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A Montessori-Based Activity Program in Occupational Therapy for Individuals with Dementia

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Abstract

As the number of individuals living with dementia rises, there is an increased need for quality dementia care. Montessori-Based Dementia Programming (MBDP) is an approach to dementia care which recognizes that people with dementia are individuals with unique needs and abilities. Previous research suggested that Montessori activities increase positive affect and engagement of individuals with dementia. Observations of ten participants living in a memory care unit took place during three regularly programmed activities and three Montessori activities to compare the amount and type of engagement. The researcher conducted Montessori activities one-on-one or in small groups with the participants. Participants displayed higher amounts of constructive engagement and less passive, self, and non-engagement during Montessori activities compared to regularly programmed activities. Participants demonstrated more pleasure and enjoyment during Montessori activities. Improvements observed in participants' positive engagement and affect may give promise for implementing Montessori activities in memory care units.

Keywords: Montessori, activities, dementia, engagement

Introduction

The Hoosier Village community consists of independent living, assisted living, long-term care, rehabilitation, and memory care (Hoosier Village, n.d.). The study discussed in this paper took place in the memory care unit at Hoosier Village, known as Hickory Hall. There are currently 29 individuals living in Hickory Hall with diagnoses of Alzheimer's disease, dementia, or other forms of memory loss. Hoosier Village's mission is to enrich the quality of life of older adults within an environment that addresses and supports their independence, morals, needs, and hobbies (Hoosier Village, n.d.). More specifically, the memory care unit's mission at Hoosier Village is to improve the quality of life of families and individuals who have memory loss (Hoosier Village, n.d.).

Individuals who have dementia often live with this illness for years. While there is currently no cure for dementia, there are different patient-centered care models including MBDP. The purpose of this study was to introduce and implement MBDP in the memory care unit to facilitate constructive engagement in purposeful occupations to promote the well-being and quality of life of individuals with dementia. The Montessori method emphasizes the importance of one's independence, freedom to choose, and a supportive physical and social environment, which are important factors that individuals with dementia continue to value (Tak et al., 2016). The MDBP is strength-based and individualized, focusing on the individuals' needs, interests, skills, and abilities (Han et al., 2016).

Additionally, due to the disproportionate staff to resident ratio at many residential facilities, including Hickory Hall, activities are typically offered in large groups. When offering activities in groups, it is difficult to incorporate the interests, needs, and abilities of each individual participating in the activity. When activities do not account for individuals' cognitive capacities and hobbies, the individuals are less likely to exhibit constructive engagement throughout the activity due to lack of interest or inability to complete the tasks

(Smith & D'Amico, 2020). Meaningful and cognitively appropriate activities for individuals with dementia can help to increase positive engagement as well as reduce negative symptoms such as agitation (Orsulic-Jeras et al., 2000).

In this paper, I will discuss the key principles of the Montessori method, how to determine an individuals' current capacity and remaining abilities, and the role of staff in successful MBDP implementation. Ultimately, I will examine the differences in types and levels of engagement for ten individuals with dementia when participating in Montessori-based activities compared to regularly programmed activities in the memory care unit.

Background

There are currently more than 55 million individuals worldwide who are living with dementia (World Health Organization [WHO], 2021). By 2050, experts project there will be nearly 140 million people diagnosed with dementia (WHO, 2021). Researchers suggest psychosocial interventions and non-pharmacological interventions, such as the Montessori method, can effectively slow the progression of the disease (Oyebode & Parveen, 2019). Furthermore, psychosocial interventions improve the well-being and quality of life for individuals who have dementia (Oyebode & Parveen, 2019).

In 1907, Maria Montessori developed the Montessori method for educational purposes to build on the way children naturally learn (Camp, 2010). More recently in the 1990's, Dr. Cameron Camp introduced the idea of using the Montessori method to improve dementia care (Camp, 2010). The MBDP emphasizes person-directed care where the activities, schedules, and environment are all tailored to meet the needs, interests, and preferences of the individuals with dementia (Camp, 2010). An important Montessori concept is to promote independence for individuals with dementia so that they need the least amount of help from staff during activities (Camp, 2010). The primary goal of Montessori dementia care is engagement in life (Camp, 2010).

Individuals with dementia face challenges after their diagnosis including internal challenges and difficulties dealing with negative perceptions or stereotypes from others. Misconceptions about persons living with dementia often leads to care providers neglecting the dignity of persons with dementia and treating them as if they are incapable of contributing in meaningful ways (Ekoh et al., 2020). One result of these negative stereotypes is that individuals living with dementia experience infantilization, which is treating someone as if they are a child despite their age and knowledge, during encounters with staff (Thompson & Fletcher, 2019). Infantilization is belittling and negatively affects a person's self-esteem and self-confidence. It is important to note that the materials used for Montessori activities as well as the activities themselves differ from those offered to children to avoid infantilization.

