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Non-Pharmacological Approaches to Reducing Negative Behavioral Symptoms: A Scoping Review

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Abstract

Background—The management of negative behavioral symptoms among residents with dementia is a challenge that nursing homes face in delivering quality care.

Objective—Examine evidence documenting non-pharmacological interventions that reduce negative behavioral symptoms among nursing home residents with dementia and the role occupational therapy practitioners have in this area.

Method—A scoping review was completed for intervention studies published from 1987 to 2014, targeting negative behavioral symptoms among nursing home residents over 60 years of age with dementia. Interventions were categorized based on the AOTA *Occupational Therapy Practice Framework*.

Results—Twenty-two studies met the inclusion criteria. Four types of interventions were identified: occupation-based interventions, context and environment interventions, exercise interventions, and daily routine-based interventions.

Conclusion—The non-pharmacological interventions were found to align with the scope of occupational therapy. This suggests that occupational therapy practitioners can contribute to the development and evaluation of non-pharmacological interventions aimed to reduce negative behavioral symptoms.

Keywords

Dementia; non-pharmacological; behavioral symptoms; nursing home

As the population ages, global prevalence of dementia is projected to increase (United Nations, 2013). Dementia is an age-related disease that causes cognitive decline and memory impairment, which lower functional and cognitive ability, increase dependence, and decrease quality of life (McDonald, Craig, & Hong, 2010). In the US, older adults often transition to a nursing home for long-term care services as the condition progresses and

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individuals require extensive care. In 2012, 48.5% of residents in US nursing homes had a diagnosis of dementia (Harris-Kojetin, Sengupta, Park-Lee, & Valverde, 2013). Thus, there is a growing demand for nursing homes to deliver quality care for long-term residents with dementia.

Management of negative behavioral symptoms among residents is a challenge nursing homes face in delivering high quality care to this population. Aggression, agitation, anxiety, and wandering are common behaviors that result from changes in the brain and environmental and social factors (Cohen-Mansfield & Werner, 1995; Raskind & Peskind, 1994). Additionally, negative behaviors can be triggered by disruptions in the individual's daily routine, causing overstimulation or sensory deprivation (Kovach, 2000). In nursing homes, negative behaviors have adverse outcomes for the individual, nursing staff, and other residents in the facility (Beck et al., 2002; Kim & Woods, 2012). Individuals who demonstrate negative behavioral symptoms are at a higher risk of self-inflicted pain and accidental falls and injuries (Beck et al., 2002). Additionally, residents who have aggressive behavior can cause conflict with other residents in the facility (Beck et al., 2002). For the nursing staff, negative behavioral symptoms have been associated with increased stress, staff burnout, high turnover rate, and work-related injuries (Kim & Woods, 2012). Accumulation of these negative outcomes can result in decreased quality of life and increased healthcare costs for dementia care.

The Centers for Medicare & Medicaid Services (CMS, 2013) have targeted dementia care as a high priority area in need of quality improvement. Since traditional behavior management practices rely on psychotropic drugs and physical restraints, there is renewed interest in non-pharmacological approaches since the medication-based methods have been associated with adverse outcomes (Cohen-Mansfield, Dakheel-Ali, Jensen, Marx, & Thein, 2012). A non-pharmacological approach to negative behavioral symptoms among residents with dementia may utilize activities to engage residents and improve their quality of life by reducing negative behaviors, improving functional status, increasing alertness, decreasing boredom, and enhancing positive affect (Cohen-Mansfield, Thein, et al., 2012; Cohen-Mansfield, Libin, & Marx, 2007; Cohen-Mansfield, Thein, Dakheel-Ali, & Marx, 2010).

Occupational therapy practitioners are well situated to examine a resident's cognitive abilities with respect to participation in desired occupations in a given context and environment (American Occupational Therapy Association, 2014; Padilla, 2011c). The occupational therapy practice domains in the AOTA Practice Framework (*the Framework*), *occupations*, *client factors*, *performance skills*, *performance patterns*, and *context and environments*, provide a structure for occupational therapy practitioners to utilize their skills in non-pharmacological approaches.

