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Utilizing Montessori-Based Occupational Therapy Interventions for People with Dementia

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Certification of Approval for Final Copy of Doctoral Project

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Acknowledgements and Dedication

There are many people I am grateful for that I wish to acknowledge. First and foremost, I am thankful to God. I also could not have done any of this without the unwavering love and support of my family, especially my husband Dennis and my sons Dennis and David Fyksen. I wish to extend my heartfelt appreciation to my doctoral advisor, Dr. John Fleming. Thank you for all of the extra hours spent offering me encouragement and guidance during this process. Another thank you goes to Dr. Kathleen Matuska, who also gave of her time serving on my doctoral committee. To my mentor, Dr. Orli Weisser-Pike, an extra special thank you for giving so generously of your time. I am appreciative for this opportunity to know and spend time with some of the faculty and classmates at St. Catherine University over these past three years.

This doctoral project is dedicated to two of my passions: the occupational therapy profession and the dementia population.

Abstract

The *Montessori Method* for dementia is a specific approach to dementia care that can be implemented as an alternative to pharmaceutical intervention with its focus on purposeful and meaningful doing. Montessori-based interventions that were found effective in increasing self-feeding for people with dementia included activities requiring hand-eye coordination, scooping, pouring and squeezing. For this project, there were five participants from a residential care facility. This study consisted of doing activities or exercises to simulate eating right before mealtime. This occurred three times per week for eight weeks. The broad long-term purpose of this project was to increase participation in the daily occupation of self-feeding for people with dementia in residential care facilities. Montessori-based occupational therapy interventions could provide caregivers with an evidence-based strategy to deal with eating difficulties of people with dementia.

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Chapter One: Introduction

Background

As of 2013, there were an estimated 44.4 million people with dementia worldwide (Alzheimer's Disease International, n.d.). Dementia is an umbrella term that describes a broad range of symptoms related to "a decline in memory or other thinking skills severe enough to reduce a person's ability to perform everyday activities" (Alzheimer's Association, 2014, About dementia, para. 2). Dementia results in cognitive decline and diminished abilities in activities of daily living (ADL). It not only takes a toll on those who are living with the disease, but it also affects families and informal caregivers. Due to aging of the world's population, there will be significantly more people at risk for dementia. In the absence of effective prevention or treatment, the increase in the number of people with dementia will simply be the result of an increase in the older adult population (Jockey Club Centre for Positive Aging, 2014).

Behavioral and psychological symptoms of dementia (BPSD) are very common and usually develop as the disease progresses (Spector, Orrell, & Goyder, 2013). The person may exhibit symptoms including restlessness, aggression, delusions, hallucinations, apathy, disturbances, depression and anxiety (Alzheimer's Society, 2014). According to Spector, Orrell and Goyder (2013), BPSD are used to describe the non-cognitive effects of dementia. It is estimated that 80% of people with dementia living in long-term care (LTC) facilities have BPSD (Spector, et al., 2013).

People with dementia deserve to experience improved health, well-being, and

quality of life through the use of occupation or co-occupation regardless of their ability to actively participate. Despite evidence to support these interventions, people presenting with BPSD are all too often prescribed pharmaceuticals (Alzheimer's Society, 2014). At present, there is no one adopted protocol utilized in residential care settings for people with dementia to enhance their health, well-being and quality of life. However, there are developing and emerging approaches for dementia management such as the Montessori-based dementia programming (MBDP) (Skrajner, Malone, Camp, McGowan, & Gorzelle, 2007).

In 1906, Maria Montessori, an Italian physician and educator, started her first school. She developed an approach to teaching people with mental disabilities how to read and write (The Hearthstone Institute, n.d.). Montessori created her approach based on models of learning and rehabilitation (The Hearthstone Institute, n.d.). Montessori used techniques to engage people in what she called an exercise in daily living better known as ADLs. Applying Montessori principles to the care of people with dementia, MBDP, was originally developed by psychologist, Dr. Cameron Camp (The Hearthstone Institute, n.d.). In the Montessori-based approach, the person is engaged in a more meaningful activity. Activities are matched with the person's interests, needs and abilities (The Hearthstone Institute, n.d.). This method of intervention focuses on rehabilitation where the goal is to enable people to circumvent existing deficits to achieve higher levels of functioning (The Hearthstone Institute, n.d.).

Project

For this project, I applied tenets of the *Montessori Method* for dementia to trial a feeding protocol. The study was conducted at a resident care facility with five

participants. Afterwards, I examined the outcomes of the Montessori-based occupational therapy interventions on self-feeding abilities, behaviors during mealtimes and food intake for people with dementia.