People living with dementia reported that among the primary challenges they face when diagnosed with dementia is the feeling of losing control and the need to find meaning (Read et al., 2017). Furthermore, those living with dementia report the desire to maintain their independence and role function for as long as possible (Davison et al., 2019; Read et al., 2017). When individuals with dementia move into a residential facility, such as a memory care unit, they can become deprived of the opportunity to stay involved and complete the daily activities they once did (Morgan-Brown & Brangan, 2016). Montessori dementia care enables those living with dementia to be as independent as possible for as long as possible and to function at their highest level while improving their well-being and quality of life (Oyebode & Parveen, 2019).

The Director of Operations at Hoosier Village expressed a need for more development and activity programming in the memory care unit, which guided the creation of this project. Staff believed that occupational therapy directed activities could benefit the individuals in the memory care unit since many of them do not receive therapy services. There was a need for more activities offered that are meaningful and purposeful for those

with dementia to increase residents' constructive engagement. Additionally, there was a need for more staff training and education on dementia care. The staff needed training on how to grade or modify tasks to promote residents' independence. Through observation, the researcher noted a need for more individual and small group activities that match the skills, needs, and interests of each individual with dementia. Finally, some residents in the memory care unit only participated in activities for a short period of time indicating poor engagement or inability to attend for the entirety of the activity.

Current evidence suggests that nursing home residents with dementia report feeling like they have limited activity options available (Han et al., 2016). Furthermore, residents do not feel the activities offered are meaningful, which decreases their motivation to participate and engage (Han et al., 2016; Tak et al., 2015). Han et al. (2016) discussed the importance of meaningful and valuable activities to improve engagement in activities for individuals with dementia. It is important to consider each individual's abilities and match them with activities that will be satisfying (Han et al., 2016). Previous research guided this study and highlighted the importance of incorporating the residents' interests and hobbies into the Montessori-based activities. The Montessori method in dementia care emphasizes the importance of residents' involvement in decisions and the option for participation in purposeful activities within a supportive environment (Camp, 2010), all of which are key parts for creating opportunities for meaningful engagement.

In a systematic review, Sheppard et al. (2016) concluded that using Montessori-based activities led to positive outcomes for individuals' memory, attention, affect, and constructive engagement. Individuals with advanced dementia have shortened attention spans compared to those with mild or moderate dementia, which means they are unable to attend to tasks or activities that required a lot of time (Orsulic-Jeras et al., 2000). Thus, developing activities for individuals with late stages of dementia must not demand more time than the person can

physically attend. Furthermore, Trahan et al. (2014) discussed the importance of modifying space and social demands to improve engagement during activities. The authors also concluded that certain modification strategies can be an influential factor in improving engagement for individuals with dementia (Trahan et al., 2014). It is important to understand each person's unique physical and social needs to adapt the activity demands to meet the individual's needs.

Orsulic-Jeras et al. (2000) and Giroux et al. (2010) examined the effectiveness of using the Montessori approach with people who have dementia. Orsulic-Jeras et al. (2000) assessed engagement covering four domains: constructive, passive, nonengagement, and self-engagement. Evidence shows that Montessori-based activities elicit higher levels of constructive engagement and lower levels of passive engagement and nonengagement (Orsulic-Jeras et al., 2000). In addition, Giroux et al. (2010) found that participants were more likely to actively participate in Montessori activities compared to inactivity or the regularly programmed activities provided in long-term care facilities. The researchers also found that Montessori activities are effective in satisfying dementia patients' need for accomplishment (Giroux et al., 2010). The purpose for implementing Montessori-based activities is that tailored and meaningful activities should increase the individuals' desire and ability to participate thereby increasing constructive engagement.

While the current research details the effectiveness and benefits of Montessori dementia care and Montessori-based activities, there are holes in the literature. Previous researchers did not study or review Montessori-based activities through an occupational therapy lens using occupational therapy assessments or screening tools to properly assess individuals. Furthermore, researchers have not assessed individuals using the Allen Cognitive Level Screen (ACLS), which is a common assessment used in occupational therapy to screen functional cognition, to determine individuals' remaining abilities before creating Montessori

activities. In this study, an occupational therapy perspective guided the MBDP. The investigator viewed the participants in this study using a holistic and person-centered approach. The investigator accounted for the life experiences, interests, needs, preferences, physical and cognitive function, and remaining abilities of each participant when developing Montessori-based activities for this study.

Theory

The Model of Human Occupation (MOHO) guided the development and implementation of this project. MOHO addresses the person, including their volition, performance capacity, and habituation (Cole & Tufano, 2008). These concepts guided the creation of the Montessori activities to enhance participants' interest in activities. Individuals with dementia retain procedural memory and habitual tasks; therefore, considering the habits and routines of the residents was important when creating activities (Cole & Tufano, 2008). Understanding the residents' performance capacities prior to creating activities ensured that the level of skill required to complete the activities matched the client's abilities.