In order to promote quality of life among nursing home residents with dementia and align with CMS's initiative, there is a need to identify the role that occupational therapy practitioners can play in ensuring the delivery of high quality care for this population. Thus, the purpose of this study is to conduct a scoping review that examines the evidence for non-pharmacological interventions, targeting negative behaviors among nursing home residents

over the age of 60 with dementia in the context of *the Framework* in an effort to increase their overall quality of life.

Methods

The research question guiding this review was “What is the role of occupational therapy in the context of the existing literature examining non-pharmacological interventions for older adults with dementia residing in nursing homes demonstrating aggression, agitation, and wandering?” Currently, there is limited research on occupational therapy practitioner administered non-pharmacological interventions for nursing home residents with dementia. Thus, it is appropriate to utilize a scoping review to gain a broad understanding of current non-pharmacological interventions and examine these interventions within *the Framework* to inform future research, practice, and education in occupational therapy. Arksey and O'Malley's (2005) scoping review methodology was implemented because it allows for the use of a broad synthesis of current knowledge about a topic. This approach was utilized rather than a systematic review because the intent of this study was to identify the absence of the role of occupational therapy in non-pharmacological interventions for nursing home residents with dementia and illustrate the role that occupational therapy can have, rather than evaluate the quality of the current literature.

Relevant studies were sought in the following databases: Pubmed, AGELINE, Ovid Medline, and CINAHL. The keywords used in the search were: *activity engagement, activity participation, dementia, Alzheimer's, older adults, nursing home, and long term care*. Articles were limited to those published from 1987 to 2014. The rationale for this time frame was based on the need for a comprehensive literature search and the passage of the Omnibus Budget Reconciliation Act of 1987, which included the Nursing Home Reform Act. This pivotal federal legislation established a mandate for improving care and quality of life for nursing home residents and served as the catalyst for research in this area (Omnibus Budget Reconciliation Act, 1987). This review was limited to studies that were written in English, published in peer-reviewed journals, measured negative behavioral issues as a primary patient outcome, and included a sample of older adults age 60 years or older with dementia residing in a nursing home.

The initial search resulted in 542 articles. A review of titles and abstracts excluded 446 articles. The remaining 96 full text articles were reviewed for alignment with the inclusion criteria. Hand searches of reference lists were also done to ensure that all relevant literature was included. Seventy-four articles were excluded because articles did not include: an intervention (n=15), negative behaviors as the primary outcome (n=42), nursing home residents (n=11), or participants older than 60 years of age (n=6). Data were then extracted from the final sample (n=22) of articles.

Results

Twenty-two studies aligned with *the Framework* and addressed interventions targeting negative behavioral symptoms in nursing home residents with dementia. A majority of the articles were conducted in the US (n=17/22). Thirteen of the studies were randomized

controlled trials. Twelve of the studies that were conducted had less than 50 participants. Only one of the interventions was delivered by occupational therapists (Maseda et al., 2014). The remaining studies utilized the research team (n=11), staff in the facility (n=5), or outside professionals, such as music therapists and Elderclowns (n=6). The research team grouped the final sample of interventions into mutually exclusive categories: occupation-based interventions (n=14), context and environment interventions (n=5), exercises (n=2), or daily routine-based interventions (n=1).

Occupation-based Interventions

Fourteen studies engaged residents in occupation-based interventions (Table 1) in an individual (n=10) or group setting (n=4). Of these, nine interventions were found to decrease negative behavioral symptoms. Occupation-based interventions were classified as interventions in which residents engaged in such as play, leisure, and social participation. Even though exercise is often seen as an occupation, it was categorized separately to reflect its primary influence on physical functioning.