Occupation

Occupational therapy (OT) is one of a wide variety of non-pharmacological interventions that are used to manage BPSD (Alzheimer's Society, 2014). Characteristics of occupation have been described in varying degrees as having purposefulness, meaningfulness to the individual, and wholeness or finiteness (Gray, 1998). There are many benefits to the health, well-being and quality of life for people with dementia in retaining or maintaining the ability to participate or engage in an occupation. Health, well-being and quality of life can be positively influenced by occupation. All elements related to occupations have been identified as being central to health, well-being and quality of life (Andresen & Runge, 2002). As the disease advances, some people will eventually require LTC because their impairments such as inability to bathe, dress or feed themselves make them unable to remain in their homes (Hancock, Woods, Challis, & Orrell, 2006; Spector, Orrell, & Goyder, 2013). According to the American Occupational Therapy Association's (AOTA) Scope of Practice (2010b), OT practitioners are uniquely qualified to offer support for people with dementia in residential care settings by assisting in the retention of existing abilities for as long as possible. Throughout the continuum of care, OT practitioners' roles and interventions are multifaceted and may include: direct care provider, consultant, trainer, and educator. People with dementia do have remaining abilities regardless of what level or stage of the disease the person is functioning at. In order to improve or even maintain health, well-being, or quality of life, people with

dementia need participation or engagement in occupation (Warchol, 2000).

On average, people with late-stage dementia living in residential care facilities participate in activities for ten or fewer minutes per day (Elliott, 2013). People with dementia have a basic human right to experience enhanced health, well-being, and quality of life through the use of occupation or co-occupation irrespective of their ability to actively participate. Nevertheless, people living in residential care facilities spend up to 87% of their time in 'no activity' (Elliott, 2013). The value of occupation for people with dementia is two-fold: participation in occupation enhances health, well-being and quality of life and it decreases disruptive behaviors that can result from boredom or lack of engagement (American Occupational Therapy Association, 2014; Elliott, 2011; Warchol, 2000; Warchol, 2004).

It is estimated that 50-90% of people with dementia exhibit significant behaviors such as repetitive questioning; wandering, agitation, and constant request for attention or help (Elliott, 2013). BPSD can be so disruptive that they become the focus of the healthcare intervention such as by medicating or confining (Hancock, et al., 2006; Spector, et al., 2013). Consequently, the person's remaining abilities can be overlooked. Medications can slow down the progression of the disease. However, when managing symptoms with medication alone, there is a neglect of other behavioral management strategies such as providing meaningful activities that keep them engaged and occupied for periods of time (Elliott, 2013).

Eating

Eating or self-feeding is a type of occupation. As the disease progresses, people with dementia tend to lose both the interest in eating as well as the ability to feed

themselves. People with dementia are at high risk for eating and feeding problems and decreased food and drink consumption. For example, they may forget to eat, forget they have eaten, fail to recognize food, or eat things that are not food. They might not know what eating utensils are used for or even how to use them. They may also have trouble bringing food or drink to their mouth. Additionally, people with dementia may have problems with starting to eat, or they may start eating, get distracted, and fail to finish eating their meals. This can all lead to poor nutrition and may cause health problems.

The environment in which people with dementia eat can have an enormous influence on the mealtime experiences and affect a person's enjoyment of food and how much food they eat. Food has been used to celebrate occasions, to cope with feelings or emotions and to establish, maintain or foster a sense of family and companionship (Aselage & Amella, 2010). In our society, we recognize mealtimes as a universal concept. We also understand a 'three-meals-a-day' model as being typical (Aselage & Amella, 2010). However, mealtimes can be impacted by several factors. For instance, people with dementia might have forgotten their longstanding mealtime traditions or caregivers might have assumed these rituals are no longer meaningful. Nonetheless, when mealtime routines change either by the result of disease, caregiving or even changes in the living environment, the ability to eat may diminish (Aselage, M., & Amella, E. (2010).

Need

My identified community with a need is a rural residential care facility located in the Midwest. It is a midsize facility with no devoted or segregated unit for people with dementia. All the residents, regardless of their diagnosis, are integrated throughout the

facility. After more than 18 years working as an OT practitioner in residential care settings, it has been my experience that a sizeable percentage of healthcare workers, especially nursing staff, employed in these settings do not possess the knowledge, skills, abilities, or perhaps even the interest, to adequately serve people with dementia. This community would benefit from training and programming geared specifically towards feeding management for people with dementia.

