over only 1 week
Patients with MNCD can make use of transitional objects. Attachment is an important need that dolls may fulfill. Realistic dolls (believed to be a baby) were preferred	Pros: Examines theories behind DT Cons: Primarily observational, no details about participant characteristics
Patients engaging with DT were more likely to receive less PRN haloperidol	Pros: Large male population. Direct comparison to pharmacologic intervention. Inpatient. Evaluates DT against other psychiatric diagnoses Cons: Majority of patients with preceding negative behaviors already had a doll (only compared with 3 patients without DT). "Dolls" consisted of rolled pillow
DT was equal to or better than various nonpharmacologic interventions (ie, hand massage, music, sewing, etc.) in improving behavioral symptoms and interest in activities	Pros: Larger study with large male population Cons: Many different interventions offered during the trial phase of study; unclear whether effect of DT is singular or cumulative with other interventions
Longer engagement, attentiveness, and positive attitude with social stimuli than with nonsocial stimuli. Greater attention and attitude seen with realistic and animated stimuli, such as lifelike baby dolls. Human and live stimuli resulted in significantly more engagement	Pros: Large male population, and multiple objects/stimuli compared. Lifelike doll compared with childish-appearing doll Cons: Confounding variables of different attributes of stimuli (ie, texture, color, etc.)

TABLE 2
Guidelines for doll therapy for patients with MNCD

- Families and clinicians should be informed prior to introduction of the doll and provided with summary of benefits
- Parties should be aware that if the patient accepts DT, the doll will not usually be removed
- Clinicians should try to provide different styles of dolls, with different clothing, in settings where >1 patient with MNCD in the same unit will be receiving DT in order to limit confusion about ownership
- Avoid dolls that cry or have their eyes closed
- Dolls should be placed in an area where the patient can make his/her own choice about engaging with the doll
- Clinicians should monitor patient fatigue and keep accurate care plans relating to DT
- Clinicians and family members should be encouraged to refer to the doll by the name that patients give the doll
- The doll should never be removed without the patient's permission
- Clinicians and family should hold the doll as if it were a real baby and explain where they will need to take it if it needs to be removed
- The doll should be placed in a safe place (not in a box, on the floor, etc.)

DT: doll therapy; MNCD: major neurocognitive disorder.

Sources: Adapted from references 8,9,29,30.

remove it may trigger significant agitation, distress, and depression. These controversies will be further explored in this review.

METHODS

We performed an extensive literature search of PubMed using the keywords “dementia,” “elderly,” “dolls,” “doll therapy,” and “Alzheimer’s disease.” Publications were also identified in the reference sections of original, peer-reviewed articles, review articles, and textbook chapters that were generated from the initial search query. Referenced publications that could not be obtained directly through PubMed were accessed through the interlibrary loan service ILLiad.

Inclusion criteria. Studies were included if they:

- had DT as an intervention for patients with MNCD
- were published within the past 10 years
- were randomized controlled trials (RCTs), cohort studies, single case studies, exploratory studies, or ethnographic studies

- were performed within the past 10 years (we felt this best reflected the most current literature on this topic).

Exclusion criteria. Studies were excluded if they did not discuss DT or dementia, were not yet published, or did not include an original research study.

A total of 12 publications were identified. Four publications included data from RCTs. There were 3 cohort studies. There was 1 of each of the following: a single case study, an ethnographic study, a one-group, pretest-post-test design study, an exploratory study, and a grounded approach study.

RESULTS

TABLE 1¹⁷⁻²⁸ offers a synopsis of current research on DT. This research is further discussed below.

Study design. The literature review revealed mostly small RCTs, typically involving 10 to 30 patients. Other studies consisted of cohort studies with a larger population of patients (approximately 100 to 200 patients), single case studies, ethnographic studies, an exploratory study, and one group pretest-post-test design.

The primary setting in which the studies took place were nursing home facilities, with only 1 study²⁶ taking place within an inpatient setting.

Patient selection. Patients were often selected by caregivers or staff based on the following inclusion criteria:

- clinical diagnosis of moderate to severe dementia
- physical ability to hold a baby doll
- age ≥65
- Mini-Mental State Examination (MMSE) score <15 (Shin et al²² used MMSE <25) or other equivalent mental status assessments.

