The Effects of Montessori Methods on Agitation and Self-Feeding in Individuals with Dementia: A Literature Review.

by

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Dedication

Mom and Dad – Thank you for forcing me on to the train two years ago, without that push I would not have experienced this nor would I have written this. I love you guys for that.

Matthew – Thank you for pausing your video games long enough to listen to me whine about how tedious this process has been. I love you.

Grandma and Grandpa John, Raya, and Quinn – Thank you for loving me and supporting me … … and to Tanner and Kya for doing it from across the rainbow bridge.
Abstract

Dementia is not a healthy part of aging. However, it is a disease that is becoming more prevalent within the geriatric population and can affect people as young as 45 years old. As a person’s age increases, their ability to care for themselves decreases. Most long-term care homes become residence to many people with dementia as many families are not able to provide care for their loved one with dementia. It is important that individuals who live in long-term care homes are engaged and stimulated by activities. Montessori methods are becoming utilized more within long-term care home especially by those homes that care for individuals with dementia. The purpose of this thesis was to review literature and studies that examined the use of Montessori methods in dementia care to manage agitated behaviours and preserve self-feeding skills. Montessori methods are sensory activities that are used to engage individuals in learning new skills or maintaining skills that they have already acquired. Montessori activities are used in many ways within the geriatric population; to improve quality of life, to provide meaningful activities, and to maintain a variety of declining skills. The literature that was selected consisted of case studies and meta-analyses. It was found that even though Montessori methods cannot bring back self-feeding skills, the activities are successful tools that can help the individual preserve the skill (Lin et al., 2011). The literature was convincing and demonstrated that Montessori methods can be utilized to provide more independence at meal time and relieve agitation when it occurs. This literature review not only supported the use of Montessori methods with individuals with dementia to ameliorate self-feeding and to decrease agitation, but also support for techniques to increase engagement in meaningful activities. More research is required to determine whether there are long-term effects of applying Montessori methods at the beginning of the cognitive decline.
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Chapter I: Introduction

As a person ages they may experience some changes associated with aging. Common changes include increased forgetfulness which may result, for example, in a person forgetting to turn off the stove after use, forgetting to pay a bill, or misplacing items every once in a while (Alzheimer’s Association, 2018). However, these changes are considered abnormal when they become intense and begin to challenge the way a person lives their everyday life. Changes that may be considered abnormal to aging include frequently forgetting the month or day, losing an object and being unable to retrace the steps to find it, and losing the ability to hold a conversation. The Alzheimer’s Association (2018) states that these are all signs of dementia and should be taken seriously when they arise.

Dementia is an umbrella term that can be described as a decline in mental processes. Specifically, these decreases in mental processes can lead to weaknesses in performing everyday tasks (such as eating and appetite), declines in short- and long-term memory as well as decision making, and changes in personality and behaviour patterns such as agitation and poor emotional regulation (Alzheimer’s Association, 2018). There are many different types of dementia. The most common types are Alzheimer’s disease, vascular dementia, and dementia with Lewy bodies (Wong, Gilmour, & Ramage-Morin, 2016). Although dementia is not part of healthy aging, roughly 12% of individuals aged 45 who are placed in a long-term care home (LTCH) have a diagnosis of dementia. At the age of 85 that percentage is over quadrupled with 56% of individuals receiving a diagnosis of dementia (Wong et al., 2016). With the prevalence of dementia being so high in older individuals, it is important that the individuals are able to engage in different activities that can improve their quality of life.

The Montessori method focuses on sensory activities that engage individuals in learning new skills or maintaining skills they already know (Saint-Elizabeth, 2018). The focus of using Montessori methods with individuals with dementia is on supporting skills that may have brought them joy in the past like folding laundry or hammering nails. This method of learning and maintaining skills can be applied to many areas both within and outside of LTCH settings. It can be effective in preserving self-feeding skills and aiding with agitation in individuals with dementia (Van der Ploeg & O’Connor, 2010). Bunn et al. (2016) mentioned that self-feeding can be one of the first skills to decline with dementia. They also noted that losing skills that were once easy to perform can increase agitation levels. It is important for people working within the geriatric population to utilize interventions that incorporate skills the population is capable of completing with little to no help and allow them to preserve independence for as long as possible.

A care giver or family member may experience stress while trying to provide for a person with dementia. This stress can stem from many things such as not being able to communicate needs effectively back and forth due to the cognitive decline (Ducak, Denton, & Elliot, 2018). Therefore, it is important to find a way to reduce the stress care givers and family members may experience. Isaia et al. (2013) mentioned that developing a better knowledge surrounding what dementia is, how to help an individual succeed with the diagnosis, and techniques that can increase their joy in life can help reduce stress in both the caregiver or family member as well as the person with dementia. The Montessori method can also be beneficial for care givers as it may alleviate some stress knowing that there is a simple intervention that can be used on individuals with dementia to help them improve their everyday life. The engagement in the Montessori method can ensure care givers and family members that the person with dementia is engaging in
meaningful activities while also bonding with them. While the methods could be used to alleviate caregiver or family stress, Montessori methods can also be useful in reducing agitation and maintaining self-feeding skills in people with dementia.

**Overview of The Montessori Method**

The Montessori method was invented by Dr. Maria Montessori and focused on engaging children in guided sensory and motor activities to build framework for future knowledge (Rathunde, 2001). The activities that the children engage in are developmentally appropriate and require little to no guidance to complete. Having a child-centered approach to actively teach children allows for the children to grow educationally as they age mentally (Rathunde, 2001). The guided play that encompasses Montessori education allows the child to build framework for future abilities through instruction and allows them to still develop independence. Recently, there has been an increase in use of the Montessori education in areas other than preschool. For the purpose of this literature, the terms ‘Montessori education’, ‘Montessori methods’, ‘Montessori programming’, ‘Montessori activities’ and ‘Montessori learning’ will be used synonymously. Montessori learning can be used with all populations and all ability types as the activities are constructed to fit the person and their abilities (Lilliard, 2013). Montessori methods work well for people with dementia as the activities focus on engaging them in familiar activities such as folding laundry, hammering nails, pipe fitting, and many more household activities which can be comforting in a confusing time (Huntsman, 2014). By engaging in these activities, the person can preserve any lasting long-term memories associated with the activity (Huntsman, 2014). The independence and personalization that is associated with Montessori methods, along with the familiarity of the task at hand can provide some comfort and reduce agitation in a person (Van der Ploeg & O’Connor, 2010).

In summary, this literature will review what the Montessori method is and how its use can be effective with the geriatric population, more specifically for those with dementia. The literature will also discuss how Montessori methods can reduce care giver/family member stress for those who have clients or family living with dementia. Finally, the use of Montessori methods to reduce agitation and preserve self-feeding will be examined. This thesis will have five sections. The first section to follow, and the second chapter of this thesis will be the literature review. This chapter explores three main sections. The first section of the literature review will provide an explanation of Montessori methods and its history. Included in this section will be an explanation of dementia, how Montessori methods are used within LTCH, how to structure a Montessori activity kit, and the benefits of engaging residents in Montessori learning. The second section of the literature review will discuss in detail how Montessori methods can be beneficial in preserving self-feeding in people with dementia. The third section of the literature review will review pharmacological and non-pharmacological interventions that can be used when people with dementia exhibit agitated behaviours. This section will also discuss the use of Montessori methods to manage agitated behaviours. The final portion of the literature review will touch upon care giver/ family member stress that can be created from caring for people with dementia and how Montessori methods can alleviate some stress. The third chapter will be the methods section. In the methods section, the criteria that the articles must meet in order to be included in this paper will be discussed. The databases from which the articles were chosen and the exclusion criteria will be discussed. The fourth chapter of this thesis will be the results. In this chapter results from the literature review will be analyzed and summarized. The fifth and final chapter of the thesis will be the discussion. This chapter will
provide suggestions and recommendations to readers, discuss any limitations, and explore how this thesis can contribute to the field of behavioural psychology. To completely summarize all findings a table will be created and included as an appendix to highlight the method and results of each article used in this thesis.
Chapter II: Literature Review

Montessori Methods and Dementia

The Montessori method is a person-centered learning approach, originally created for educating school aged children, that focuses on the individual acquiring skills through independent task completion (Canadian Council of Montessori Administrators; CCMA, 2018). In schools, the use of Montessori methods allows for the student to engage meaningfully in activities that aid in establishing the student’s social and cognitive skills, emotional growth, and coordination through developmentally appropriate activities that lead to achieving academic goals (CCMA, 2018). Rathunde (2001) noted that Maria Montessori, the developer of the Montessori Method in the 1900s, had understood that children need sensory and motor activities to succeed on their academic journey. It was through this viewpoint that the Montessori method was created.

In the late 1990s, Dr. Cameron Camp adapted the application of Montessori methods to be used with people with dementia (Sheppard, McArthur, & Hitzig, 2015). This adaptation incorporated the principles of dementia care that reflect those of Montessori methods. Montessori learning for school aged children and dementia care are both governed the person, focused on evoking positive and meaningful interactions through stimulation of the cognition and focused on the person’s abilities rather than disabilities with an interest in building on skills that are already present (Warchol, 2015). With the prevalence of dementia rising within our society, Warchol (2015) discussed how society needs to accommodate to those living with dementia not only within a LTCH but also outside in the community. Warchol completed a review of best practices that should be utilized with this vulnerable population and allow for the individuals to engage in opportunities to preserve their declining abilities (Warchol, 2015). Warchol discussed three components that an organization should follow when providing services to those with dementia. The components focus on the person as a whole and should be able to provide a community with a sense of meaning, allow for choices, and be fun. The activities designed for the individuals should be designed in a way that allows the person to complete them with another, and provide respect to preferences (Warchol, 2015). Putting these best practices to work can allow for others to relate to the person behind the illness.

Using Montessori Activity Kits

Montessori activity kits are boxes that are created to utilize hands on skills to complete specific activities or tasks. Each kit has specific materials tailored to an activity that can stimulate and engage the person doing it (i.e. socks and towels for folding laundry). There are guidelines that need to be followed when creating Montessori kits to ensure they follow the principles of the Montessori Approach in Dementia Care and provide therapeutic results. The materials that are included should be everyday tools that can be manipulated easily by the person completing the activity. Preferences and interests of the person should be matched to the activity as well as their skill level and past experiences. The activities should be adaptable to different cognitive and physical abilities and be able to be simplified. Additionally, the activities should range from simple to complex and gradually increase if the person’s abilities allow. Finally, someone should model the activity prior to the individual being asked to complete it. Modelling the activity allows for the person to see how to correctly complete the task and build a repertoire of behavioral skills to complete the task in the future (Kindermann, 2018).
To engage people in the activities, a shelf with all the labelled activity kits should be placed in an easily accessed area. This will allow the individuals to browse and choose an activity. Before the activities begin, the room in which the activities will take place should be quiet and have minimal distractions. When using Montessori kits in groups, an ideal number of participants is four however, some kits may only be designed for one-on-one work (Kindermann, 2018). While the individual is completing the activity, encouragement and motivation to enjoy and engage in the activity should be the focus rather than the outcome of the activity. The facilitator should be there to provide minimal guidance, as the participant’s skills and abilities should match with their activity. As long as the participant is engaging strongly, minimal guidance should be provided. After the participant has finished with the activity, the facilitator should thank them for their time and invite them to participate in another session in the future (Kindermann, 2018).