Individual setting—Ten studies utilized an intervention in an individual setting. Six implemented individually tailored activities, while four used pre-determined or standardized activities. The individualized activities developed interventions that were tailored to participant's functional skill level, interests, personality, and/or valued roles. All but one (Orsulic-Jeras, Schneider, & Camp, 2000) of the individually tailored activities showed a reduction in negative behavioral symptoms among participants (Buettner, Fitzsimmons, & Atav, 2006; Cohen-Mansfield, Parpura-Gill, & Golander, 2006; Kolanowski, Litaker, & Buettner, 2005; Kolanowski, Litaker, Buettner, Moeller, & Costa, 2011; van der Ploeg et al., 2013). In contrast, of the four pre-determined activities, only two showed a reduction in negative behavioral symptoms (Cohen-Mansfield, Thein, et al., 2012; Politis et al., 2004) and two did not (Beck et al., 2002; Cohen-Mansfield, Dakheel-Ali, et al., 2012). The pre-determined activities were established without being tailored to each individual participant's needs and interests.

Group setting—The group interventions (n=4) included an examination of music therapy (Raglio et al., 2008; Svansdottir & Snaedal, 2006), humor-based intervention (Low et al., 2014), and story-telling (Houser, George, & Chinchilli, 2014). Three studies found that the intervention was effective in decreasing negative behavior symptoms (Low et al., 2014; Raglio et al., 2008; Svansdottir & Snaedal, 2006). The story-telling intervention, however, did not significantly decrease negative behaviors (Houser et al., 2014). Three of the studies compared their intervention to the standard activities that were provided in the nursing home (Houser et al., 2014; Low et al., 2014; Svansdottir & Snaedal, 2006). Of those studies that compared interventions to standard activities, two studies were more effective in decreasing negative behavior symptoms (Table 1; Low et al., 2014; Svansdottir & Snaedal, 2006).

Context and Environment Interventions

All of the studies examining modifications of the nursing home context or environment (n=5) found a decrease in the frequency of negative behaviors (Table 2; Connell, Sanford, & Lewis, 2007; DeYoung, Just, & Harrison, 2002; Galik et al., 2008; Maseda et al., 2014;

Mitchell & Maercklein, 1996). Two of the interventions modified the physical environment (e.g., relocating activities to the outdoors) and used a multisensory stimulation environment (Connell et al., 2007; Maseda et al., 2014). The remaining three studies targeted the organizational context by training nursing staff in strategies to handle negative behaviors (DeYoung et al., 2002; Galik et al., 2008; Mitchell & Maercklein, 1996).

Exercise Interventions

The two studies evaluating exercise programs found a reduction in negative behavioral symptoms (Table 3; Aman & Thomas, 2009; Thomas, Glogoski, & Johnson, 2006). Aman and Thomas (2009) evaluated a multi-component exercise program that incorporated aerobic, resistance, and balance exercises, while Thomas and colleagues (2006) started a supervised walking program. Aman and Thomas (2009) found an overall improvement among participants with varying levels of cognitive impairment, whereas Thomas and colleagues (2006) only found improvement for those participants in the early or middle stages of dementia.

Daily Routine-based Interventions

One study evaluated the daily routine of participants in order to target the arousal imbalance that is thought to cause negative behavioral symptoms (Table 3; Kovach et al., 2004). Arousal imbalance was defined as being awake in an arousal state for 1.5 hours or longer without any change. The participants were monitored by observations for periods of arousal and agitation. Based on those findings, an individualized plan to reduce arousal imbalance was designed for each participant, and a new activity schedule was implemented. It was found that monitoring the participants' arousal imbalance and adjusting their schedule accordingly significantly decreased agitation.

Discussion

This scoping review identified four types of interventions that were shown to reduce negative behavioral symptoms among residents age 60 and older with dementia. The findings in the *occupation-based interventions* suggest the importance of person-centered activities that match the participants' functional level and activity preferences (Buettner et al., 2006; Kolanowski et al., 2005; Kolanowski et al., 2011; van der Ploeg et al., 2013). The *context and environment interventions* highlight the importance of examining the individual's occupational participation within his/her context and environment, including the organization of the nursing home and physical environment (Connell et al., 2007; DeYoung et al., 2002; Galik et al., 2008; Maseda et al., 2014; Mitchell & Maercklein, 1996).