The overwhelming majority of patients studied was female, and some studies required female gender as an inclusion criterion.²¹ Although this is a common demographic of patients with MNCD, it is possible that this gender discrepancy could represent an inherent selection bias in which female patients were selected due to the expectation that they would respond better to DT by nature of their maternalistic instinct.

Furthermore, most studies were conducted on Caucasian females (when demographics were included), and only 1 study specified the inclusion of 1 African

American female.²¹ However, 1 study (Shin et al²²) examined the effects of DT on 51 patients of Korean background, including 41 females.²²

This calls attention to the need for further research involving the impact of DT for male patients with MNCD, as well as for patients of different ethnic backgrounds.

Methods/outcome measurements. Four studies^{18-20,22} utilized guidelines for DT as outlined by Mitchell⁸ (TABLE 2).^{8,9,29,30}

The studies primarily examined the effect of DT on 2 common behavioral and psychological symptoms of dementia: anxiety and agitation. The screening tools used to measure these symptoms included the following:

- Neuropsychiatric Inventory Questionnaire for people with clinical dementia (NPI-Q)
- The Cohen-Mansfield Agitation Inventory, and adaptations such as the Engagement Observation Rating Tool for DT, which was used by Braden and Gaspar²¹
- The Neuropsychiatric Inventory (NPI)
- The Observational Measurement of Engagement (OME).

Seven studies incorporated qualitative descriptions from caregivers and staff on the observed effect of DT on resident behavior.^{18,19,21,22,24,25,28}

Psychotropic medications. Two of the studies included patients taking some form of psychotropic medication,^{17,26} while the remainder of the studies did not explicitly mention this.

Doll characteristics. A key point of discussion in our review of the literature was the impact of specific doll characteristics on patient behavior and reactions towards the doll. Positive factors included “lifelike” characteristics such as softness of the doll’s skin, realistic texture/color hair, and smile, which was believed to convey calmness and peacefulness.^{18,22} Other beneficial factors were dolls that had similar demographics to the patient; however, no studies directly compared the impact of varying demographics on patient interaction.²²

One study noted lifelike dolls that cry promoted distress in patients with MNCD.³¹ Other negative characteristics were dolls without eyes that opened and closed as 1 study reported that “some residents may think the dolls are dead if they do not open their eyes.”²² TABLE 3 summarizes these characteristics.

Benefits of DT. Our review of current literature found several purported benefits of DT:

- improved agitation.^{17,24} DT may be better for agitation than gesture-verbal treatment¹⁷

TABLE 3
Positive and negative characteristics of dolls used in doll therapy

Positive	Negative
<ul style="list-style-type: none"> • Smile • Soft skin • Realistic hair • Eyes that open and close • Demographics of doll similar to those of the patient • Individualized clothing • Realistic in shape and size 	<ul style="list-style-type: none"> • Crying • Laughing • Eyes that do not open and close

- decreased irritability, apathy, and delusions¹⁷
- increased displays of pleasure¹⁸
- perceived benefit in emotional comfort, calming effect, and purposeful activity^{18,20,22}
- decreased caregiver distress¹⁹
- increased happiness, activity/liveliness, ease of giving care²⁴
- reduced anxiety^{21,24}
- improved social interaction^{20,21,24}
- improved communication^{22,24}
- decreased aggression, obsessive behavior, wandering, and appearing comfortable/uncomfortable²²
- decreased depression^{17,22}
- promoted attachment-caregiving and exploration²³
- improved ability to relate to the surrounding world²³
- promoted engagement and attention²⁸
- may decrease need for as-needed medications such as haloperidol.²⁶

Limitations of reviewed studies

The following limitations were observed in the studies reviewed:

Ownership. One point of conflict with DT is the issue of doll ownership, especially in multi-resident nursing facilities. In 1 study of a small sample size of residents in a nursing home, “five residents tried once during the study period, and two residents tried more than three times per week to take other residents’ dolls.”²² One potential solution to this issue is to provide different styles of dolls with different clothing to each resident to eliminate confusion over ownership.⁸

Distress. For some patients who view the doll as a real child, the daily act of feeding, bathing, and clothing their dolls may become a tedious and encumbering

TABLE 4
Future directions for DT research

- Impact of DT on male patients with MNCD
- Impact of DT on patients with MNCD of different ethnicities
- Impact of various/varying doll characteristics on outcomes
- Impact of DT on different types of MNCD (ie, AD vs vascular vs Parkinson's disease vs Lewy body dementia)
- Impact of DT in non-nursing home settings (ie, inpatient, home)
- Impact of DT on PRN medication use
- Impact of robotic vs traditional DT
- Impact of DT on other psychiatric conditions (ie, depression, anxiety)
- Impact of DT on transmission of infection within nursing homes