In addition, MOHO addresses occupational identity, occupational competency, occupational participation, and occupational adaptation (Cole & Tufano, 2008). As a result of the COVID-19 pandemic, residents of the memory care unit experienced occupational deprivation (K. Grissom, personal communication, March 2, 2021). The Montessori-based activity program aimed to help the residents rediscover or develop occupational identities and occupational competency. Lastly, MOHO examines an individual's environment (Cole & Tufano, 2008), which is an important aspect of my project. An emphasis on organizing and de-cluttering the environment to make it visually appealing and easy to access is an important part of encouraging participation in activities.

Allen's Cognitive Levels (ACL) frame of reference (FOR) guided the development of this study. Allen's Cognitive Levels consists of six different levels and 52 modes of

performance that define a person's range of cognitive function (Cole & Tufano, 2008). The ACLS is a standardized assessment tool designed for the ACL FOR (Cole & Tufano, 2008). A person's ACLS score guides individual and group interventions or activities (Cole & Tufano, 2008). Allen's Cognitive Levels focuses on the just-right challenge, which aims to match task demands to the client's current capacity for functioning (Cole & Tufano, 2008). Task demands include the materials, instructions, choices, and steps required to complete an activity (Cole & Tufano, 2008). Individuals with dementia can become irritable or frustrated if they are unable to accomplish something, which is why the just-right challenge was an important concept to emphasize in the Montessori activities. Lastly, the task environment, which is the environment in which an individual performs tasks, is an important part of Allen's Cognitive Levels FOR. Adapting the task environment to be engaging and supportive for the residents was important while setting up the activities for the Montessori program.

Project Design

The decline of abilities, both cognitive and motor, can vary greatly among individuals who are in different stages of the disease. For this reason, individualized and tailored activities are important to meet the personal needs, interests, and abilities of individuals. For the project design, the researcher identified ten residents of the memory care unit who frequently attended regularly programmed activities and assigned them to be the participants in this study. The types of regularly programmed activities that most routinely occurred included: exercise classes, music performances, Bingo, and trivia. During the first five weeks of the study, the researcher observed and recorded the ten participants' engagement in three regularly programmed activities using the Menorah Park Engagement Scale (MPES) (See Appendix B), which is a scale developed by Judge et al. (2000) to measure engagement during activities. The investigator measure participant engagement in seconds for the first ten minutes of each activity. Then, the investigator used an excel sheet to record the duration of

the type of engagement exhibited by each participant during the activities. One participant's engagement in a single activity was equivalent to 600 seconds. Ten participants engaged in three regularly programmed activities each for a total of 1,800 seconds per person.

The MPES measures four different types of engagement: constructive engagement (CE), passive engagement (PE), self-engagement (SE), and non-engagement (NE) (Judge et al., 2000). Judge et al. (2000) defined CE as "motor or verbal response to the activity". PE was "listening to or observing the activity" (Judge et al., 2000). SE was "repetitive or self-stimulating behaviors" including wandering, excessive rubbing or wringing hands (Judge et al., 2000). Finally, sleeping, zoning out, or disengagement from an activity was NE (Judge et al., 2000). Researchers found that the MPES has a high content validity (Judge et al., 2000).

Towards the beginning of the study, the researcher completed online educational courses to become a Certified Montessori Dementia Care Professional to become qualified to lead staff training on the Montessori approach. Based on the knowledge gained from the certification courses, the researcher created a training PowerPoint including the key components of the Montessori method, the staff's role in Montessori dementia care, information about the Allen Cognitive Level frame of reference, and how the ACLS assesses individuals' cognitive function. Over the course of the study, staff in the memory care unit completed the pre-test survey (See Appendix C) designed by the researcher to capture staff members' baseline knowledge on Montessori dementia care. Then, staff reviewed the Montessori dementia care PowerPoint and the researcher explained more in-depth the purpose of the Montessori approach. Finally, staff completed the post-test survey, which was identical to the pre-test survey. The purpose of the survey was to assess the staff's change in knowledge on Montessori-Based Dementia Programming after completing the training. Caregivers play a vital role in successful implementation of Montessori-based activities (Wilks et al., 2019), and it is essential that they have a proper understanding of how to lead

the activity sessions. The statements included on the pre and post-test survey conveyed important Montessori concepts and principles that are imperative for staff to understand to facilitate positive resident engagement during activities. Initially, leading the Montessori activities was going to be the responsibility of the certified nursing assistants (CNA); however, due to being short-staffed and very inconsistent CNA staffing in the memory care unit, the researcher led all Montessori activities. Staff education and training still occurred to increase the likelihood for sustainability of the Montessori activities.