Activities more commonly seen include sorting colors of different objects, matching shapes or colors to their respective slot, pairing or sorting articles of clothing, and sensory boxes. Sensory boxes can include tasks such as “hard or soft”, distinguishing between the hard or soft item then sorting them into their respective labels, or excavating buttons in a pile of sand and placing the buttons in boxes labelled “small”, “medium”, or “large” (Kindermann, 2018).

Montessori Programming in Long-Term Care Homes

When it comes to programming for people with dementia in LTCHs, Campo & Chaudhury (2012 as cited in Hitzig, 2017) stated that it is hard to provide activities that are meaningful, effective, and allow for positive social interactions. They explained this difficulty is due to the amount of effort required from all parties. Effort is needed from the staff within the home, the person with dementia, and the family members who are around frequently. Engagement from the staff and family members is essential because without external sources of guidance there is no guarantee that the person will immerse themselves in the activities on their own. Hitzig (2017) reported that a recent systematic review of Montessori methods found that participating in Montessori activities can improve one’s positive sensations, emotions, and overall affect. In their systematic review, Sheppard et al. (2015) reviewed ten studies examining the effect of Montessori activities on positive sensations, emotions, and affect. They reported that there is evidence that Montessori activities are beneficial. However, they noted that the positive reactions were stronger after three to six months of engaging in the activities (Sheppard et al., 2015).

Ducak & Denton (2018) conducted a survey regarding recreation staff and multidisciplinary consultants’ perceptions of factors that influence the implementation of Montessori methods in LTCHs. Ducak & Denton based their study on the political economy of aging framework, which suggests that there are connections between individuals, community, institutions and society that affect aging policies. The political economy can determine the distribution of resources within the community and institutions for the geriatric population. Thus, the political economy would also determine how and when Montessori methods are implemented within a LTCH. The recreation staff and multidisciplinary consultants were interviewed and discussed the many themes that can influence the implementation of Montessori methods within LTCHs. Some limiting factors included “regulating and funding medical practices” (p.17). The interviewees discussed this as a limitation because there are many regulations put in place by different Ministries that gives precedence to providing medical care instead of providing for the resident’s quality of life, such as engaging in meaningful activities. Following the regulations of
the Ministries ensures funding for the home (Ducak & Denton, 2018). A participant discussed how encouragement for engaging the residents in Montessori methods was minimal due to this limiting factor and people not wanting to step outside of regulations. However, an enabling factor for implementation of Montessori methods was culture change. This was discussed as the ability to change from large programming to more individualized groups because it was recognized that smaller groups fit the needs of their residents better (Ducak & Denton, 2018). A second enabling factor was educating staff and family members of the benefits of utilizing Montessori methods when resistance to change was noticed within the facility. Montessori Learning for Dementia care workshops were provided to staff and families were able to be educated through one-on-one or groups meetings within the LTCH.

Benefits of Engaging in Montessori Methods

Montessori methods for dementia have aimed to including activities that require participants to recall facts or knowledge to complete activity tasks as this may make a person feel upset if they cannot complete the task correctly. Instead the focus is on a single action of completing the task (Blackman, 2012). When a person with dementia is asked to complete a task that focuses on the procedural memory, such as folding laundry, they are required to utilize their action repertoire calling on skills they already have to complete the task. This may allow for the person to connect with the world around them and provide them with the tools to contribute to society in a new role (Blackman, 2012). Many Montessori activities are aimed at tasks that would have once brought joy to the individual, such as hammering nails, coloring, pipe fitting, and listening to older songs. Ducak & Denton (2018) examined enabling factors that encouraged caregivers to participate in Montessori activities with their residents. These factors resulted in positive outcomes for the study. The most prevalent positive outcome that they found was the “(re)connection of people and passions” (p. 24). Many participants were reported building new connections with residents as well as creating more meaningful ones with other residents. It was also reported that family members were also able to build on their relationships with their loved ones through the use of the Montessori activity kits.

Huntsman (2014) suggested that the positive emotions that come from long-term memories associated with the activities that once brought the person joy, may allow the individual to connect with those distant memories again and find themselves in a world they are getting lost in. Huntsman discussed how a main goal in Montessori learning is to provide the individual with many opportunities to engage their senses and with doing this the person will have a greater chance at reconnecting with their world. The research has suggested that the more sensory involvement a person has, such as physical or musical, the greater ability they have at experiencing positive emotions they may have lost the ability to feel (Huntsman, 2014). Recreating positive, familiar events from the past through Montessori kits, physical activities, or music can bring about the positive emotions that once accompanied those memories. Huntsman also discussed the positive outcome of having family members complete the activities with their loved one. Engaging in Montessori methods with a loved one can allow for meaningful relationships to be built or rebuilt while still having the aspect of familiarity. This can allow for both parties to find comfort in their new reality.

Similarly, Wegerer (2017) stated that familiarity of surroundings or activities and organization can limit the amount of stress and anxiety a person may feel. This can also lead to more positive affect and provide a sense of belonging to their environment. Wegerer also stated that providing people with familiarity within their home or during activities can allow for a sense
of personal control which can become positive thing for people. Since Montessori activities are created based on tasks people have enjoyed in the past, engaging in the tasks can bring a sense of familiarity which in turn can be comforting. If a person feels in control of their situation, they may be more inclined to take part in activities and social interactions which in turn can create positive emotions and meaningful interactions.

Both Huntsman (2014) and Wegerer (2017) supported the use of Montessori activities by demonstrating that when they are designed to mimic past experiences or familiar situations the activities can help a person encounter the same positive emotions that were once felt. The individual can begin to feel a sense of control in those situations and utilize it in a world they are slowly losing control of.

**Montessori Methods and Self-Feeding Skills**

The risk of malnutrition in people with dementia is higher than those without dementia (Bunn et al., 2016). People with dementia risk losing nutrition due to many reasons such as not remembering to eat, not being able to feed themselves and becoming dependent on staff to feed them, or not feeling well enough to eat. In normal aging, self-feeding is one of the last skills to decline (Lin et al., 2011). Generally, a healthy elderly person may forget to eat but then feed themselves as soon as they realize they are hungry. This is not the case for a person with dementia. The ability to self-feed declines quicker because of the decline in mental processes that come with dementia (Lin et al., 2011). The person may completely forget to eat but they also start to lose the ability to feed themselves. In part the decline in self-feeding can be seen from lack of concentration, attention, and coordination (Lin et al., 2011). A staple in dementia care is independence and as such, providing people with the proper tools in order to keep independence is important.

Lin et al. (2011) utilized a crossover design to explore the effects of Montessori methods on self-feeding skills. They contrasted the pre- and post-test mean differences between the Montessori intervention group and the regular activity group for three factors; results on the Edinburgh Feeding Evaluation in Dementia scale (EdFED), feeding difficulty, and nurse intervention for feeding. In all domains, Lin et al. found there were significant differences between pre- and post-test results for the Montessori intervention group. They discovered that for the regular activity group the differences between pre- and post-test were very low. Lin et al. found the differences for self-feeding time and need for physical assistance to be significant for the Montessori intervention group. It is notable to discuss that most, if not all, of these changes can be credited towards the use of the Montessori methods. All changes can be credited towards Montessori methods because both participant groups took part in each treatment condition and the results produced in the Montessori intervention group were significant for both groups. Utilizing these tools have been shown to increase coordination and help work on already existing skills that the person would already have in their repertoire. The Montessori activity specifically mirrored hand movements that involve eating. In their study, the participants in the Montessori intervention group participated in activities that had them squeezing objects, scooping, pouring, and utilizing hand-eye coordination (Lin et al., 2011). Although this study yielded significant results to show that Montessori methods can aid in self-feeding and lower assistance needed at meal time, Lin et al. mentioned that this does not provide enough evidence that one may be able to regain self-feeding independence if it is already lost. However, they acknowledged that Montessori methods can help preserve and maintain the skills for a period of time.
In a systematic review of interventions used to increase food intake with people with dementia, Bunn et al. (2016) found similar results. The authors reviewed a total of 51 studies on interventions used with people with dementia in long term care homes and reported on their findings. There were four domains that were reviewed; environment and service, education or training, behavioural interventions, and exercise interventions.

In a comparison of 12 studies in the domain of behavioural interventions, Coyne (1988 as cited in Bunn et al., 2016) reported an increase in self-feeding and in the intake of foods. These changes were credited to verbal prompts and positive reinforcement given by the staff in a LTCH. Similarly, Van Ort (1995 as cited in Bunn et al., 2016) assessed the use of behaviour guidance and systematic prompting over a 4-week time period and found that the residents self-feeding increased. However, Eaton (1986 as cited in Bunn et al., 2016) found that the use of physical prompts was more effective in increasing food intake. In another study, Santo Pietro (1998 as cited in Bunn et al., 2016) examined the effects of having people with dementia prepare and clean up after the meals in a breakfast club. It was found that after 3 months, the intervention group was more interested in participating, could recall names of those within the club, and saw a reduction in wandering from the breakfast club. The insight that the use of behavioural interventions has given is important. In an actual setting, many times people are not finishing their meals because they need help to remain at the table and encouragement to continue to eat even though they seem full or disinterested.

In another study, Wu et al. (2013) utilized spaced retrieval and Montessori methods to increase eating abilities in males with dementia. Spaced retrieval is a technique in which participants are asked to recall information over periods of time, with the intervals progressively getting longer. This technique calls on the procedural memory which is mostly intact in those with dementia. Studying a combination of spaced retrieval and Montessori methods has provided more insight into a person’s ability to unconsciously recall motor skill abilities when they are declining. Wu et al. argued that by using the repetitive nature of both spaced retrieval and Montessori methods, the participants would be able to establish a good foundation to recall the proper movements needed to be executed at each meal time. They did find that when breaking down the skills into sequential movements and implementing them during regular activity times there was an overall decrease in difficulties and an increase in self-feeding skills (Wu et al., 2013).

Similarly, Lin et al. (2010) also found similar results when spaced retrieval was combined with Montessori methods in an effort to decrease eating difficulties and increase self-feeding. They also discussed how the intervention group’s positive results could be credited to a development of positive feelings towards eating and the dining room environment. Engaging in the Montessori methods tailored towards eating gave the residents a more relaxed and enjoyable affect towards eating (Lin et al., 2010).