The concept for this doctoral project originated from my clinical observations, staff comments and complaints about people with dementia. For example, comments said by nursing assistants such as "she is doing it just to be difficult" or "he is deliberately ignoring me" are heard by me on an almost daily basis. As a result, people with dementia are an underserved and misunderstood population. Based on my professional opinion, some of these factors may include: lack of experience, lack of confidence, intimidation of the diagnosis itself or lack of dementia specific educational training and resources. The culmination of all these contributing factors was the primary reason this community partner was chosen.

Significance

The *Montessori Method* for dementia provides an approach to dementia care that can be adapted for individuals, groups, and also as a philosophy of care (Elliott, 2013). There are several fundamental beliefs that would make the *Montessori Method* a practical approach for addressing the occupation of self-feeding for people with dementia. First, Montessori-based activities follow several rehabilitation principles and techniques, such as task breakdown, guided repetition and task progression from simple to complex and concrete to abstract (Camp, 2010). Second, learning is facilitated by hands-on activities

and activities that focus on a particular concept to be learned (Vance & Porter, 2000). Third, activities and routines are based on the needs, strengths, skills, abilities, and interests of people with dementia and delivered in an environment that supports the cognitive function associated with the disease (Elliott, 2013).

The focus on "doing" is what sets this project apart and it mirrors the emphasis on occupation, the core value of the OT profession. Historically, occupation served as the foundation and framework for therapeutic interventions but has been de-emphasized with the current focus on pharmacological treatment and institutional care. Some pharmacological interventions for people with dementia are reported to have adverse effects including confusion and somnolence; therefore, more attention should be paid to non-pharmacological interventions (van der Ploeg & O'Connor, 2010). This project realigns its focus on the use of occupation as an end but arguably as a means, too (Gray, 1998; Trombly 1995).

Purpose

The purpose of this project is to demonstrate that the *Montessori Method* for dementia may be an effective intervention that helps people with dementia experience improved self-feeding abilities, reduced behaviors during mealtimes and increased food intake.

This doctoral project is important because it is a non-pharmacological intervention that is both person-centered and abilities focused. This project departs from the status quo by returning to the core principle of our profession: occupation. The *Montessori Method* for dementia could substantially advance the OT profession by

offering an alternative intervention for promoting and encouraging participation in the occupation of self-feeding.

Chapter Two: Literature Review

My goal was to locate evidence of dementia specific education or training that offered solutions across all care settings and for all levels of practice. This search yielded problem-solution resources which further informed my doctoral project needs assessment. General topics from the review included: definition and course of dementia; economic consequences of dementia; care and needs of people with dementia; history of Medicare coverage and therapy services for people with dementia and current non-pharmacological dementia programs.

Definition and Course of Dementia

The term ‘dementia’ is used to describe symptoms that occur when the brain is affected by a specific condition or disease which includes: memory; reasoning and thinking; orientation (place, time and spatial); comprehension; planning and initiating; learning ability; language (both receptive and expressive); judgment and safety awareness; behavior; personality; and mood (Wallwork, 2011). For example, people with dementia may not be able to do normal, everyday activities such as bathing or eating. Their personalities may change. They may lose their ability to solve problems or control their emotions. They may become agitated or see things that are not there (National Institute of Neurological Disorders and Stroke, n.d.). Dementia is a condition that can be present in several diseases or caused by biological and environmental factors. There are many types of dementia.

Alzheimer's disease is the most common form of dementia (National Institute of Neurological Disorders and Stroke, n.d.). Memory loss is one of the earliest symptoms, along with a gradual decline of other intellectual and cognitive functions, and changes in personality or behavior (National Institute of Neurological Disorders and Stroke, n.d.). Alzheimer's disease typically advances in stages, progressing from mild forgetfulness and cognitive impairment to widespread loss of mental abilities (Alzheimer's Association, 2012). There are several characteristics associated with advanced Alzheimer's disease. The time course of the disease varies from person to person. It can range from five to 20 years with the most common cause of death being infection (Alzheimer's Association, 2012). The person becomes more dependent on others for every aspect of their care (Alzheimer's Association, 2012).

Care and needs of people with dementia

As the disease progresses or advances, so, too, do the needs of people with dementia. In time, the loss of functional ability associated with dementia makes independent living very difficult, resulting in many people being admitted to residential care facilities (Spector et al., 2013). The needs become more complex and some people living in residential care facilities may have their needs overlooked for a variety of reasons (Hancock, Woods, Challis, & Orrell, 2006). An unmet need may be described as a situation in which a person is having significant difficulties for which there is an appropriate intervention that could potentially meet the need (Hancock et al, 2006). These unmet needs may be due to the complexity of their behavior; lack of daytime activities or visitors; and psychological distress (Hancock et al, 2006; Passos, Sequeira, & Fernandes, 2012).