AD: Alzheimer's disease; DT: doll therapy; MNCD: major neurocognitive disorder; PRN: pro re nata (as needed).

task that promotes stress and anxiety.^{15,26} To counter this, Mitchell⁸ suggested that caregivers keep accurate care plans relating to DT, including monitoring residents for fatigue.⁸

Implementation. There were inherent difficulties with implementation of DT within the nursing home setting. Such issues included adequately educating nursing care staff on the appropriate DT protocol²¹ and ensuring that residents did not already have a doll prior to the onset of the study.^{21,23,26}

Limited time frame. Studies were limited in the time frame they could allot towards observation of the intervention, with some studies only observing the effects of DT over a 1-week period.²⁴ Indeed, the longest period of observation was only 3 months.²² Furthermore, most studies did not involve long-term follow-up of patients' status post intervention. This raises concerns about whether the true efficacy of DT for patients with MNCD can be evaluated in such a short time frame.

DISCUSSION

The sparsity of current DT research leads one to question its true efficacy and purported benefits.³² In fact, there may be some recent evidence against the efficacy of DT for improving behavioral symptoms of patients with MNCD. In a parallel-design RCT measuring the effects of lifelike baby dolls, Moyle¹⁸ did not find a significant reduction in anxiety, agitation, or aggression when compared with routine dementia care at Weeks 1 and 3 (the

primary outcome measure).¹⁸ Cantarella¹⁹ demonstrated no significant impact of DT on patient eating behavior, which is a commonly-encountered barrier to the care of patients with severe MNCD.^{19,33}

Ethical considerations

Although research has suggested that an individual with MNCD can often be calmed or made happy in the presence of a doll, questions have arisen concerning the ethical nature of the relationship with the doll. People engaging with the doll often treat it as if it were a living thing, and this situation may be viewed as essentially "tricking" the patient and may be construed as disrespectful or infantilizing.³⁴ Bisiani and Angus²⁴ wrote that their institution's ethics committee was concerned that a patient receiving DT might be ridiculed by other residents, staff, or visitors, but that they mitigated this risk via a person-centered approach²⁴ that included all involved parties. As discussed in Frantik,³⁵ complementary perspectives on the implementation of DT are key to ensuring the patient's dignity is maintained.³⁵ Likewise, Frantik³⁵ advocates for a person-centered approach based on each patient's individual circumstances. The guidelines in Mitchell⁸ address the concern for infantilization by advocating for early involvement of the staff, family, and health care proxies when implementing DT. The Pezzati²³ study examining DT adhered to those guidelines by specifically denoting the importance of discussing the family's views of DT before attempting the intervention. Braden and Gaspar²¹ noted that none of the family members of their patients ever objected to DT.²¹ Ultimately, the concern for infantilization is valid and important to discuss because it adds an ethical dimension to an otherwise straightforward intervention.

The subject of infantilization has brought up a broader academic discussion on the philosophical importance of truth in treating patients with MNCD. In *Nothing But the Truth: On Truth and Deception in the Dementia Patient*, Schermer¹⁶ noted that the ideas of truth and reality are inherently predicated on our cognitively intact view of the world, as we have the ability to understand, interact, and appreciate the world as we see it.¹⁶ However, due to their cognitive impairments, patients with MNCD often do not see and interpret the world as we do, which raises the question of what importance truth has to them. With respect to DT, it is both documented in the literature and discussed in this paper that patients with MNCD may respond well to dolls and gain

happiness from them. This raises the question of whether our moral judgment of DT needs to go beyond this fact, despite concerns of the loss of patient dignity through deliberate deceit. Is providing happiness and enjoyment simply enough to be considered a morally sound therapy? That question depends on the ethical beliefs of the individual making that judgment. Ultimately, we must decide if our own emphasis on the importance of truth as clinicians would be shared by the patients, their families, and society at large in order to guide our ethical consideration of this therapy, as the patients themselves may be indifferent.