**Assessments of Self-Feeding**

Many studies have used measures to assess participants nutrition levels, food intake, eating difficulties, and level of assistance needed during mealtimes. Many studies, more specifically Lin et al (2011), Lin et al. (2010), Bunn at al. (2016), and Wu at al. (2013) utilized either the Edinburg Feeding Evaluation in Dementia Scale (EdFED) or the Mini-Nutritional Assessment (MNA) to compare participant information at baseline and post-study. The measures, such as the EdFED or MNA, provide valuable information when looking into feeding abilities and food
intake. Using measures like these when authors conduct studies with the main interest being in feeding skills and abilities, can provide the examiner with important information pre- and post-study.

**Edinburg Feeding Evaluation in Dementia Scale.** The Edinburg Feeding Evaluation in Dementia (EdFED; Appendix A; Watson, 1994d) scale was developed to measure feeding problems and assess eating habits in people with late-stage dementia. It is the only scale that is deemed ethical to be used with people with dementia and is also considered valid for use within this population (Watson, 1993). The scale has been translated into Chinese and Italian (Bagnasco et al., 2015). The Chinese version was found to have an intraclass correlation coefficient agreement of 0.85 to 0.90 with the English version (Stockdell & Amella, 2008). This means that the test retest reliability of the EdFED demonstrates excellent reliability and can produce reliable results time after time. This scale is comprised of 11-items and considers the behaviours one may exhibit while eating. Behaviours such as refusing to eat when prompted or dropping food are looked at. This instrument can be used by trained nursing staff to determine how much help a person may need at feeding time. The results from the measure allows the care team to create an effective nutritional plan for the person (Stockdell & Amella, 2008).

**Mini-Nutritional Assessment.** The Mini-Nutritional Assessment (MNA; Appendix C) is an assessment that can be used to screen for a person’s risk of malnutrition. The results provide an evaluation for the elderly person’s outcome, nutritional plan and intervention, educational programs, and physical programs. Utilizing this tool early can provide stepping stones for a nutritional intervention that can target specific areas of need for the person. This test is non-invasive and validated to be used within the geriatric population especially in the domain of dementia.

When administering the MNA a trained professional must follow this procedure - use the mini-nutritional assessment short form (MNA-SF) to screen for the risk of malnutrition, then move on to the full version if needed. The MNA is an 18-item questionnaire that helps identify systematic measurements of the person’s body (BMI, weight loss, and circumference of arms and legs) for pre- and post-test use. Once the systematic measurements are taken the caregiver or individual is asked questions pertaining to personal nutrition facts. These questions gather information on how many meals the person consumes in a day and their intake of food and fluid. A global assessment interested in medications, diagnoses, and overall lifestyle is also taken into account. Finally, the MNA finishes with a self-assessment describing their perceived nutrition and health. The MNA-SF is exactly half of the MNA. The MNA correlates well with objective indicators of nutritional status and with clinical assessments. This assessment can predict hospital stays in elderly patients and can predict the malnutrition outcome of people living within homes. This measure predicted that approximately 37% of people living within LTCHs will become malnourished (Guigoz, Lauque, & Vellas. 2002).

**Montessori Methods and Agitation**

There are a few behavioural issues that can be associated with dementia. Agitation can be characterized by verbal, non-verbal, or physical aggressions that do not appear to be stemming from the current situation from an outsider’s point of view (Cohen-Mansfield, 2008). Agitated behaviours can grow from many areas of unmet needs a person with dementia may be
experiencing or think they are experiencing (Cohen-Mansfield, 2008). Behaviours that are thought to be used to grab the attention of others such as yelling or physically hitting objects are common. There are many types of interventions that can be used to manage agitation in people with dementia. Interventions range from pharmacological such as anti-depressants or anti-psychotics, to non-pharmacological interventions like aromatherapy, and behavioural interventions.

**Pharmacological and Non-Pharmacological Interventions**

Ujkaj (2015) outlined the limits of implementing and maintaining non-pharmacological interventions. Many times, LTCH units that utilize the non-pharmacological interventions, such as Montessori methods, do not have the resources to maintain continuous use. Factors such as understaffing or lack of education and training relating to the intervention can hinder the use of these methods. Ujkaj also mentioned that pharmacological methods should only be used when necessary; in cases of harm to oneself or others. There are adverse effects that can come of using drugs to treat agitation. Medications may also cause other unwanted illnesses or side effects, such as trembling resembling Parkinsons disease (Ujkaj, 2015). The relief of the agitated behaviours is generally short lived and does not provide relief to all aspects of the behaviour.

In comparison, Small (2014) found mixed results for treatments for those with dementia and agitated behaviours. Although anti-psychotics, anti-depressants, and anti-convulsants can and have been used to manage agitated behaviour does not mean that they should be. Much like Ujkaj, Small argued that there are no clear results demonstrating that medications can help manage agitated behaviours long term without causing harmful effects. He also noted the use of medication could possibly increase the person’s risk for other unwanted health issues. However, Small reported on a study done by Porsteinsson et al. (2014). Porsteinsson et al. studied whether the use of drugs and psychosocial interventions would yield better results than only drugs. Their results were statistically significant ($P=.04$) demonstrating that the use of drugs combined with psychosocial interventions can lower agitation in people with dementia. There are benefits of using non-pharmacological interventions to manage agitated behaviours in people with dementia, however, there are also disadvantages. Most non-pharmacological interventions are person-centered (Cohen-Mansfield, 2008) and require that the person be self-driven to complete them. This could lead to the person not receiving the most out of the intervention.

**Using Montessori Methods to Manage Agitation**

Van der Ploeg et al., (2013) investigated the use of Montessori methods combined with one-on-one interactions during the activity to manage agitation. They wanted to probe this combination because there is strong evidence that shows interventions work better when they are personalized. The authors mentioned that these types of interventions work best when they are tailored to the person’s preferred hobby. Having one-on-one interactions throughout the whole process would allow for the proper tools to be administered to create an activity that is personalized properly. When instructing to a group of people it is hard to tailor the pace of activity, length, speed of instruction, and difficulty of the activity. However, with the one-on-one interactions, the aforementioned areas can be manipulated to fit the need of the person. In their study, Van der Ploeg et al. concluded that the agitation levels in the Montessori group decreased by 50% and only by 42% in the control group. It should be noted that although the control group did not engage in personalized activities, their agitation levels still decreased from baseline. This
demonstrated that engaging in any sort of meaningful activity or social interaction, individualized or not, can provide some sort of relief for the agitated person (Van der Ploeg et al., 2013).

Another important point Van der Ploeg et al. (2013) discussed involved language. Since most Montessori methods do not rely heavily on verbal instruction and can be demonstrated easily through modelling, people of all language background and fluencies can participate in and benefit from the same activity. Individualized activities with minimal language requirements play an important role in achieving stimulation needs of those with dementia (Van der Ploeg et al., 2013). Although the results for overall agitation were close in both the Montessori group and the control group, the reduction for those who had lost their fluency in their language was far more significant in the Montessori group than the control group (Van der Ploeg, 2013). The authors noted that this suggests that personalization of activities requiring little language skills do in fact better meet the stimulation and social interaction needs of a person with dementia.

Mohler et al. (2018) offered insight into the use of individualized activities to reduce agitation. They conducted a meta-analysis of over 7 studies with nearly 960 participants. The meta-analysis explored the use of individualized activities in randomized controlled trials and controlled clinical trials for people with dementia. The control groups needed to receive usual daily care or a control intervention (Mohler et al., 2018). Unfortunately, this meta-analysis did not find any significant results. The authors only reported “low-quality evidence” in all areas explored. This may be because of a lack of high-quality research done on Montessori methods and agitation. Mohler et al. (2018) mentioned that researching further into “stage” specific activities for those with dementia may find positive results. However, the nature of Montessori methods for dementia allows for an individual to be able to complete the task no matter how progressed their dementia is. This article provides insight into other non-pharmacological interventions but does not provide support for the use Montessori methods as the behavioural intervention.

Assessing Effectiveness of Montessori Methods

Below are two measures that are commonly used to assess agitated behaviours and cognitive deficits that may lead to problems behaviours in those with dementia. These measures can be helpful when assessing the effectiveness Montessori methods can have on a person’s agitation. The Cohen-Mansfield Agitation Inventory provides a log to track changes in agitated behaviour, including when the behaviour occurs and does not occur. The Standardized Mini-Mental State Examination provides an outlook on the person’s cognitive impairments which in turn can give insight into their problem behaviours. Both measures can be administered pre- and post-study to track the changes in the person’s behaviour in order to evaluate the effectiveness of Montessori methods that were utilized.

**Cohen-Mansfield Agitation Inventory.** The Cohen-Mansfield Agitation Inventory (CMAI; Appendix D; Cohen-Mansfield, 1991) is a questionnaire that examines 29 behaviours caused by agitation. The examination is administered by a trained nurse or a caregiver. The inventory scale reports on the frequency of these behaviours on a 7-point scale from never (1) to several times an hour (7) of the previous two weeks. The behaviours that are exhibited are then scored on a 5-point scale of disruptiveness to determine the degree to which they disrupt. The CMAI can be used to track behaviours of interest and log whether a particular intervention is
working. The inter-rater agreement rates of this tool range from .80 to .92, which considers the tool to be reliable.

**Standardized Mini-Mental State Examination.** The Standardized Mini-Mental State Examination (SMMSE; Appendix E; Molloy et al., 1997) is used in many studies that explore cognitive deficits. It was first created by Folstein et al. in 1975 but had few instructions on how to administer the test, leaving it up to the discretion of the administrator. Molloy et al. created guidelines of how to properly administer the test each time, increasing the reliability of the test. This tool is commonly used as a screening tool for dementia or other cognitive impairments particularly in older adults. The scale is considered ‘mini’ because it includes twenty questions and requires ten minutes or less to complete. The scale focuses primarily on cognitive features of a person’s mental function. The areas examined are orientation (year, day, time, etc.) and cognition, including problem solving.

When conducting the examination, each question can only be asked a maximum of three times before they receive a score of zero. If the person answers incorrectly, the question is scored zero. The raters are trained how to score each response and there is a maximum score of 5 for each question. The guidelines also include verbatim what the administrator is supposed to say, for example to commence the examination they must say “I am going to ask you some questions and give you some problems to solve. Please try to answer as best you can.” It is suggested to not use this tool alone but in combination with others.

**Dementia and Caregiver Stress**

Family members may have emotional reactions when their loved one’s experience outbursts due to agitation. Becoming educated on why their loved one is experiencing agitation or how to respond to it can help relieve some stress. Cohen-Mansfield (2008) discussed how Sourial et al. (2001) conducted a study out of Montreal and found that agitated behaviours and caregiver stress are significantly correlated. If caregivers and family members learn techniques to use when agitation occurs, they would likely be able to reduce their own stress.