The structured and multi-component exercise intervention was effective in reducing negative behavioral symptoms, which suggests the intensity and structure of the program could play an important role (Aman & Thomas, 2009). The study that targeted the daily routines of the participants based on observations, suggests that altering arousal imbalance can reduce behavioral symptoms (Kovach et al., 2004).

Implications for Occupational Therapy Practice

All four categories of non-pharmacological interventions identified in this review highlight the multiple aspects that can influence and mitigate negative behaviors in residents with dementia. Utilizing *the Framework*, these interventions can be viewed in an occupational therapy context through the occupational therapy practice domains (AOTA, 2014). In order for optimal performance in occupations, the “occupations” domain (i.e. play, leisure, social participation) need to take into account the other domains of “client factors” (i.e. beliefs, values, interests) and “performance skills.” Similarly, the interventions that were individually tailored to the participants’ functional skills and preferences align within these three domains. By developing individualized interventions, occupational therapy practitioners can elicit remaining abilities that residents with dementia have to prolong independence (Padilla, 2011b). The *daily-routine based intervention* aligns within the “performance patterns” domain because it focuses on the individual’s habits, roles, and routines. The last domain, “contexts and environments,” integrates the physical environment with the social environment. Interventions designed to target environmental modifications or staff training can help reduce the residents’ negative behavioral symptoms, improve affect, and prolong functional independence (Padilla, 2011a).

The four non-pharmacological interventions highlight a need for a holistic approach that addresses the individual’s skills, interests, engagement in occupation, and daily routines in the context of his/her environment. Thus, since occupational therapy practitioners are trained in delivering person-centered services, which take into account all the occupational therapy practice domains that contribute to an individual’s health and well-being, they are well-situated to provide non-pharmacological approaches for negative behaviors (AOTA, 2014). The findings of this study suggest that occupational therapy practitioners are well positioned to provide person-centered care for individuals with dementia to reduce negative behavioral symptoms, improve quality of life, and lower healthcare costs. To summarize,

- The four areas of that emerged from this study and aligned with *the Framework*, include: *occupation-based* approaches, modifications to the *context and environment*, *exercise* interventions that target the “client factors” and “performance skills” domains, and *daily-routine based* interventions.
- Occupational therapists focus on a person-centered approach, which can be applied when treating negative behavioral symptoms.

Implications for Occupational Therapy Research

Only one of the 22 articles in this study included occupational therapy (Maseda et al., 2014). Thus, this scoping review illustrates the need for future occupational therapy research to evaluate interventions that integrate the person with his/her environment, desired occupations, and routines to ameliorate negative behavioral symptoms. Specifically, there is a need to design and study interventions delivered by occupational therapy practitioners that demonstrate the role occupational therapy can have in activity programs in nursing homes.

Furthermore, this scoping review highlights a methodological need for future studies utilizing occupational therapy practitioners. Despite identifying multiple interventions that

target negative behavioral symptoms, a majority of the studies (n=12) had relatively small sample sizes with fewer than fifty participants. Since interventions were implemented on a small-scale, these studies can be replicated with a larger study sample to determine if similar results occur. Research in this area needs to be on a larger scale with a multi-site study design that evaluates the effectiveness of occupational therapy's role in providing these interventions.

Limitations

There are limitations associated with conducting a scoping review. Not all relevant studies may have been included because of the key terms used for the search. Relevant studies could have inadvertently been excluded during the review of the title and abstract. In addition, only studies that focused on behavioral symptoms as a primary outcome were included in the review. Finally, because this was not intended to be a full systematic review, the methodological quality of the studies was not evaluated. As research and evidence grow in relation to non-pharmacological interventions with the target population, systematic reviews will be warranted.