It is estimated that 80% of people with dementia living in residential care facilities have BPSD (Spector, et al., 2013). These needs must be addressed to ensure the effective delivery of services to people with dementia. People with impaired cognition have a decreased ability to make their wants or needs known and become more dependent upon caregivers to meet their needs (Hancock et al, 2006).

People with dementia have remaining capabilities but sometimes they cannot articulate this to caregivers. For instance, a person in early stage dementia scoring an 11-17 on the Mini Mental Status Examination (MMSE) (Folstein, Folstein, & McHugh, 1975) or staging at 4 on the Global Deterioration Scale (GDS) (Reisberg, Ferris, de Leon, & Crook, 1982) can still sequence oneself through steps of familiar activities by tapping into procedural memory for greater independence (Dementia Care Specialists, 2006). Even a person in end/late stage dementia scoring 0 on the (MMSE) (Folstein et al, 1975) or staging at 7 on the (GDS) (Reisberg et al, 1982) is able to use senses and respond to sensory stimulation; the development of a sensory stimulation program to promote movement of limbs and head can minimize contractures (Dementia Care Specialists, 2006). However, there seems to be excessive disability or a learned helplessness mentality within the residential care settings (Warchol, 2000). As a result, staff tends to do more for the resident despite their capabilities. People with dementia living in residential care settings are not engaging or participating in occupation such as feeding, dressing or walking (Warchol, 2000).

Occupation has an inherent beginning, middle and end and the "multidimensionality possessed by an activity in context, the human and his or her multiple systems–emotional, cognitive, perceptual, physical– interacting the

environment" (Gray, 1998, p. 354). These unmet needs have created occupational injustices which include: marginalization; alienation; imbalance; and deprivation among people with dementia in residential care settings (Nilsson & Townsend, 2010). Unmet needs as described above may also lead to decreased quality of life (Passos et al, 2012).

In order to meet the needs of people with dementia living in residential care settings, healthcare workers should offer interventions that are both person-centered and abilities-focused and not pharmacologically-based. (Hancock et al, 2006). This approach involves understanding the weaknesses and capabilities of the resident, as well as, issues relating to staff and the caring environment (Hancock et al, 2006). Participation in occupation needs to serve as the foundation and framework for interventions rather than the current focus being on pharmacological treatment and institutional care.

Economic Consequences of Dementia

The economic burden of caring for people with dementia in the United States (US) are large and growing larger. At present, the monetary cost of dementia in the US ranges from $159 billion to $215 billion annually, making this more costly to the nation than either heart disease or cancer (Hurd, 2013). Worldwide, approximately 35 million people have Alzheimer's disease (Alzheimer's Association, 2012). Currently, there are 5.2 million Americans living with Alzheimer's disease (Alzheimer's Association, 2013). Fifty to 60% of dementia cases are classified as Alzheimer's disease (Alzheimer's Association, 2012).

There are nearly 60% of nursing home residents that have Alzheimer's disease or related dementia (ADRD) (Alzheimer's Association, 2012). Researchers say the main

factor for dementia costs is for institutional and home-based LTC rather than medical services; it comprises 75 to 84% of all costs (Hurd, 2013).

History of Medicare Coverage and Therapy Services for People with Dementia

For years, some Medicare carriers determined that medical services were not reasonable or necessary and automatically denied the claim solely because it was submitted on behalf of a beneficiary with a diagnosis of ADRD. Effective September 1, 2001, the Centers for Medicare and Medicaid Services (CMS), formerly Health Care Financing Administration (HCFA), issued a memo stating that Medicare will no longer use the dementia diagnostic codes alone as a basis for determining whether Medicare covered services are reasonable and necessary (Centers for Medicare and Medicaid Services, 2001).

Since the CMS policy changed back in 2001, therapy professionals, especially OT practitioners, were now strongly encouraged to provide skilled therapy services to people who had a dementia diagnosis. As stated in the Medicare Benefit Policy Manual (Centers for Medicare & Medicaid Services, 2013), there was now an opportunity for therapists to create maintenance programs, such as range of motion (ROM), and ADLs, to be carried out by restorative nursing. These types of programs are reimbursable services when implemented by therapists. However, in spite of this, there was also a rule called 'the need for improvement' or 'Medicare Improvement Standard' (K. Warchol, personal communication, November, 2012; Centers for Medicare & Medicaid Services, 2013). Essentially, it stated that in order for therapists to get reimbursement for serving their patients, they must be able to significantly improve the 'problem area' or improve the

dysfunction (K. Warchol, personal communication, November, 2012; Centers for Medicare & Medicaid Services, 2013).