Van der Ploeg et al. (2012) discussed how having experienced volunteers come into LTCHs or facilities that are home to people with dementia can relieve stress the staff and caregivers may experience. Allowing the volunteers to engage in activities, such as Montessori activities, with people who exhibit less intense agitated behaviours can be beneficial. This removes a few people from the care of the caregivers and allows them to focus more on the residents who need extra care. This lowers the caregivers’ stress and also allows for the residents to engage meaningfully in activities and have pro-social interactions. These volunteers are valuable resources in areas that are understaffed or have limited time.

Van der Ploeg et al. (2013), stated that the use of Montessori activities during family visits can have a calming sense, relieve boredom, and provide positive social interactions with others. Even without engaging in meaningful conversations, utilizing these activities can make family time more meaningful (Van der Ploeg et al., 2013).

However, Mitrani et al. (2006) stated that although the burden of a close family member being diagnosed with a rapidly declining cognitive impairment is stressful in itself, there are other factors that can predispose a family to stress. Factors such poor patterns of communication, diminished cohesiveness of partners or family members, lack of adaptability, and little ability to
define clear boundaries are all contributors to family stress through emotional functioning. Mitrani et al. looked at how engaging in meaningful interactions with family members can aid with family stress and help improve bonds through communication. Mitrani et al. conducted a study in which the families were asked to engage in three separate tasks that would evaluate how they handled stress within their network. The families were asked to discuss a recent argument, plan a dinner menu together, and discuss their likes and dislikes about each other. The families were observed using structural family framework. Behaviours such as cohesion, disengagement, conflict resolution, anger, patient hood, and positive affect were all filmed and evaluated. Mitrani et al. discussed how many of these behaviours are observed from stress created within a family network as well as from external, non-direct factors, such as a loved one with dementia. This study is similar to the others in the mode of engaging in meaningful interactions to build on family relations. Although Mitrani et al. did not focus on the agitated behaviours demonstrated by those with dementia, the findings are still relevant to helping build on broken relationships in which most families overtime come to endure with loved ones with dementia.

In summary, this literature review has demonstrated the effects Montessori methods can have on agitated behaviours and self-eating skills in people with dementia. The effects of Montessori methods were demonstrated through analyzing many articles which demonstrated moderate support for the use of Montessori methods to maintain self-feeding skills, reduce agitation, and relieve caregiver or family stress. Although the quantity of evidence used in this literature review was small, the evidence presented many valid studies in which Montessori methods were successful in changing behaviours in people with dementia.
Chapter III: Method

In order to fully understand Montessori methods and their effectiveness on managing agitation and preserving self-feeding skills, a literature review was conducted to explore relevant research. All literature used in this literature review was collected through searches of online databases such as the Queen’s University Online Library Summon Search (PSYCArticles and PSYCinfo) and Google Scholar. A staff member at Providence Manor conducted a search through the Providence Care Online Database and found 8 articles that were subsequently used. Key search terms used to navigate the databases included: dementia, Montessori methods, Montessori activities, feeding, eating, self-feeding, and agitation. These terms yielded similar articles therefore in order to broaden the search the terms: Dr. Camp, dementia care, dementia behaviours, and malnutrition were used.

Article Selection

In order for an article to be included it needed to include data from participants who had been diagnosed with any type of dementia or experience some form of cognitive decline stemming from dementia. The participants also needed to be engaging or have engaged in Montessori learning activities and be over the age of 45 years old. The participants also needed to have agitated characteristics and have problems with feeding, eating, or appetite. The setting in which the data was collected was not important however, articles that included LTCHs were considered first then those including private housing or hospitals were reviewed. There was no specific criteria for the design of studies included. Articles that discussed only Montessori methods were used as they provided insight into the structure of the intervention. Articles that utilized scales such as The Edinburg Feeding in Dementia scale, Mini-nutritional assessment, and Mini Mental State examination were also included, however this was not an inclusion criterion. Articles were excluded if they did not use any form of Montessori methods to manage agitation, aid with self-feeding skills or manage caregiver stress.

Meta-analysis or systematic reviews were searched for as they served as a starting point for the review of many other studies. If a study was found with in the review a search was conducted on Google Scholar for the original copy. Majority of the time a full text version of the study could not be found due to the age of the study being over 20 years old. Therefore, a combination of information was used to support the study. There was no year cut off for the articles used as there was valuable information found in all articles. The articles that were deemed older were used as a secondary source of information rather than a main component. Finally, the results of each study did not matter as an unsuccessful study still yields important and sometimes useful information.

Article Summarization

Approximately 50 articles were searched, and 23 articles were used in the final review. While reading the articles, points that supported the use of Montessori methods for dementia were taken out and analyzed. Quantitative and qualitative measures were also considered when reading through the findings. There was no formula for deciding on was data to utilize, if the author made a valid point that could be expanded on with other literature or be used alongside other literature it was utilized. A chart summarizing each articles methods and results will be included in Appendix F, utilizing a chart will make it easier to find information regarding each individual article.
Chapter IV: Results

The objective of this thesis was to explore the literature relating to the use of Montessori methods to maintain self-feeding skills and agitation in individuals with dementia. After reviewing many studies and literature conducted on the use of Montessori methods it was found that this method can be beneficial in helping maintain self-feeding skills and managing agitation in people with dementia. The results of this study were intended to be reviewed and utilized by LTCHs to evaluate the effectiveness Montessori methods may have within their programming. The literature that was reviewed was placed in a chart in Appendix F to be analyzed quicker, this information should serve as stepping stones for further research done on the importance of Montessori methods in dementia care.

It was found that this thesis did not have much quantitative data. When using qualitative data it only demonstrates that something is effective but it does not demonstrate to what degree that factor is effective. However, there were a few experimental studies that provided quantitative data. The results these studies produced were found to be significant when looking to alter behaviours. Most authors utilized two participant groups that took part in each treatment condition at opposite times. Using a design like this produces reliable results because it takes into account individual factors and if both groups demonstrate a change in the same treatment condition, that condition is most likely useful.

This thesis utilized 36 articles, seven of these articles focused on explaining dementia and what it is. Seven articles were based on Montessori methods, its history, and how it can be used within dementia care. Eight out of 36 articles were research-based and included experimental studies. The setting in which the studies took place varied between nursing homes in Asia or LTCHs in North America. Six of the eight studies had participants who were diagnosed with dementia and were over the age of 70 years old. The remaining two studies involved participants who were working professionals within the nursing home or LTCH and conducted interviews to gather information.

Three of 36 articles used were systematic or scoping reviews. These articles provided a summary of multiple studies that pertained to the use of Montessori methods to manage agitation and preserve self-feeding skills in people with dementia. Six articles were used to gather information on how to create and use a Montessori activity kit. Four out of those six articles noted that it is important to consider the preferences of the people who will be engaging in the activities. Finally, five articles that were looked at utilized different measures such as the EdFED and MMSE. These articles provided insight on the reliability and validity of the measures.
**Chapter V: Discussion**

In this chapter, the implications of the results of this thesis will be discussed. The strengths and limitations will be discussed and an analysis from a multi-level system challenges perspective will also be reviewed from the lens of the client, program, organization, and societal levels. The ideas that this thesis contribute to the field of Behavioural Psychology will be analyzed in the application to Behavioural Psychology section. Finally, suggestions and recommendations on how this topic could be examined in the future will be provided.

**Implications of Results**

Dementia is not a healthy part of aging which is why people over the age of 45 should be concerned when they or a loved one begin to frequently experience the inability to remember the day or month, lose the ability to hold a fluent conversation, and are unable to retrace steps to find forgotten items (Alzheimer’s Association, 2018). A diagnosis of dementia becomes more prevalent with age and as they age the ability of their spouse or their loved one to provide around the clock care for them decreases. People with dementia are being moved into LTCHs in order to receive the care they need. LTCHs can provide meaningful activities to increase their quality of life.

This thesis analyzed and reviewed many studies which can be found summarized in Appendix F. As reviewed in the previous chapter, Montessori methods have demonstrated to provide opportunities for residents to engage in meaningful activities with friends and loved ones, reducing their overall stress and providing a sense of familiarity. These results examined the effects that Montessori methods can have on self-feeding skills and agitation in those with dementia and they provided evidence to suggest that they are beneficial to the quality of life of an individual with dementia. Therefore, professionals and caregivers should invest more time to fully implement this intervention that can allow for their clients for find independence.

Outlined below are the major themes that are important to the research of Montessori methods and dementia. It will follow the structure of the literature review beginning with Montessori methods and dementia, how to structure a Montessori activity kit, Montessori programming within LTCHs, the benefits of engaging in Montessori programming, the use of Montessori methods and self-feeding skills, using pharmacological and non-pharmacological interventions, the use of Montessori methods and agitated behaviours, and Montessori methods and caregiver stress.

**Montessori methods and dementia.** Montessori learning was originally created by Maria Montessori and used with school-aged children. It started by engaging the children in meaningful activities that would allow them to learn through play while still being cognitively stimulated (Rathunde, 2001). It was in the late 1900’s that Dr. Cameron Camp adapted this method to be used with people with dementia. Dr. Camp’s adaptation utilized the meaningful activity aspect of Montessori learning and combined it with the principles of dementia care. Both methods are person-centered with a primary focus of evoking positive and meaningful interactions through cognitive stimulation. The literature discussed that implementing this method allows individuals to engage in opportunities that would preserve their declining abilities.

**Using a Montessori activity.** Providing individualized activities for individuals to complete can be beneficial as it brings back good memories that were associated to the task, this
can increase enjoyment. It was also noted that all kits should be adaptable to many cognition and skill levels, also having the ability to be simplified. The kits should benefit from being able to increase in complexity each time a person completes it. To increase self-driven use, the kits should be in an open area that all residents have access to and decorated with colorful activity boxes to catch their attention (Kindermann, 2018).

**Montessori programming and long-term care homes.** It was found that Montessori programming in long-term care homes are hard to implement because it requires effort from all parties, and without external forces helping those with dementia engage in them, they would not. Ducak & Denton (2018) interviewed many staff working in LTCHs and discussed their take on the policies in place to implement Montessori learning. The themes that stood out most were strict policies that were valued other aspects of care more than quality of life care, staff being afraid to go against policies due to funding, and lack of education staff and families have regarding Montessori methods and dementia. Staff mentioned that implementing Montessori methods requires effort from all staff within the home and it is not always welcomed. However, providing education to staff, caregivers, and family members with regards to Montessori programming would allow them to understand the benefit of engaging residents and increase the methods credibility.