Conclusions

This scoping review found that non-pharmacological interventions aimed at reducing negative behavioral symptoms among nursing home residents with dementia align with *the Framework*. In the context of healthcare reform, which emphasized the need to enhance the quality of care for residents with dementia, the delivery of evidence-based, non-pharmacological treatments is imperative. Occupational therapy practitioners can uniquely contribute to this need in long-term care and improve quality of care by utilizing their skills in providing interventions that address the person with his/her habits, roles, routines, and environment. The occupational therapy practitioner's holistic approach can facilitate a person-centered intervention that takes into account the individual's needs and abilities, the demands of an occupation, and the context and environment. Therefore, occupational therapy practitioners can play a pivotal role in maximizing the quality of life for nursing home residents. To this end, there is a need to develop the research and implement occupation-based interventions to enhance the quality of life of nursing home residents with dementia.

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Table 1

Occupation-Based Interventions

Article	Country	Sample	Methodology	Intervention Provider	Intervention	Results
Occupation-Based Interventions						
Individual Setting						
Beck et al., 2002	US	n=127 age(83.64)	5-arm RCT	Project nursing assistants	Arm 1- Develop ADL strategies Arm 2- 25 standardized modules targeting the psychosocial needs of residents Arm 3- A combined intervention (Arm 1+Arm 2) Arm 4- One-to-one interaction with PNA Arm 5- Standard of care	No change in negative behavior for Arm 1, Arm 2, and Arm 3.
Buettner et al., 2006	US	n=107 age(86.1)	2-arm RCT	RAs	Arm 1- Individualized activities that align with participant's abilities and interests Arm 2- Regular activities and social visit from RA.	Arm 1 significantly reduced negative behaviors.
Cohen-Mansfield, Dakheel-Ali et al., 2012	US	Sample 1: n=185 age(86.3) Sample 2: n=117 age(87.3)	2-arm RCT	RAs	Arm 1- 22 standardized activities and 2 individualized activities Arm 2- Activities tailored to patient's needs and preferences	No correlation between agitated behavior and engagement in both groups.
Cohen-Mansfield et al., 2006	US	n=93 age(87)	2-arm RCT	RAs	Arm 1: Individualized interventions that reflected participant's valued roles. Arm 2: Standard activities	Arm 1 reduced disorientation and agitation.
Cohen-Mansfield, Thein et al., 2012	US	n=193 age(86)	2- arm RCT	RAs	Arm 1: Introduced 25 pre-determined and 2 self-chosen activity Arm 2: No activity	All activities, except for music, significantly decreased total agitation in Arm 1.
Kolanowski et al., 2005	US	n=30 age(82.3)	Crossover experimental design	RAs	Arm 1: Activities matching skill level Arm 2: Activities matching personality Arm 3: Activities matching skill level and personality	Significant improvement in agitation in all three groups.
Kolanowski et al., 2011	US	n=128 age(86)	4-arm RCT	Research team	Arm 1: Intervention tailored to participant's functional level (FL) Arm 2: Intervention tailored to personality style (PSI) Arm 3: Intervention tailored to both FL and PSI Arm 4: Intervention not tailored to FL and PSI	Significant improvement in behavioral symptoms across all groups.