Another aspect of this ethical conundrum is that other nonpharmacologic therapies that have been studied and utilized lack the moral controversy surrounding DT. Examples include music therapy, art therapy, and aromatherapy.¹¹ However, studies have supported the efficacy of DT, and unlike these other nonpharmacologic therapies, administration of DT does not require the presence of a specialist or clinician. In essence, DT has a smaller burden on the health care system and overall cost of care for patients with MNCD.²³

Overall, DT may be an option used on an individualized basis for patients deemed to potentially benefit. Frantik³⁵ noted that when it comes to more nuanced therapies such as DT, it is best to consider a person-centered approach, and to weigh the ethical pros and cons of therapies for each patient.³⁵ Thus, DT may remain as an option for patients with MNCD, but clinicians must weigh these ethical concerns vs the benefit it may provide to quality of life for patients and caregivers.

While DT is currently being used in the treatment of patients with MNCD, it is not without its ethical tenuousness. Although reflexive judgment may limit the use of DT because many other less controversial therapies exist, we argue that the ethical concerns surrounding DT are an additional impetus for further research. The field would most certainly benefit from more studies regarding the overall efficacy of DT, as well as how it compares to other nonpharmacologic options.

Other indications

Little research has been conducted regarding the effect of DT for other disease processes; however, DT's positive impact on patients with MNCD may be generalizable to other populations. Most of the studies attributed the positive impact of DT on problematic behaviors secondary to patients' inherent need for attachment. The need for

attachment theory extends beyond patients with MNCD. For example, children will often exhibit undesirable behaviors if their attachment needs are not met. They may experience agitation, anxiety, and distress similar to that seen in patients with MNCD.

Other studies involving dolls have primarily examined the beneficial effect of DT on children. For example, Bharti et al³⁶ found a decreased need for sedation in children undergoing MRI with play therapy, which consisted of conducting several simulations with a doll or favorite toy. Rafihi et al³⁷ showed a positive effect of adding DT to cognitive-behavioral therapy–based bibliotherapy in the treatment of night-time fear and co-sleeping problems in children.³⁷ The use of DT also has possible benefit in children after acute limb loss, those with autism, and in cases of adolescent trichotillomania.³⁸⁻⁴⁰ Although “doll therapy” in these contexts differs from the protocol typically used for patients with MNCD, the principles of its benefit in terms of fulfilling attachment needs appear to be similar.

CONCLUSIONS

The need for nonpharmacologic therapies to treat behavioral symptoms in patients with MNCD becomes increasingly important as the number of older adults continues to rise.² Current research suggests that DT may be a helpful tool for alleviating certain behavioral symptoms of dementia, including agitation, anxiety, apathy, and depression, without exposing patients to adverse effects of pharmacologic therapies. This benefit may be grounded in theories of attachment, in which caring for dolls provides patients with MNCD with a sense of fulfillment and purpose. The primary benefits of DT are observed with lifelike dolls with characteristics such as soft skin, eyes that open and close, and realistic hair. To prevent common problems such as doll ownership issues and patient fatigue, DT should be used in conjunction with suggested guidelines outlined by Mitchell.⁸

Although the purported benefits of DT are numerous, the strongest current research is limited to a few small RCTs with Caucasian females as the predominant study population. Larger RCTs that include male patients and those of varying ethnicities need to be conducted. Research should also seek to differentiate the effect of DT on the various types of MNCDS (including Alzheimer's disease, vascular dementia, Parkinson's disease, and

Lewy body dementia). Further research may also help elucidate which patients may best benefit from DT. Long-term follow up of patients treated with DT is also needed to determine the efficacy of DT over time.

Doll therapy as an intervention for other psychiatric conditions such as depression and anxiety should be explored to evaluate if the benefits observed in patients with MNCD extend to a broader population. As technology advances, the benefits of robotic vs traditional dolls may also be a growing topic of interest.

Considering the recent coronavirus disease 2019 global pandemic, concerns for infection control are paramount for long-term care centers and other institutional settings where patients with MNCD are living in groups. Only 1 study we reviewed briefly mentioned concerns for infection control, stating that these risks

are mitigated by the fact that patients do not share dolls.²⁶ This concept of dolls being unique to each patient is echoed in guidelines provided by Mitchell.⁸ This is certainly a subject worthy of future study. A comprehensive list of possible future directions for DT research can be found in **TABLE 4**.

The aim of this article was to serve as a reference for further research on this important topic. We hope that future studies will build upon the principles of DT research that have been discussed in this article and seek to improve upon the current limitations in existing research. ■

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