A registered occupational therapist (OTR) observed the researcher administer the ACLS to one participant to verify accuracy and competency. Then, the researcher administered the ACLS to the remaining nine participants to obtain their scores, which indicated each individuals' current cognitive function and problem-solving abilities. Each participant's individual ACLS score and interests guided the creation of Montessori-based activities to promote independence and success during activities. The ACLS score also suggests the amount of time a person is able to attend for, which was a key piece of information to account for when creating Montessori activities. For example, participants who are an ACL 3 can only attend to activities for up to thirty minutes in one sitting. Thus, participants with an ACL of 3 were not given activities that required more than 30 minutes to complete.

The families of the residents completed a Life History Sheet to describe the residents' past roles, hobbies, interests, preferred environment, and likes and dislikes. The researcher used the information gathered from the participant's sheet as well as his or her score on the ACLS to develop activities that would provide purpose and that matched the participant's cognitive capacity. An emphasis on the process of the activities, as opposed to the outcome, was an important focus point when creating activities. The environment was also modified to be set-up according to the Montessori principles including organized areas with activity kits

readily available for resident use (Appendix D), visible signage and visual cues (Appendix E), and de-cluttered spaces. The organized activity kits allowed for more accessible opportunities for residents to explore their environment and engage in activities as desired.

During the second half of the study, the researcher began inviting participants to take part in Montessori-based activities that were interesting and purposeful to them. While the researcher invited participants to engage in the Montessori activities, the goal in the future is for the residents to eventually reach the point of self-initiating and spontaneously engaging in activities throughout the day. The researcher served as a support during the activity by offering guidance and cues (verbal, tactile, visual) as needed.

The study used a within-subjects design where each participant served as his or her own control. The researcher observed and measured the ten participants' engagement in three Montessori-based activities using the MPES for a total of another 1,800 seconds of engagement per participant. The types of Montessori-based activities the subjects participated in varied according to their past occupations, roles, and interests. However, some of the most common Montessori activities included household chores, baking, and gardening tasks. The Montessori activities took place one-on-one or in small groups based on the participant's needs or preference for individual versus group activities. For the group activities, the investigator formed small groups by pairing those with comparable ACLS scores or those with similar interests and hobbies. Group activities with participants who had similar ACLS scores were more difficult to lead due to all participants needing the same level of assistance; however, the small groups made it easier to help each individual. Activities were strategically designed so that they did not exceed ten minutes for individuals who are an ACL 2, thirty minutes for those who are an ACL 3, and an hour for those who are an ACL 4.

Project Outcomes

The investigator hypothesized that participants observed during Montessori activities would exhibit higher levels of constructive engagement and lower levels of passive, self, and non-engagement during Montessori activities compared to the regularly programmed activities. Instances of self-engagement were incredibly rare during the observation periods of activities. Only two out of ten participants displayed any occurrence of self-engagement during any regularly programmed activity and zero participants exhibited self-engagement while completing the Montessori activities. As a result, the investigator did not include self-engagement as part of the formal data analysis.

The investigator used paired t-tests to analyze the participants' constructive, passive, and non-engagement during regularly programmed activities and Montessori activities. Results associated with these analyses are shown in Table 1. There was a statistically significant difference found for constructive engagement ($p < .05$) and non-engagement ($p < .05$) between regularly programmed activities and Montessori activities. Passive engagement exhibited by the participants during the regularly programmed activities compared to Montessori activities approached significance but was not statistically significant ($p > .05$).

Table 1

Analyses for Participant Engagement during Regular and Montessori Activities

Type of Engagement	Type of Activity	Mean	Standard Deviation	p
Constructive	Regular	509.1	272.5	**.009**
	Montessori	1086.3	444.4	
Passive	Regular	984	288.4	.071
	Montessori	652.5	372.7	
Non	Regular	274.2	172.97	**.015**
	Montessori	61.2	101.7	

Note. The mean and standard deviation are recorded in seconds.

*Bolded items are statistically significant, $p < .05$

Five CNAs who worked in the memory care unit completed the MBDP training along with the pre and post-test survey, which used a 5-point Likert scale. The mean of the five staff members' responses to the seven statements on the pre-test survey was 25. The mean of the post-test survey responses improved to 33. As a group, the staff demonstrated a 32% increase in knowledge and understanding of the MBDP after completing the training. One CNA shared that she believes the Montessori activity program and readily accessible activity kits will be beneficial because she said she is the only CNA working on one wing of the building majority of the time, which makes it difficult to gather and initiate activities with residents throughout the day.