Article	Country	Sample	Methodology	Intervention Provider	Intervention	Results
Orsolic-Jeras et al., 2000	US	n=25 age(88)	4-arm RCT	Research and nursing staff	Arm 1: Individual Montessori-based activities Arm 2: Individual activity and group memory bingo Arm 3: Memory bingo and structured reading group Arm 4: Regular activities	There was no significant change in agitation across all groups.
Politis et al., 2004	US	n=37 Intervention: age(84.4) Control: age(83.5)	2-arm RCT	Activity therapist	Arm 1: Geriatrics network kit, a standardized, structured mental stimulation activity Arm 2: One-on-one activity chosen by participant	No significant differences between groups, but both groups had less negative behaviors at follow-up.
van der Ploeg et al., 2013	Australia	n=44 age(78.1)	Random cross-over design	Psychologists and higher degree psychology students	Arm 1: Individualized Montessori-based activities Arm 2: General one-on-one conversations	Significant decline in agitation for both groups.
Group Setting						
Houser et al., 2014	US	n=20 age(85.5)	Clustered 2-arm RCT	Principal Investigator	Arm 1: TimeSlips program, a story-telling group. Arm 2: Standard activities	No significant differences between groups.
Low et al., 2014	Australia	Intervention: n=189, age(84.5) Control: n=209, age(84.5)	Clustered 2-arm RCT	ElderClowns	Arm 1: Humor therapy Arm 2: Standard activities	Arm 1 decreased duration of high agitation compared to Arm 2.
Raglio et al., 2008	Italy	n=59 Intervention: age(84.4) Control: age(85.8)	2-arm Quasi-experimental design	Music therapist	Arm 1: Music therapy Arm 2: Individualized, educational and entertainment activities	Arm 1 significantly decreased behavioral disturbances.
Svansdottir & Snaedal, 2006	Iceland	n=47	Case-control study	Music therapist	Arm 1: Music therapy Arm 2: Standard activities	Arm 1 Significantly decreased aggression and anxiety compared to Arm 2.

Note. RCT = randomized control trial; RA = research assistant

Table 2

Context and Environment Interventions

Article	Country	Sample	Methodology	Intervention Provider	Intervention	Results
Connell et al., 2007	US	n=20 age(79.7)	2-arm RCT	Geriatric nurse practitioner and nursing assistants	Arm 1: Outdoor activity programming Arm 2: Indoor activity programming	Arm 1 significantly decreased frequency of aggression and agitation.
DeYoung et al., 2002	US	n=32 age(73)	Quasi-experimental design	Nursing staff	A behavior management program	Frequency of the 29 behaviors measured decreased post-intervention, but only 6 of the 29 were significant.
Galik et al., 2008	US	n=46 age(82.61)	Quasi-experimental design	Nursing assistants	Training nursing assistants in restorative care, goal development, and activity development.	Agitation, anxiety, irritability, and pacing decreased significantly from pre- to post-intervention.
Maseda et al., 2014	Spain	n=30 age(87.3)	3-arm RCT	Occupational therapists or psychologists	Arm 1: One-on-one multisensory stimulation environment (MSSE) with a nondirective approach and no physical/intellectual demand Arm 2: One-on-one activity session with no MSSE, using a directive approach and some intellectual/physical demand Arm 3: Standard activities	Physically nonaggressive behavior decreased for Arm1 and Arm 2. Agitated behavior decreased significantly for Arm 1 compared to Arm 3.
Mitchell & Maercklein, 1996	US	n=30 age(78.6)	Quasi-experimental design	Trained Facilitators	Trained facilitators with specialized communication techniques to promote sensory stimulation	Irritability, lethargy, and inappropriate speech decreased from pre- to post-intervention.

Note. RCT = randomized control trial

Table 3

Exercise and Daily Routine-based Interventions

Article	Country	Sample	Methodology	Intervention Provider	Intervention	Results
Exercise Interventions						
Arnan & Thomas, 2009	US	n=50 age(78.8)	Prospective comparative study	Research assistant	Arm 1: Exercise program with aerobic, resistance, and balance exercises Arm 2: No exercise	Arm 1 significantly reduced agitation.
Thomas et al., 2006	US	n=13 age(71–89)	Pretest posttest design	Research volunteers	A 7 week, 30 minute daily supervised walking program	Only those with early/middle stage dementia had a decrease in wandering behavior, but were not sustained at follow-up.
Routines Intervention						
Kovach et al., 2004	US	n=78 age(86.57)	2-arm RCT	Nursing staff	Arm 1: Develop a new daily activity schedule to reduce arousal imbalance Arm 2: Standard of care	Arm 1 significantly decreased agitation.

Note. RCT = randomized control trial