Unfortunately, people with dementia have a chronic and progressive condition and typically do not show significant improvements. In opposition, there was a federal class action lawsuit (Jimmo et al. v. Sebelius, 2013) that was brought against Medicare that challenged the Improvement Standard (Jaffe, 2013; Centers for Medicare & Medicaid Services, 2013). As of October 24, 2012, there was a settlement that overturned this Medicare Improvement Standards (Jimmo et al. v. Sebelius, 2013). As a result of the lawsuit, people with dementia would now have access to therapy services due to the overturned or re-clarified Medicare Improvement Standard (Centers for Medicare & Medicaid Services, 2013). Under this settlement agreement, Medicare would now pay for services as long as they were designed to maintain the patient's current condition or to prevent or slow further deterioration (Jaffe, 2013; Centers for Medicare & Medicaid Services, 2013).

Based upon AOTA's Scope of Practice (2010b), OT practitioners are uniquely qualified to offer support for people with dementia in residential care settings by assisting in the retention of existing abilities for as long as possible. Throughout the continuum of care, OT practitioners' roles and interventions are multifaceted and may include: direct care provider, consultant, trainer, and educator to various stakeholders. Examples of current practice for people with dementia include: behavior modification, sensory stimulation, environmental modifications, designing restorative nursing programs and training/education for caregivers such as staff and family members (Schaber, 2010).

As of September 2012, the Affordable Care Act required certified nurses' assistants (CNA) to receive regular training on how to care for residents with dementia and on preventing abuse (Centers for Medicare & Medicaid Services, 2012). As a result, CMS created a training program to address this requirement for annual nurses' aide training. It is a person-centered approach to care for people with dementia and prevention of abuse. The training materials, "Hand in Hand: A Training Series for Nursing Homes" consists of an orientation guide and six one-hour video-based modules. Nursing homes are not required to utilize the CMS developed materials but are required to provide some form of training on these important topics (Centers for Medicare & Medicaid Services, 2012). There are opportunities here for the OT profession to positively impact the geriatric and dementia populations.

The findings suggest that people with dementia are an underserved population in LTC. Approximately 20% of OT practitioners work in LTC/skilled nursing facilities (AOTA, 2010a). It is expected that people diagnosed with dementia will reach 65.7 million by 2030 (Spector, Orrell, & Goyder, 2013). There are nearly 75 percent of nursing home residents that have Alzheimer's disease or related dementias (ADRD) (Alzheimer's Association, 2012; Spector et al, 2013). If the predicted statistics hold true, there could be an enormous gap between the demand for and the supply of OT practitioners working in LTC and caring for people with dementia.

Current non-pharmacological dementia programs

Despite CMS' new regulations, there still is no one adopted protocol utilized by residential care settings for people with dementia to improve their health, well-being and quality of life. While current approaches for non-pharmacological dementia management varied, three developed programs were identified in the literature. Claudia

Allen's work has been instrumental for two of the approaches identified: The Forget Me Not program (Warchol, 2004) and the Tailored Activity Program (TAP) (Gitlin et al., 2008). Based on Allen's observations of functional performance, she hypothesized that the same hierarchical levels of functional performance capabilities and limitations could also be observed in the progression of adults with dementia (Earhart, 2009). For the third approach, Maria Montessori had been the impetus and inspiration for the development of the MBDP (Jarrot, Gozali, & Gigliotti, 2008). There have been positive outcomes with both the Forget Me Not program and the TAP. The MBDP also demonstrated increased participation and engagement in occupation and activities (Skrajner et al, 2007).

The Forget Me Not program is based on the Theory of Retrogenesis and the Allen Cognitive Disabilities Theory (Allen, Earhart, & Blue, 1992; Reisberg et al., 2002). The intervention centers on current capabilities by providing the 'just right' challenge and adapting the task and the environment to the person. It considers how the person responds to the demands of the activities such as sensory cues, motor actions and attention span (Cole & Tufano, 2008; McGraith et al., 2011). By providing cues, assistance or adapting the environment, OT practitioners can improve a person's ability to engage in an activity or an occupation (Cole & Tufano, 2008; McGraith et al., 2011). Engagement in activities or occupations itself doesn't promote change but rather the ability to engage is guided by the OT practitioner providing the person with cognitive assistance such as prompts, correcting or adapting the environment (Cole & Tufano, 2008; McGraith et al., 2011).