The researcher also collected qualitative data through observations of participants throughout the study. Prior to the beginning of the Montessori activities, participants expressed uncertainty of how to contribute by saying, "What am I supposed to be doing?" and "I feel bad. There's so many people working hard and I am doing nothing". Other participants wandered around looking for something to do. One participant said to another,

"Well, let's mosey on down here and see if we can find something to do". Additionally, some participants expressed discontentment with the regularly programmed activities. One participant referred to a trivia game saying, "This is like kindergarten", which suggested that the participant experienced infantilization. Another participant expressed that she does not like attending the exercise classes anymore because they have become too repetitive.

Once participants began engaging in the Montessori activities, they provided positive feedback during or after participating in the Montessori activities. One participant shared, "Now that was fun to make and really neat stuff to work with" in response to using cookie cutters to make different objects out of homemade dough. Another participant commented, "This is great. It's like we are contributing something here" while building bird houses to hang in the outdoor community area. While arranging flowers, one participant said, "The opportunity to do something like this…I have chills all over my body. I am really having a wonderful time". The participants' responses to the Montessori activities indicated that they enjoyed themselves and experienced a sense of belonging and purpose.

Summary

Upon moving into residential care facilities, individuals often feel a loss of purpose, identity, and independence (Davison et al., 2019). Individuals with dementia long to continue participating in their preferred activities, fulfilling previous roles, and maintaining a sense of autonomy (Davison et al., 2019). Most memory care units offer regularly programmed activities; however, many activities do not account for the differing interests and varying levels of cognitive functioning of each resident. It is important to take an individualized approach in dementia care to meet the needs of each resident and to facilitate constructive engagement during activities. Montessori-Based Dementia Programming emphasizes the importance of understanding the unique needs, cognitive functioning, and hobbies of each resident, which allows for the creation of meaningful and suitable activity opportunities.

To create purposeful Montessori activities for the residents, the researcher first assessed each participant using the ACLS to determine their level of cognitive functioning. Then, the researcher collected information about the participants' preferences, hobbies, interests, and past roles. The researcher created activities according to each participant's ACLS score and hobbies to promote independence, motivation, and engagement. The investigator adapted the environment and task demands, as needed, to meet the needs of each participant.

Overall, the Montessori approach to activities presents a useful tool for staff in memory care units to engage their residents in a meaningful and constructive manner. The findings from this study suggest that individuals with dementia exhibit greater amounts of constructive engagement and less passive engagement during Montessori activities compared to non-Montessori activities. Additionally, based on observation and participant report during and immediately after completing Montessori activities, the individuals experienced feelings of enjoyment, contribution, and purpose.

Conclusion

The Montessori method can be effective for actively engaging those with dementia at higher levels than regularly programmed activities. When the task demands of an activity match a person's capacity, independence completing tasks is supported and can help alleviate some of the staff's burden. It is pivotal to screen cognition using a standardized assessment tool to determine each person's functional cognition in order to create activities that meet the just-right challenge. Assessing the participants' cognition demonstrated to the site that each individual retains different abilities at the different stages of dementia and a single activity is not appropriate for every individual. The investigator provided staff in the memory care unit a sheet containing each participant's ACLS score and a list of activities that match the cognitive level for straightforward and easy continuation of Montessori activities. The current

study supports use of the Montessori method in dementia care and the process of modifying activities to meet a variety of cognitive, motor, mental, or social deficits. Continued education and advocacy for the Montessori-based activity approach is needed to advance quality person-directed and person-centered dementia care. Through an occupational therapy lens, use of the Montessori approach can allow individuals with dementia prolonged opportunities for engagement in occupations that are meaningful to them.

Although the results of this study showed positive benefits through the use of Montessori activities, it is important to consider the challenge of fully integrating a MBAP where staff can conduct the activities in the face of organizational constraints. In this regard, the most critical aspect for determining sustainability of the program is whether the staff and director of the memory care unit commit to continuing the use of Montessori activities within their activity program. Additionally, the interaction between staff and residents is important for successful implementation of Montessori activities and can be the difference between a resident experiencing feelings of enjoyment or frustration. Limitations of this study include the staffing and programming restrictions at the site. Furthermore, to account for threats to validity, future researchers need to replicate these findings with larger sample sizes with increased diversity. Additionally, future researchers should implement a Montessori-based activity program in more diverse practice settings.