**The benefits to engaging in Montessori programming.** The literature suggested that the more sensory involvement a person has they will have a greater ability to experience positive emotions (Huntsman, 2014). This is said because when a person with dementia engages in Montessori activities, they feel like they are positively contributing to society and reconnecting to their world. Wegerer (2017) also mentioned that when a person with dementia is placed in a familiar and organized environment it can limit the amount of stress and anxiety they feel and increase their sense of personal control. It was also suggested that when family members engage in the activities with their loved ones there are opportunities to rebuild their relationships.

**Montessori methods and self-feeding skills.** Lin et al. (2011) demonstrated that using Montessori methods to engage individuals in activities involving finer motor skills can aid in preserving self-feeding skills. Bunn et al. (2016) reviewed 12 studies and found that engaging in more broad activities such as setting or clearing tables and participating in breakfast clubs, provided participants with the ability to build meaningful relationships while still engaging in activities tailored to mealtime and feeding. Lin et al. (2011) was able to demonstrate a significant increase in self-feeding when participants engaged in activities that required them to mimic movements that are utilized when eating, such as pouring, squeezing, and pinching. Engaging in these activities was shown to also increase coordination, concentration, provide independence, and lower meal time assistance to those participating. It is important to note that although Lin et al. were able to demonstrate that Montessori methods can help preserve self-feeding skills, there is not enough evidence that it can bring back those skill once lost. The literature also indicated that when combined with other techniques such as spaced retrieval, music at meal time, nutrition education there were positive outcomes for preserving the individual’s level of self-feeding skill as well as developing positive feelings towards the dining environment and eating.
Pharmacological and non-pharmacological interventions. The research provided some awareness to the use of pharmacological and non-pharmacological interventions for agitated behaviours that stem from dementia. It was stated that pharmacological interventions should only be used when necessary. However, lower doses of medication combined with behavioural interventions were shown to have some effect on agitation. The use of medications can often leave the person at higher risk for other unwanted health issues and most of the time only provides short-term relief (Ujkaj, 2015). More research is needed to be done on the use of both methods together in order to conclusively determine which is more effective for those with dementia.

Montessori methods and agitated behaviours. The research reviewed suggested that the use of Montessori methods to decrease agitated behaviours works best when paired with one-on-one interactions. This is suggested because the ability to individualize the session is greater when not in a group as the instructor can manipulate each portion correctly. Van der Ploeg et al. (2013) commented on the language abilities of Montessori methods. Their literature demonstrated that since Montessori methods relies on modelling rather than language, people of all language fluencies and backgrounds can participate. This is important as most times agitated outbursts are related to the person not being able affectively communicate their needs and wants. Probing into more stage specific activities and their results could draw more information on the overall effectiveness of Montessori methods to treat agitated behaviours.

Montessori methods and caregiver stress. The literature provided insight to utilizing volunteers within the home to engage low-risk residents in the Montessori activities. Van der Ploeg et al. (2012) explained that having volunteers engage the residents would allow for the caregivers to focus on other residents who exhibit more agitated behaviours and relieve some stress knowing that the lower-risk residents are taken care of and occupied. During family visits, it was stated that engaging in activities with their loved ones can provide a calming sense and provide positive social interactions. It was also noted that families who experience stress when not around their loved one with dementia can still benefit from stress relief when engaging in meaningful activities within their own home. Engaging in meaningful activities with and without the person with dementia is still beneficial.

Strengths and Limitations

Strengths. A main strength of this thesis is that the research narrowed in on the two issues of decreased self-feeding skills and increased agitation that more commonly occur in people with dementia. As self-feeding is one of the last independent skills to decline (Lin et al., 2011) it is important to provide tools that can allow for people with dementia to preserve these. Preserving these skills also allow for an attempt at more independence in a time where they are reliant on others for most tasks. Agitation can stem from an inability to communicate proper needs and this is also an issue that is seen often.

Another strength to the literature that was used is the time span of when most studies were completed. Most research that demonstrated the effectiveness for Montessori methods was completed within the last 8 years. This implies that findings are still relevant to the research being done today with most current research building off of these past studies.
Additionally, this thesis provides LTCHs with insight on this cost-effective intervention. The research indicated that Montessori activity kits can be made from everyday items and do not need to be purchased from a specific supplier. This is beneficial to most LTCHs as some may not receive a lot of funding for recreation purposes. Thus, having a cost-effective and simplistic intervention can be beneficial.

A final strength of this thesis is that it examined an approach to provide meaningful activities to people with dementia in ways that are familiar and enjoyable to them. This was a major strength because many times people within longs sit around with little stimulation but with this information professionals and agencies can move forward and implement these tools to ensure their residents’ have a better quality of life. Montessori methods are self-directed so once the resident is able to engage in the activity by themselves less staff is required to keep the activities going thus having more staff available for the primary care.

Limitations. There were a few limitations to this thesis. The first limitation is that the research does not dive deep enough into all the varying uses the Montessori method has with dementia. It only touched on the benefits of engaging in Montessori activities, the barriers to implementing Montessori methods in long term care homes, the use for self-feeding skills, agitated behaviour, and how it can be of help to reduce caregiver and family stress. There are more areas, such as communication and other life skills, that could be researched and that could also provide more literature for the areas that were discussed in this thesis. Therefore, this should serve as a starting point for readers and researchers.

Due to the fact that this thesis only conducted a literature review, there are limitations to the literature that was used. Some studies that were analyzed may be outdated and cause the findings to be not harmonized with today’s research and application. More research could provide new information with regards to dementia and how it works now. All the studies that were examined here could be revamped with the new findings and possibly produce more sufficient information.

Multi-Level System Challenges

Client level. One challenge to utilizing Montessori methods at the client level may fall with the progression of the disease of the person. Since Montessori methods are partially self-directed, the person should be able to and willing to engage in the activity. If the person who is engaging in Montessori methods has declined rapidly and is unable to complete the activities, they may not be receiving the fullest potential of the activity and may not be engaging meaningfully.

Program level. A challenge that can be seen at the program level is burnout. Ensuring that residents are engaging in Montessori methods can require time and effort that not all staff have due to other factors, such as low staffing and other commitments. Providing service that is above and beyond their duties can be tiring and cause burnout. In contrast, having activity kits such as Montessori kits that are already organized and require little to no set up can also aid with staff burnout.

Organization level. The organizational level has a few challenges, one challenge to providing Montessori methods within the organization lies within the lack of education surrounding the benefits of engaging residents in meaningful activities such as Montessori methods. This challenge can inhibit the use of Montessori methods within LTCHs because if not
all levels of the agency are educated and on board with the implementation of the intervention there will be gaps in service. These gaps can directly affect the residents in a negative manner.

Societal level. At the societal level a challenge that may be seen involves the stigma around Montessori methods. As Montessori learning was originally created for use with children people may be reluctant to engage in these types of activities with adults who have dementia. This stigma may affect the quality of interventions people with dementia may receive as the activities may not be thought of as an inappropriate reflection of their true cognitive abilities. This challenge of society not viewing Montessori methods as an age appropriate tool can negatively impact the funding and implementation of this intervention which can overall affect the individual’s quality of life.

Application to the Behavioural Psychology Field

This thesis provides insight into less intrusive behavioural interventions for people with dementia. It contributed to the field of behavioural psychology through discussing tools that can be utilized to maintain and preserve declining self-feeding skills and aid in managing agitated behaviours in people with dementia. Through this knowledge, professionals can engage clients in personalized behavioural programs that promote independence and require little to no assistance. This is beneficial for the client as they are able to engage in meaningful activities that benefit their overall quality of life. The clients would also be able to build independence and find a sense of control due to Montessori methods being minimally intrusive. Through this research other supports and organizations within the community would be able to see the value in applying Montessori learning to multiple areas and expand application and knowledge of this method.

Suggestions and Recommendations

First, it is recommended that Montessori methods be implemented more often across more settings. Whether it be in LTCHs, hospitals, out in the community, or any place where people with dementia may benefit from them. Implementing more opportunities to engage in Montessori learning would bring more awareness to the importance of it throughout dementia care and also provide more people with the chance to engage in meaningful activities, something that is beneficial to those with dementia. This would also provide a breadth of professionals from all interdisciplinary teams with the skills to create, implement, and advocate for this new intervention.

Secondly, in order to implement Montessori methods in more settings further research is needed. It is important to research the effects Montessori methods have on all areas of dementia, such as cognition or isolation. While Montessori methods were shown to be useful with self-feeding and agitation those are only a couple of issues seen in those with dementia. Researching more in-depth areas would provide more of an understanding on ‘how’ Montessori methods help and why they should be continuously used.

Thirdly, professionals in all settings should be trained on how to properly implement and engage residents in Montessori activities. This is the most important recommendation because most times the individual will not voluntarily engage in the activity and will need guidance to commence it. Without someone there to take out the kits and engage everyone the Montessori kits render useless.

Recommendations for future research. It is recommended that future research investigate longitudinal studies on the effects and usage of Montessori methods. These types of
studies should be created to detail the long-term effects Montessori methods can have if implemented early on. It is also important to create new studies contingent on the new research scientist in the field of dementia detect as it is continuously evolving, and new pharmacological and non-pharmacological interventions are being tested.
References


Appendices

Appendix A: Edinburgh Feeding Evaluation in Dementia Scale

Score answers to questions 1-10: never (0), sometimes (1), often (2)
1. Does the patient require close supervision while feeding? _______
2. Does the patient require physical help with feeding? _______
3. Is there spillage while feeding? _______
4. Does the patient tend to leave food on the plate at the end of the meal? _______
5. Does the patient ever refuse to eat? _______
6. Does the patient turn his head away while being fed? _______
7. Does the patient refuse to open his mouth? _______
8. Does the patient spit out his food? _______
9. Does the patient leave his mouth open allowing food to drop out? _______
10. Does the patient refuse to swallow? _______

Total Score = _______

(Total scores range from 0 to 20, with 20 being the most serious. Scores can be used to track change.)

11. Indicate appropriate level of assistance required by patient: supportive-educative; partly compensatory; wholly compensatory

* Used with permission of author, R. Watson.

Other Essential Assessment Guidelines

Assessing Pre-Hospital Eating and Feeding Behaviors: The nurse should ask the family or other caregivers whether the patient usually feeds him- or herself and what assistance is generally provided. This information is essential to establish a realistic target for maintaining the patient’s self-feeding ability.

Swallowing Disorders: People with dementia and eating difficulties may have swallowing disorders that are often unrecognized. These patients are sometimes labeled as combative, uncooperative, and difficult to feed when they try to refuse food they cannot swallow (Kayser-Jones, 1999). If assessment suggests an undiagnosed swallowing disorder, the patient should be referred to a speech pathologist for further evaluation.
Appendix B: Permission to use the Edinburg Feeding Evaluation in Dementia Scale

Roger Watson <R.Watson@hull.ac.uk>
Sun 12/2, 7:01 AM
Krug, Elaine <ameillaej@musc.edu>; Alyssa Castonguay [Student]

Dear Alyssa

There is no copyright on the EdFED so please feel free to use it.