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Appendix A

Week	DCE Stage (orientation, screening/evaluation, implementation, discontinuation, dissemination)	Weekly Goal	Objectives	Tasks	Date Complete
1	**Researching new literature and adding to literature review** **Prepping for first week on-site**	1) Research new literature related to my DCE 2) Add relevant information to literature review 3) Research literature on creating pre and posttest outcome measures 4) Review capstone site's vision and mission statement to prepare for next week	Meet with site mentor, other site personnel, and the site participants to introduce myself and educate them on why I am here/what I will do for the 14 weeks Document supervision plan and update MOU with site mentor Understand site environment, where to park,	Create a list of potential questions to ask for when I meet with people in-person at the site next week	All completed by 1/14/22

		5) Create list of questions to ask capstone site mentor on first day on-site	dress code, hours, etc. Finalize questions for Needs Assessment Perform SWOT analysis		
2	**Orientation & begin screening/evaluation**	1)Complete orientation 2) Complete needs assessment by the end of the week 3) Look through activity closet 4) Gather information on patients' hobbies and interests	Determine needs of the site according to the director of the memory care unit Compile list of items in the activity closet for potential Montessori activities	Ensure that all paperwork for orientation is complete and given to site Set up meetings with key personnel to complete needs assessment Finalize MOU and submit to Brightspace	All completed by 1/21/22
3	**Screening/Evaluation**	1)Complete search of literature for	Establish and create outcome assessments	Review outcome assessments with site	All completed

		program evaluation measures by mid-week 2)Become a Certified Montessori Dementia Care Professional 3) Review residents' Life History Sheets	used for my project Complete the required 7 hours of training in Montessori Dementia Care. Understand the broad categories of patients' hobbies and interests	mentor & faculty mentor Complete courses and test required to receive the certification Take notes on important information learned from Montessori Dementia Care course to include in staff training PowerPoint Create comprehensive list of interests/hobbies	by 1/28/22
4	**Evaluation**	1)Read Allen Cognitive Level Screening (ACLS) manual and practice administering it 2)Observe staff and residents involved in regularly	Understand the ACLS manual to accurately understand how to administer the assessment to residents Determine how many and which residents typically attend the regularly	Make notecards with the script for administering the ACLS on them Watch videos of OTR administering the ACLS to residents Collect data at baseline by observing the participants' engagement during regularly scheduled	2/4/22 2/4/22 Started by 2/4/22

		programmed activities with the residents 3) Begin adding information from the Montessori Dementia Care training course into a PowerPoint for staff training	programmed activities and what staff members lead the activities	activities in the memory care unit Work on PowerPoint for in-service presentation next week	Started by 2/4/22
5	**Implementation**	1)Finalize Montessori-Based Dementia Programming staff training PowerPoint 2) Administer pre-test survey to CNAs in memory care unit involved with leading activities 3) Educate the CNAs using the training PowerPoint	Complete an educational training PowerPoint on the Montessori approach in dementia care for the CNAs in the memory care unit Understand the staff's current knowledge on the Montessori method for dementia care	Finish adding information to training PowerPoint Edit PowerPoint for grammar and spelling Add up the total scores of all staff responses on the outcome measure Compare pre and post-test survey results Determine 10 participants for study	2/11/22 2/11/22 Started 2/11/22 Started 2/11/22 2/7/22

		4) Administer post-test survey to CNAs in memory care unit involved with leading activities 5) Continue observing residents' engagement and affect during regularly programmed activities 6) Administer ACLS to participants	Determine percentage of change in staff knowledge on Montessori-Based Dementia Programming Determine the effectiveness of the staff training PowerPoint Use the Menorah Park Engagement Scale (MPES) to log type of engagement exhibited by participants in an Excel spreadsheet Determine the ACL of each participant	Make excel sheet for tracking participants' engagement Find quiet space for participants to complete ACLS	2/11/22 Started 2/9/22
6	**Implementation**	1)Administer pre-test survey to CNAs in	Understand the staff's current knowledge on	Add up the total scores of all staff	Continued through 2/18/22

		memory care unit involved with leading activities 2) Educate the CNAs using the training PowerPoint 3) Administer post-test survey to CNAs in memory care unit involved with leading activities 4)Observe 10 participants' engagement during regularly programmed activities 5) Observe participants' reactions and thoughts	the Montessori method for dementia care Determine percentage of change in staff knowledge on Montessori-Based Dementia Programming Determine the effectiveness of the staff training PowerPoint Use the MPES and continue logging participants' engagement in Excel Gain understanding of participants' reactions or thoughts towards current	responses on the outcome measure Compare pre and post-test survey results of CNAs Document type and duration of engagement for each participant during regularly programmed activities Document quotes from participants' throughout the day prior to implementation of Montessori activities	Continued through 2/18/22 Continued through 2/18/22 2/15/22

		throughout the day 6)Administer ACLS to participants	activity schedule Determine the ACL of each participant		
7	**Implementation**	1)Create Montessori activities for participants	Incorporate all Montessori principles when creating the activities for participants	Create list of each participants preferences, likes/hobbies/interests, and ACLS score Look through activity closet to determine what materials the site already has Communicate with director of the memory care unit to request additional items	Started 2/25/22 2/25/22 2/25/22
8	**Implementation**	1)Continue developing Montessori activities for participants 2) Begin organizing the environment according to	Incorporate all Montessori principles when creating the activities for participants Create a visually	Combine the participants' ACLS score, interests/hobbies/likes and preferences to create Montessori activities	3/4/22