If I can be of further help then please let me know.

Elaine - nice to hear from you!

Roger

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Appendix C: Mini-Nutritional Assessment

<table>
<thead>
<tr>
<th>Last name:</th>
<th>First name:</th>
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<tbody>
<tr>
<td>Sex:</td>
<td>Age:</td>
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<tr>
<td>Weight, kg</td>
<td>Height, cm</td>
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<tr>
<td>Date:</td>
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Complete the screen by filling in the boxes with the appropriate numbers.
Add the numbers for the screen. If score is 11 or less, continue with the assessment to gain a Malnutrition Indicator Score.

**Screening**

A. Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?
- 3 = severe decrease in food intake
- 1 = moderate decrease in food intake
- 2 = no decrease in food intake

B. Weight loss during the last 3 months
- 6 = weight loss greater than 3 kg (6.6 lbs)
- 5 = does not know
- 2 = weight loss between 1 and 3 kg (2.2 and 6.6 lbs)
- 3 = no weight loss

C. Mobility
- 6 = bad or chair bound
- 5 = able to get out of bed/ chair but not go out
- 2 = goes out

D. Has suffered psychological stress or acute disease in the past 3 months?
- 6 = yes
- 2 = no

E. Neuropsychological problems
- 6 = severe dementia or depression
- 5 = mild dementia
- 2 = no neuropsychological problems

F. Body Mass Index (BMI) = weight in kg / (height in m)^2
- 6 = BMI less than 19
- 5 = BMI 19 to less than 21
- 2 = BMI 21 to less than 23
- 3 = BMI 23 or greater

**Screening score (subtotal max. 14 points)**

12-14 points: Normal nutritional status
8-11 points: At risk of malnutrition
0-7 points: Malnourished

For a more in-depth assessment, continue with questions G-R

**Assessment**

G. Lives independently (not in nursing home or hospital)
- 1 = yes
- 0 = no

H. Takes more than 3 prescription drugs per day
- 1 = yes
- 0 = no

I. Pressure sores or skin ulcers
- 0 = yes
- 1 = no

J. How many full meals does the patient eat daily?
- 0 = 1 meal
- 1 = 2 meals
- 2 = 3 meals

K. Selected consumption markers for protein intake
- At least one serving of dairy products (milk, cheese, yoghurt) per day
- Two or more servings of legumes or eggs per week
- Meat, fish or poultry every day
- 0 = if 0 or 1 yes
- 0.5 = if 2 yes
- 1.0 = if 3 yes

L. Consumes two or more servings of fruit or vegetables per day?
- 0 = no
- 1 = yes

M. How much fluid (water, juice, coffee, tea, milk...) is consumed per day?
- 0.0 = less than 3 cups
- 0.5 = 3 to 5 cups
- 1.0 = more than 5 cups

N. Mode of feeding
- 0 = unable to eat without assistance
- 1 = self-fed with some difficulty
- 2 = self-fed without any problem

O. Self view of nutritional status
- 0 = views self as being malnourished
- 1 = uncertain of nutritional state
- 2 = views self as having no nutritional problem

P. In comparison with other people of the same age, how does the patient consider his/her health status?
- 0.0 = not as good
- 0.5 = does not know
- 1.0 = as good
- 2.0 = better

Q. Mid-arm circumference (MAC) in cm
- 0.0 = MAC less than 21
- 0.5 = MAC 21 to 22
- 1.0 = MAC greater than 22

R. Call circumference (CC) in cm
- 0 = CC less than 31
- 1 = CC 31 or greater

**Assessment (max. 10 points)**

Screening score

Total Assessment (max. 30 points)

**Malnutrition Indicator Score**

24 to 36 points | Normal nutritional status
17 to 23.5 points | At risk of malnutrition
Less than 17 points | Malnourished

References
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For more information: www.mca-eiders.com
Appendix D: Cohen-Mansfield Agitation Inventory

Cohen-Mansfield Agitation Inventory (CMAI)\(^1\) – Short

Instructions: For each of the behaviours below, check the rating that indicates the average frequency of occurrence over the last 2 weeks.

<table>
<thead>
<tr>
<th></th>
<th>1: Never</th>
<th>2: Less than once a week</th>
<th>3: Once a week</th>
<th>4: Several times a week</th>
<th>5: Once a day</th>
<th>6: Several times a day</th>
<th>7: Several times an hour</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical / Aggressive</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>1. Hitting (including self)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>2. Kicking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>3. Grabbing onto people</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>4. Pushing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>5. Throwing things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>6. Biting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>7. Scratching</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>8. Spitting</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>9. Hurting self or others</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>10. Tearing things or destroying property</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>11. Making physical sexual advances</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td><strong>Physical / Non-Aggressive</strong></td>
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<tr>
<td>12. Pace, aimless wandering</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>13. Inappropriate dress or disrobing</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>14. Trying to get to a different place</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>6</td>
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<tr>
<td>15. Intentional falling</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>16. Eating/drinking inappropriate substance</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>17. Handling things inappropriately</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>18. Hiding things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>19. Hoarding things</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>20. Performing repetitive mannerisms</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>21. General restlessness</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td><strong>Verbal / Aggressive</strong></td>
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<tr>
<td>22. Screaming</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
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<td>6</td>
<td>7</td>
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<tr>
<td>23. Making verbal sexual advances</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>24. Cursing or verbal aggression</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td><strong>Verbal / Non-aggressive</strong></td>
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<tr>
<td>25. Repetitive sentences or questions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>26. Strange noises (weird laughter or crying)</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<tr>
<td>27. Complaining</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>28. Negativism</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>29. Constant unwarranted request for attention or help</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

Signature: __________________________  Date: ______________

\(^1\)The use of this tool is strictly for clinical assessment and educational purposes only and is restricted from use in any for-profit activities.

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## Appendix E: Standardized Mini-Mental State Examination

### Standardised Mini-Mental State Examination (SMMSE)

*Please see accompanying guidelines for administration and scoring instructions*

**Say:** I am going to ask you some questions and give you some problems to solve. Please try to answer as best you can.

1. **Allow ten seconds for each reply. Say:**
   
   a) *What year is this?* (accept exact answer only) /1
   
   b) *What season is this?* (during the last week of the old season or first week of a new season, accept either) /1
   
   c) *What month is this?* (on the first day of a new month or the last day of the previous month, accept either) /1
   
   d) *What is today's date?* (accept previous or next date) /1
   
   e) *What day of the week is this?* (accept exact answer only) /1

2. **Allow ten seconds for each reply. Say:**
   
   a) *What country are we in?* (accept exact answer only) /1
   
   b) *What state are we in?* (accept exact answer only) /1
   
   c) *What city/town are we in?* (accept exact answer only) /1
   
   d) *<At home> What is the street address of this house?* (accept street name and house number or equivalent in rural areas) /1
   
   e) *<At home> What room are we in?* (accept exact answer only) /1
   
   f) *<In facility> What floor of the building are we on?* (accept exact answer only) /1

3. **Say:** I am going to name three objects. When I am finished, I want you to repeat them. Remember what they are because I am going to ask you to name them again in a few minutes (say slowly at approximately one-second intervals).

   - **Ball**
   - **Car**
   - **Man**

   For repeated use: Beil, jar, fan; bill, tar, can; bull, bar, pan

   **Say:** Please repeat the three items for me (score one point for each correct reply on the first attempt) /3

   Allow 20 seconds for reply; if the person did not repeat all three, repeat until they are learned or up to a maximum of five times (but only score first attempt)

4. **Say:** Spell the word WORLD (you may help the person to spell the word correctly). **Say:** Now spell it backwards please (allow 30 seconds; if the person cannot spell world even with assistance, score zero). Refer to accompanying guide for scoring instructions (score on reverse of this sheet) /5

5. **Say:** Now what were the three objects I asked you to remember? /3

   (score one point for each correct answer regardless of order; allow ten seconds)

6. **Show wristwatch. Ask:** What is this called? /1

   (score one point for correct response; accept 'wristwatch' or 'watch'; do not accept 'clock' or 'time', etc.; allow ten seconds)
7. **Show pencil. Ask:** What is this called?  
(score one point for correct response; accept ‘pencil’ only; score zero for pen; allow ten seconds for reply)

8. **Say:** I would like you to repeat a phrase after me: No its, ands, or buts  
(allow ten seconds for response. Score one point for a correct repetition. Must be exact, e.g. no its or buts, score zero)

9. **Say:** Read the words on this page and then do what it says  
Then, hand the person the sheet with CLOSE YOUR EYES (score on reverse of this sheet) on it. If the subject just reads and does not close eyes, you may repeat: Read the words on this page and then do what it says, a maximum of three times. See point number three in Directions for Administration section of accompanying guidelines. Allow ten seconds; score one point only if the person closes their eyes. The person does not have to read aloud.

10. **Hand** the person a pencil and paper. **Say:** Write any complete sentence on that piece of paper  
(allow 30 seconds. Score one point. The sentence must make sense. Ignore spelling errors)

11. **Place** design (see page 3), pencil, eraser and paper in front of the person. **Say:** Copy this design please. Allow multiple tries.  
Wait until the person is finished and hands it back. Score one point for a correctly copied diagram. The person must have drawn a four-sided figure between two five-sided figures. Maximum time: one minute.

12. **Ask** the person if he is right or left handed. **Take** a piece of paper, hold it up in front of the person and say the following: Take this paper in your right/left hand (whichever is non-dominant), fold the paper in half once with both hands and put the paper down on the floor.