		Montessori principles	appealing, de-cluttered, inviting space for the participants	Organize the open activity areas Print invitation sheets such as, “Please help fold the laundry.”	3/4/22 3/4/22
9	**Implementation**	1)Begin implementing Montessori activities with the participants	Create meaningful, purposeful, and interesting activities for the residents through use of Montessori principles	Use the MPES to measure engagement during Montessori activities Document participants’ comments during or after taking part in Montessori activities	Started 3/7/22
10	**Implementation**	1)Lead Montessori activities with participants	Create meaningful, purposeful, and interesting activities for the residents through use of Montessori principles	Use the MPES to measure engagement during Montessori activities Document participants’ comments during or after taking part in Montessori activities	Continued 3/14/22 - 3/18/22
11	**Implementation**	1)Finish leading Montessori activities with participants	Create meaningful, purposeful, and interesting activities for the residents	Use the MPES to measure engagement during Montessori activities Document participants’	3/25/22

		2)Administer pre-test survey to CNAs in memory care unit involved with leading activities 3) Educate the CNAs using the training PowerPoint 4) Administer post-test survey to CNAs in memory care unit involved with leading activities	through use of Montessori principles Understand the staff's current knowledge on the Montessori method for dementia care Determine percentage of change in staff knowledge on Montessori-Based Dementia Programming Determine the effectiveness of the staff training PowerPoint	comments during or after taking part in Montessori activities Add up the total scores of all staff responses on the outcome measure Compare pre and post-test survey results of CNAs	3/25/22 3/25/22
12	**Finish Implementation**	1)Data Collection and Data Analysis 2)Secondary Advanced Skill	Demonstrate any percentages in change between pre and post-test	Calculate change in percentage Run paired t-test in Excel	4/1/22 4/1/22

		of Health Promotion and Wellness	survey given to staff Determine change in participant engagement during regularly programmed activities vs. Montessori activities Determine change in participant observations before and after implementation of Montessori activities Gain expertise related to health promotion and wellness for adults 65+	Create chart comparing participants' comments during regularly programmed activities compared to their comments during Montessori activities Attend personal training sessions and group exercise classes Assist with Rock Steady Boxing Program	4/1/22 4/1/22 4/1/22
13	**Discontinuation**	1)Wrap-up DCE project at site	Staff will feel comfortable leading	Ask staff if they have any questions	4/8/22

		2) Work on creating a Montessori binder to leave at site	Montessori-based activities for residents in memory care unit	Print the Montessori training PowerPoint, ACLS scores of participants, activity ideas and how to grade them, information about the ACL and ACLS, and research on Montessori method for dementia care	4/8/22
14	**Dissemination**	1)Present findings of program implementation to director of memory care unit and director of operations 2) Provide Montessori binder to site	To promote sustainability of project	Prepare and practice what to say during dissemination meetings Answer any questions from the staff Put all materials in binder and give to director of the memory care unit	4/15/22 4/15/22 4/14/22

Appendix B

Table 1 **Menorah Park Engagement Scale coding categories**

Category	Description of behavior
Constructive (CE)	Active engagement in presented activity: motor or verbal response to the activity
Passive (PE)	Passive engagement in presented activity: listening to or observing the activity
Self (SE)	Repetitive or self-stimulating behaviors: excessive rubbing, wringing hands, wandering
Non (NE)	Asleep or disengaged from an activity: 'zoned out' or blank stare

(Jarrott et al., 2008)

Appendix C

PRE-TEST SURVEY

Directions: Please read the statements below and respond as accurately as possible to each statement by circling the number that best describes your answer. Your answers will only be used for the purpose of the research study and will remain anonymous. After viewing the "Montessori Dementia Care" PowerPoint, please complete the post-test survey on the back of this paper.

Likert Scale:
1= Strong disagree
2= Disagree
3= Neutral
4= Agree
5= Strongly agree

1. I am familiar with Montessori-Based Dementia Programming.
1 2 3 4 5

2. I know the differences between regularly programmed activities in a memory care unit and Montessori-based activities.
1 2 3 4 5

3. I understand how to choose activities for residents to engage in based on their interests and hobbies.
1 2 3 4 5

4. I feel confident in my ability to adapt and grade activities to meet each individuals' needs.
1 2 3 4 5

5. I feel confident with making appropriate modifications to the physical and social environment to support individuals during activities.
1 2 3 4 5

6. I understand my role as a staff member in supporting residents' participation and constructive engagement throughout activities.
1 2 3 4 5

7. I feel confident that I could lead activities for residents using the Montessori principles.
1 2 3 4 5

Thank you for your time and feedback!

POST-TEST SURVEY

Directions: Please read the statements below and respond as accurately as possible to each statement by circling the number that best describes your answer. Your answers will only be used for the purpose of the research study and will remain anonymous.

Likert Scale:
1= Strong disagree
2= Disagree
3= Neutral
4= Agree
5= Strongly agree

1. I am familiar with Montessori-Based Dementia Programming.
1 2 3 4 5

2. I know the differences between regularly programmed activities in a memory care unit and Montessori-based activities.
1 2 3 4 5

3. I understand how to choose activities for residents to engage in based on their interests and hobbies.
1 2 3 4 5

4. I feel confident in my ability to adapt and grade activities to meet each individuals' needs.
1 2 3 4 5

5. I feel confident with making appropriate modifications to the physical and social environment to support individuals during activities.
1 2 3 4 5

6. I understand my role as a staff member in supporting residents' participation and constructive engagement throughout activities.

1 2 3 4 5

7. I feel confident that I could lead activities for residents using the Montessori principles.
1 2 3 4 5

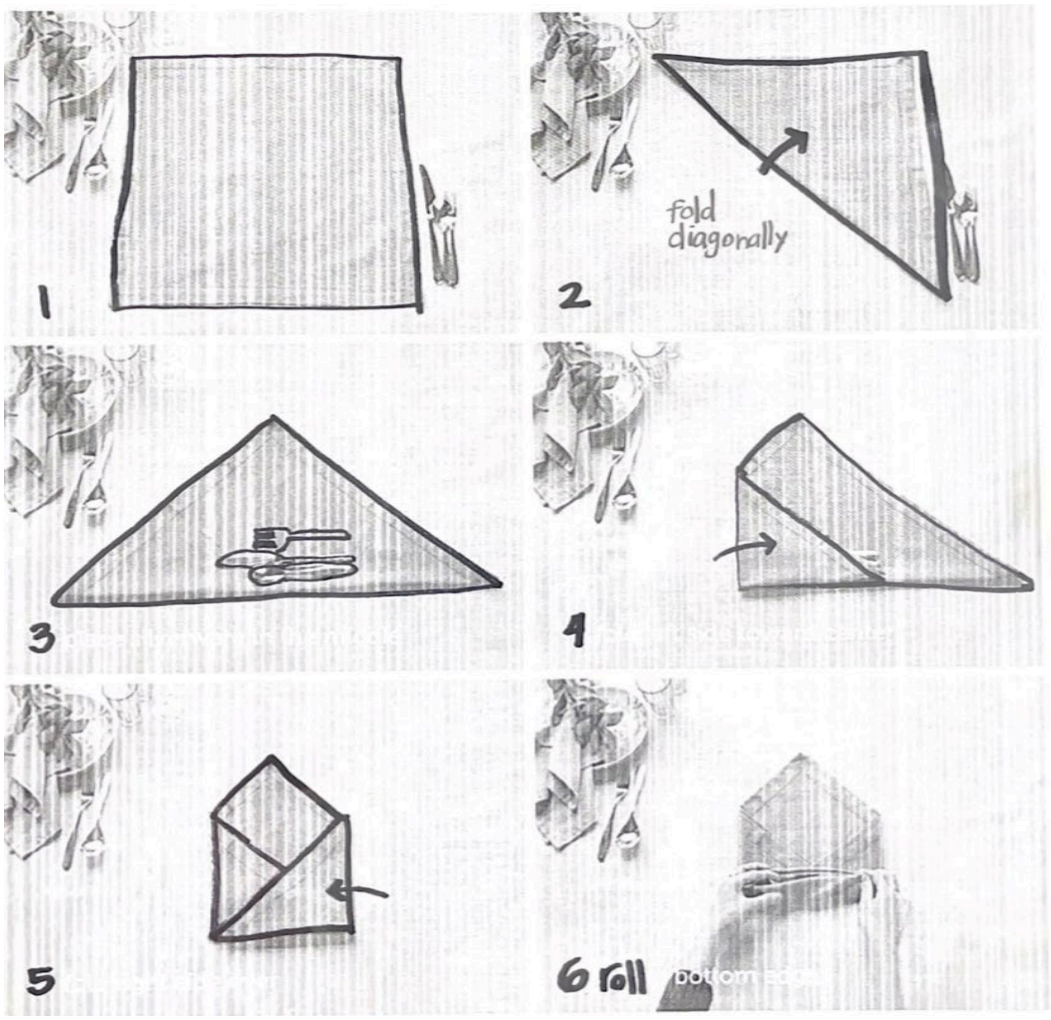
Thank you for your time and feedback!

Appendix D


Please
help fold
the
laundry.


Flower
Arranging Kit
Dough Design Kit

Appendix E


1
2
fold
diagonally
3
4
5
6 roll