<table>
<thead>
<tr>
<th>Task</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Takes paper in correct hand</td>
<td>1</td>
</tr>
<tr>
<td>Folds it in half</td>
<td>1</td>
</tr>
<tr>
<td>Puts it on the floor</td>
<td>1</td>
</tr>
</tbody>
</table>

**TOTAL TEST SCORE:** 30

**ADJUSTED SCORE:**

---

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CLOSE YOUR EYES
### Appendix F: Chart Summarization of Articles

<table>
<thead>
<tr>
<th><strong>Title and Author</strong></th>
<th><strong>Method</strong></th>
<th><strong>Results</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bagnasco, A., Watson, R., Zanini, M., Rosa, F., Rocco, G., &amp; Sasso, L. (2015). Preliminary testing using Mokken scaling of an Italian translation of the Edinburgh feeding evaluation in dementia (EdFED-I) scale. <em>Applied Nursing Research</em>, 28(4), 391-396.</td>
<td>To test the validity and reliability of an Italian version of the Edinburgh Feeding Evaluation in Dementia Scale (EdFED) participants in a nursing home were evaluated by trained professionals in two variables; eating difficulty and food intake.</td>
<td>The data was analyzed using Pearson’s correlation, and it was found that the data gathered using the Italian version of the EdFED correlated in the expected direction and proved to be valid and reliable.</td>
</tr>
<tr>
<td>Bunn, D., Abdelhamid, A., Copley, M., Cowap, V., Dickinson, A., Howe, A…Hooper, L., (2016). Effectiveness of interventions to indirectly support food and drink intake in people with dementia: Eating and drinking well in dementia (EDWINA) systematic review. <em>BMC Geriatrics</em> 16(89), 2-21. doi: 10.1186/s12877-016-0256-8.</td>
<td>Conducted a systematic review of randomized and non-randomized controlled trials of interventions that were aimed at increasing food and beverage intake while also increasing the individual’s meaningful activities.</td>
<td>After comparing 17 studies pertaining to dining room experience and food service, it was reported that residents were more likely to engage in a less institutionalized setting. Warner lights, family like dining experience, and traditionally plated meals allowed for more engagement.</td>
</tr>
</tbody>
</table>

The results of 15 studies suggested that providing training for families and people with dementia regarding nutrition could improve one’s quality of life but did not have a direct effect on food intake. When using behavioural interventions such as verbal prompts and positive reinforcement,
there was a reported increase in self-feeding skills, food intake, and food engagement. Utilizing the residents skills and allowing them to aid in preparation or cleanup of meals was shown to increase self-feeding skills as well.

No positive results were found when exercise groups were utilized as an intervention for food intake.

| Cohen-Mansfield, J. (2008). Agitated behaviour in persons with dementia: The relationship between type of behaviour, its frequency, and its disruptiveness. *Journal of Psychiatric Research, 43*(1), 64-69. doi:10.1016/j.jpsychires.2008.02.003. | 191 participants were evaluated with the Cohen-Mansfield Agitation Inventory. This data provided information on the persons frequency of agitated behaviours and the level of disruptiveness of that behaviour. The data was used to study the relationship between different types and frequencies of agitated behaviours. | The highest frequencies of agitated behaviours occurred in people who are verbal and display non-aggressive behaviours. The highest level of disruptiveness was determined to be verbal aggression. Physical but non-aggressive behaviours (pacing) were determined to be more disruptive during the day rather than in the evening or at night. Overall, it was found that the frequency and disruptiveness of agitated behaviours are highly correlated. |
| Ducak, K., Denton, M & Elliot, G., (2018). Implementing Montessori methods for dementia in Ontario long-term care homes: Recreation staff and | An interview was conducted to review the perceptions that recreation staff and multidisciplinary consultants have regarding the | Limiting factors such as regulations imposed by the ministry make medical care priority to |
multidisciplinary consultants perceptions of policy and practice issues. *Dementia, 17*(1), 5-33. doi: 10.1177/1471301215625342

Factors that affect the utilization of Montessori activities within long term care homes.

A demographic test was given to assess each participant; areas such as educational level, years employed at their current company, time spent directly with residents, title within current company, and the size and funding size of current long-term care home.

Enabling factors such as providing staff and family education surrounding Montessori methods and their benefits, being supported by all within the home when implementing the Montessori methods and seeing results when Montessori methods are implementing led to positive outcomes.

The positive outcomes that were viewed were reported as reconnecting or connecting with residents and improving their quality of life. Many participants reported connecting with residents with whom they may have had hard time connecting with previously.

Guigoz, Y., Lauque, S., & Vellas, B. (2002). Identifying the elderly at risk for malnutrition. The mini nutritional assessment. *Geriatrics Medicine, 18*(4), A validated screening tool used to assess malnutrition in elderly people. This tool correlates highly with objective indicators of nutritional status as well as clinical
<table>
<thead>
<tr>
<th>737-757. doi: 10.1016/S0749-0690(02)00059-9</th>
<th>assessments. Compromised of 18-items, the questionnaire takes note of measurements of the persons, dietary intake, self-assessment, and a global assessment which includes lifestyle, medications, presence of any mental health or cognitive impairments.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hitzig, S. &amp; Sheppard, C. (2017). Implementing Montessori methods for dementia: A scoping review. <em>The Gerontologist, 57</em>(7), 94-114.</td>
<td>A systematic review of six databases was conducted. This was done to explore and understand the different approaches of Montessori-based programming that can be utilized in dementia care. Four approaches were searched for; staff assisted activities, intergenerational, resident assisted programming in which a resident with mild dementia facilitated activity groups, and volunteer or caregiver assisted. The setting in which these approaches were applied was also discussed. Peer reviewed articles, review or commentaries, and chapters from edited books that were relevant and provided clear suggestions on implementation of Montessori-based programming in dementia care were taken into consideration.</td>
</tr>
<tr>
<td></td>
<td>61 out of 158 studies were utilized, 14 of which discussed staff assisted programming. Through the literature it was found that staff assisted programming can increase engagement and self-engagement, and some research found that some participants had small improvements in cognitive functioning. Four studies discussed intergenerational programming, where participants with dementia were paired with preschool aged children around the age of two. This was found to beneficial for both groups and there was a decrease in disengagement from those with dementia. It is suggested to plan for intergenerational programming both skill sets and interests should be taken into account prior to commencement.</td>
</tr>
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</table>
Four studies out of 61 examined resident assisted programming, some studies were positive, but most suggest that there needs to be more refined procedures and materials to ensure the guidelines for Montessori programming are being followed.

Two studies examined the use of family or volunteers to facilitate activities. The studies found that when using volunteers, they should be knowledgeable about dementia and should have positive attitudes towards those with dementia. Family members who engaged in the programming noted feeling less of a burden when engaging in the programming with their loved one.

| Huntsman, M. (2014). Why the Montessori method is becoming a popular treatment for dementia. Retrieved from: https://www.alzheimers.net/montessori-method-dementia/ | This article outlined the best practices to put into place as a caregiver or family member to maximize their loved ones experience with Montessori methods. | Some ideas to put Montessori methods into practice can be as simple as laying out clean towels or socks that need to be folded. Playing materials on a table for activities such as coloring, puzzles, or pipe fitting. It also mentioned that people who have advanced dementia may enjoy caring for a doll as this... |

Data collection on age, gender, marital status, years of employment, and economic status of participating nurses and non-participants at two Italian nursing homes was done. At baseline all participants were evaluated on their stress with the Staff Stress Measure Dementia Care. A scale specifically designed for healthcare professionals involved with people with dementia or other degenerative cognitive diseases. There are 20-items which are scaled on a 4-point likert scale 0- never to 4- always. Their scores determine their levels of work-related stress, the higher their score the higher their stress.

All participants took part in training to obtain more knowledge about the care of older people with cognitive declines and functionally impaired individuals. They also took part in training to enhance their own capability to handle stressful situations. The course lasted eight months and the main topics covered were lessons bases on aging and cognitive impairment, stages and symptoms of dementia, managing behavioural and psychological symptoms related to cognitive declines. During each lesson the nurses took part in role plays and were able to ask the physicians questions after each lesson.

1 year post-baseline the caregivers underwent the same evaluation as

Although a person’s age, gender, marital status, years of employment, and economic status have no significant correlation towards stress, it was found that increased knowledge with regards to patients with dementia can reduce work-related stress.
they did prior to the course and the same personal data was collected at this point.

| Lin, L.C., Huang, Y.J., Su, S.G., Watson, R., Tsai, B.W.J., and Wu, S.C. (2010). Using spaced retrieval and Montessori-based activities in improving eating ability for residents with dementia. *International Journal of Geriatric Psychiatry, 25*(10). | The purpose of this study was to examine the effectiveness of spaced retrieval and Montessori learning activities to decrease eating difficulties in people with dementia. Eighty-five participants from three separate long-term care homes in Taiwan were randomly assigned to one of three groups; spaced retrieval, Montessori-based activity, and a control group. The study was a single evaluator, blind, randomized control trial that consisted of 30-40-minute-long sessions three times a week for 8 weeks. Baseline data on eating difficulty, nutritional status, and eating amount was collected for each participant. Prior to the start of the study each participant was observed for three meals to determine their average length of feeding time, eating amount, and level of assistance required. No data was collected during the 8-week intervention period. The spaced retrieval group focused on two dimensions of eating; the procedure and the behaviour. This group received immediate, 1, 2, 4, 8, 16, and 32-minute training intervals over the 8-week period. The Montessori based activity group focused on scooping, pouring, squeezing, and hand-eye coordination. They also added in determining which food was edible and non-edible. | A repeated measures analysis of eating ability and nutritional status was compared among groups. The EdFED scores from the space retrieval and Montessori groups were lower than the control group which indicate that the programming may decrease eating difficulty in those with dementia. The frequencies of assistance in a physical and verbal manner was higher for those in the Montessori group post-intervention were higher than the control group which might suggest that those in the group may need more assistance at mealtime. The nutritional status of participants in the spaced retrieval and Montessori group were also higher than those in the control group. |
The control group participated in the home’s regular activity schedule.

<table>
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<tbody>
<tr>
<td>29 residents from two different dementia care units in Taiwan were chosen. Participants needed to have a diagnosis of dementia, scored greater than two on the EdFED and have a Mini-Mental State Examination score between 10 and 23.</td>
</tr>
<tr>
<td>The study was an experimental crossover design meant to examine the efficacy of implementing Montessori methods to improve eating ability in residents with dementia.</td>
</tr>
<tr>
<td>Two sequences were utilized the first sequence was the Montessori intervention sequence I which has 15 participants and started with the Montessori intervention then switched to routine activities when the study required. The second sequence was the Montessori intervention sequence II, which had 14 participants and began with the routine activities of the long-term care home then switched to the Montessori intervention.</td>
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<td>The Montessori intervention was utilized for 30-minutes during the respective time for each sequence for three days a week continuing for eight weeks.</td>
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<td>Data was collected at baseline for difficult eating behaviour, level of verbal and physically assistance needed, and feeding assistance for each participant, the same data was collected the first week post-</td>
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intervention. No data was collected during the intervention period.

The food used during the intervention were served as snacks instead of full meals. The Montessori groups intervention was standardized but was able to be changed depending on the individual’s needs. This intervention involved 24 specific activities that focused on scooping, pouring, squeezing, hand-eye coordination, and matching. Four activities pertained to each domain. To begin each session, music was played to remind participants that the sessions were about to start, then the procedural movements began. Facilitators presented an item, asked the participant to touch it then asked them to name the item, if they could the next item was presented. If they could not the facilitator named it for them.

The routine activities group took part in regular activities that the long-term care home had scheduled.

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<td>This study aimed to evaluate family functioning when stress was present by utilizing a structural family framework. Families of caregivers of people with dementia in Miami were sampled from and 181 were chosen to participate. Sociodemographic, depression, anxiety, perceived health, and burden were assessed. A structural equation model was used to assess the fit of the multidimensional instrument for the sample and was also used to examine whether the</td>
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<td>This study found that family who do not have the tools to properly handle and discuss their feelings suffer from family stress. This is similar to the stress families and caregivers of people with dementia cope with. This study provides insight into helping families of those with dementia better cope with their stress.</td>
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demographics of the sample affected each relationship in the model.

The Center for Epidemiologic Studies – Depression scale (CES-D) was used to evaluate the presence of depressive symptoms in the caregiver.

The State-Trait Anxiety Inventory (STAI) was also administered to measure their intensity of anxiety in certain situations. The feelings were rated on a 4-point Likert scale.

All scales were administered at baseline, and 6, 12, and 18 months post-test.

The Structural Family Systems Rating – Dementia Caregiver (SFSR-DC) scale was designed to measure family structure that were relevant to the functioning of dementia caregivers. In the study it was used to measure family interactions in three separate tasks. The tasks the families were asked to complete were discussing a recent argument the family had, planning a menu, discussing their likes and dislikes about each other. The presence of behaviors such as; cohesion, disengagement, patienthood, conflict resolution, positive affect, and expressed anger were observed and rated. The total score of this assessment is related to caregiver depression, anxiety and subjective burden, this was validated in a previous study.

The families were videotaped performing the tasks and two raters reviewed and coded the results. Utilizing a videotape as a form of
measurement allowed the researchers to review the behaviours at a later date.

The total score of SFSR-DC represents an overall assessment of the family function across multiple dimensions.

| Mohler, R., Renom, A., Renom, H., & Meyer, G. (2018). Personally tailored activities for improving psychosocial outcomes for people with dementia in long-term care. *The Cochrane Database of Systematic Reviews, 13*(2). doi:10.1002/14651858.CD009812.pub.2. | A search of multiple databases was conducted to obtain peer-reviewed articles on personally tailored activities and how they affected challenging behaviours in those with dementia. Eight articles were selected and either conducted a controlled clinical trial or a randomized controlled trial. All interventions included a preference test for activities to be used in their individualized activity plan. The control groups received regular care or a control intervention. The authors were looking to compare results of reducing challenging behaviours, aggression, positive affect, engagement, quality of life, and other variables to see if personally tailored activities had a greater impact than general activities. This meta-analysis found that personally tailoring activities can produce minimal changes in a person’s challenging behaviour, quality of life, positive affect, and engagement in other activities. This study was inconclusive in demonstrating if personally tailored activities can have a greater impact than generalized activities on psychosocial outcomes. |
| Molloy, W. & Clamette, R. (1999). Standardized mini-mental state examination: A user’s guide. | A user guide on how to correctly administer the Standardized mini-mental state examination. The guide outlines the standardized questions and responses that the administrators must use to gather information. The administrators are not able to prompt or correct responses given. There is a time limit allotted to each question, if the participants cannot answer within the time frame they The scoring is based on the person’s ability to answers the questions correctly. A score of 30 indicates no impairment and as the score gets lower the higher the impairment there is said to be. History of education and formal schooling |

186 participants were randomly selected to take part in a double-blind, controlled study. They would receive a psychosocial intervention combined with either citalopram (n=94) or a placebo (n=92) for 9 weeks. The dosage of citalopram for those receiving it started at 10 mg per day and increased to 30 mg depending on their ability to tolerate the drug.

The primary outcome measures were based on scores form the Neurobehavioral Rating Scale agitation subscale (NBRS-A) and the Alzheimer Disease Cooperative Study-Clinical Global Impression of Change (mADCS-CGIC).

Other outcomes were measured through scores on the Mini-Mental State Examination (MMSE) and the Cohen Mansfield Agitation Inventory (CMAI), abilities to complete activities of daily living, caregiver distress, and scores on the Neuropsychiatric Inventory (NPI).

Participants who received the dosage of citalopram displayed significant improvement (P=.04) on both primary measures than the placebo group. Those in the citalopram group also demonstrated improvement on their mADCS-CGIC (P=.01), CMAI, NPI, and caregiver distress. There was no significant improvement on the NPI agitation scale or activities of daily living.

This demonstrates that through the use of psychosocial interventions and the use of citalopram agitation and caregiver distress.


Peer-reviewed studies that utilized Montessori-based activities for people with dementia were selected from six databases.

14 articles were included. There was evidence supporting the use of Montessori-based activities to reduce eating difficulties. There was minimal evidence for the use of Montessori-based activities to benefit cognition and memory. Finally, there was evidence to

This article discussed the use of drugs to treat behavioural problems in those with dementia. It criticized the study in which Porsteinsson et al. (2014) conducted using citalopram to treat agitated behaviours in those with dementia.

Although the study had seen positive outcomes in reducing agitation through pharmacological interventions, 2 years after the start of the study the Food and Drug Administration issued a warning against using citalopram at doses higher than 40mg a day. The drug was seen to cause cardiac problems including cardiac arrest and types of arrhythmia. This was backed up through other studies of participants who were taking similar antidepressants and experienced similar side effects. Overall, it was cautioned to reduce the use of pharmacological interventions to treat behavioural issues when nonpharmacological interventions are safer and provide positive outcomes.


An assessment tool used to assess eating and feeding problem in individuals with later-stage dementia.

The results of this tool are used to help the nurses and care team.

dementia. Items such as spilling food and turning head when being fed, along with other items are examined and scores are used to create an effective care plan. Nurses must administer this tool which takes five minutes.

determine how much food the person needs to consume at each mealtime in order to stay within their nutritional range.

| Ujkal, M. (2015). Dementia, agitation, and aggression: The role of electroconvulsive therapy. *Psychiatric Times, 32*(3), 52. | The article outlined that nonpharmacological interventions for managing agitation should be used first-line and should be aimed at removing or containing the contributing factor to the persons agitation. An evidence-based approach called DICE was created to help clinicians develop the strongest strategy.

Describe- caregiver is asked to describe the antecedents in chronological order that led up to the behaviour.

Investigate- the clinician identifies the causes of the agitation or aggression that are related to the person, their caregiver, or their environment.

Create- the clinician, treatment team, caregiver, and the person collaborate to implement a treatment plan that takes into consideration all factors that lead to the persons agitation.

Evaluate- the clinician regularly assesses the treatment plan and modifies when necessary.

Pharmacological treatment interventions were also examined, and it was determined that they should not be used unless the persons agitation or aggression pose a serious threat to themselves or

In all studies the use of electroconvulsive therapy did not cause cognitive impairment and was found to be effective in treating agitation and aggression in people with dementia with a comorbidity of a mood disorder. Most participants saw a reduction in those behaviours by the ninth session.
Pharmacological treatments can cause other adverse side effects that can pose more distress on the person exhibiting agitation often increasing their instances of agitation or aggression.

Electroconvulsive therapy has been minimally studied as a short-term treatment for those exhibiting high levels of agitation and aggression in those with dementia. It has limited evidence to support its use. 9 retrospective case studies and one prospective study were examined.

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<td>A randomized crossover trial was used in nine long-term care homes to determine the effects of one-on-one interactions and agitation within nursing homes. 44 participants took part in the study, personalized one-on-one activities were used and tested against a control of non-personalized activities. Participants were observed 30 minutes before, during, and after each session. The appearance of selected agitated behaviours were noted as well as the perceived affect and the individual’s engagement were observed and noted.</td>
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<td>The agitated behaviours were lower in both the Montessori and control sessions. The Montessori activities showed to increase the participants engagement by double compared to the control sessions, which also demonstrated more interest during the Montessori sessions.</td>
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<td>It was also noted that participants who lack English fluency showed a significant larger reduction in agitation during the Montessori sessions than the control sessions.</td>
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| Van der Ploeg, E., Mbakile, T., Genovesi, S., & O’Connor, D. (2012). The potential of Clinical interviews were conducted with 18 staff members and 39 |
|---|---|
| Most long-term care homes had at least one |
volunteers to implement non-pharmacological interventions to reduce agitation associated with dementia in nursing home residents. *International Psychogeriatrics, 24*(11), 1790-1797.

Volunteers from 17 different long-term care homes to determine the use of volunteers to implement non-pharmacological interventions.  

Active volunteer within their homes. The use of volunteers were perceived in a positive member by caregivers as well as residents. Utilizing volunteers to work with residents who experience lower levels of agitation can be seen as potentially valuable resources.

|---|

This article outlines dementia care best practices to ensure a persons transition into dementia care is organized and goes smoothly as possible.

Providing person-centered and abilities focused care are the two principles of dementia care that should focus on optimizing a persons quality of life, independence, health, and safety. Guide and support loved ones and their caregivers, and reduce hospitalizations and pharmacological interventions.

Creating individualized and therapeutic care and treatment plans can help transform dementia care principles into practices. Providing environmental support and utilizing trained interdisciplinary teams can also help with this. Allowing for family involvement during the whole process and keeping staff as consistent as possible can aid in keeping this
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<th>Wegerer, J. (2017). How positive environments dramatically affect alzheimers. Retrieved from: <a href="https://www.alzheimers.net/2014-01-30/how-positive-environments-affect-patients/">https://www.alzheimers.net/2014-01-30/how-positive-environments-affect-patients/</a></th>
<th>This article discussed how to make an environment organized and familiar to those with dementia. Ways to balance out all senses is beneficial as those with dementia can become more sensitive to their environments and depend more on their senses to experience what is going on within their environment. Providing decorations that are soothing in color and can provide a sense of comfort to the individual, such as family pictures, is very beneficial. Allowing for the individual to help with the decoration can instill independence and a sense of safety and comfort to the individual. Having visitors routinely throughout the week, preferably the same times every day can also instill a sense of routine and reduce chaos in their world.</th>
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<td>Wu, H.S., Lin, L.C., Wu, S.C., Lin, K.N., &amp; Liu, H.C. (2013) The effectiveness of spaced retrieval combined with Montessori-based activities in improving the eating ability of residents with dementia. <em>The Journal of Advanced Nursing</em>, 70(8), 1891-1901. doi:10.1111/jan.12352.</td>
<td>90 residents with dementia were selected to participate in a repeated measures study. The intervention combined spaced-retrieval with Montessori-based activities. One group, the standardized group, received 24 intervention sessions during an 8-week timespan. The second group, the individualized group, received individualized sessions and the number of sessions was adjusted based on the person’s ability to remember answers in spaced retrieval. The third group was the control group and received no treatment. The body weight and food intake in the standardized group was significantly lower than those of the control group pre-test. However, post-test those scores were significantly higher than those of the control group. The scores on the EdFED were significantly higher than at pre-test for the standardized group than the control group. When tested again post-test the scored decreased significantly, resulting</td>
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in the standardized group scores being lower than the control group. Eating difficulties were seen to remain stable in the control group and decrease in the standardized group.