The Forget Me Not program focuses on encouraging the highest level of function regardless of the stage of dementia. According to Warchol (2006), these activities

positively affect both the levels of engagement and the behavior of the person, regardless of their stage of dementia. As stated by Warchol (2006), residents showed a significant decrease in problem behaviors, lessening the burden of care for the CNAs which can lead to higher staff retention. Warchol (2006) also reported a lower than average incidence of behavioral issues and a very high level of activity participation by people with dementia.

Unlike the Forget Me Not program or the MBDP, the TAP was designed for home-based OT intervention for people with dementia and their caregivers. This program requires the active involvement of the caregiver. TAP was developed to reduce dementia-related behaviors, promote engagement in activities, and increase caregiver well-being (Gitlin et al., 2008). TAP *identifies* interests and capabilities of people with dementia, *develops* and *tailors* activities to individual profiles, and *trains* caregivers in using activities as part of their daily care routines (Gitlin et al., 2008). There are several goals or objectives of TAP: engage people with dementia in meaningful activities, train caregivers to manage troublesome behaviors, support quality of life for both the people with dementia and their caregivers and to promote participation in activities for people with dementia (Gitlin et al., 2008).

TAP intervention can last for a period of four months. OT practitioners may provide up to eight sessions consisting of six home visits and two brief phone calls to the caregiver. There are three phases to the program. During phase I of the intervention, OT practitioners evaluate the caregiver for existing communication and management techniques, identify remaining abilities of the person with dementia, and assess the person's physical environment (Gitlin et al., 2008). Phase II involves education for caregivers about the role of the environment and activities in dementia care, instruction in

specific management techniques, and demonstration and practice of selected activities with the person with dementia and the caregiver (Gitlin et al., 2008). During phase III, OT practitioners continue to provide caregiver training and encouragement in the use of activities, and help families generalize specific approaches to other care challenges (Gitlin et al., 2008). Most sessions include both the caregivers and the person with dementia. Pilot studies have shown that TAP intervention increased engagement in activities and decreased the amount of time providing care to people with dementia (Gitlin et al., 2008).

The approach used for this study was the *Montessori Method* or MBDP (Malone & Camp, 2007). The central principles of this method include grading tasks, focusing on the process rather than on the outcome, using everyday materials, and following a pattern for assigning activities (Jarrot et al., 2008). It is a common misconception that people with dementia can no longer learn, but research is refuting this (Leland, 2008). As reasoned by Dr. Cameron Camp, people with dementia are a good match for Montessori-based interventions because they have lost higher brain function (Leland, 2008). One Montessori principle purports that you can bypass the deficits by drawing on existing skills and habits (Leland, 2008). This creates what Montessori described as "normalized environments" which means environments that challenge but also allow for success (Leland, 2008). Montessori-based interventions also employ extensive use of external cues and reliance on procedural memory rather than declarative memory (Orsulic-Jeras, Schneider, & Camp, 2000). For people with dementia, the key is to build on retained abilities rather than letting the deficits limit their life (Leland, 2008; Skrajner, et al., 2007). While early studies have suggested that ADL completion was not directly

influenced by the use of Montessori-based interventions, evidence indicates there was a reduction in agitation (Padilla, 2011). Consequently, this allowed for increased participation in ADL tasks when delivered through Montessori-based activities (Padilla, 2011).

Additional examples of non-pharmacological dementia approaches located include the use of Snoezelen or controlled multisensory environment (MSE) (Chung & Lai, 2002) and the Eden Alternative (Weinstein, 1997). In spite of this, there is not an agreed upon approach or intervention utilized by residential care settings for people with dementia to improve their health, well-being and quality of life. The evidence does indicate that people with dementia benefit from environments which are smaller in size, more home-like, offer quality stimulation but also have noise reduction provisions (Morgan-Brown, M., Newton, R., & Ormerod, M. 2013). Settings that have more CNAs, activity staff and increased involvement of family members were also shown to be favorable as well. The findings do suggest there are advantages for people with dementia residing in special care units. In general, these characteristics included a reduced need for physical or chemical restraints, decreased use of psychotropic medications, increased participation with ADLs and a reduction in negative behaviors (Reimer, Slaughter, Donaldson, Currie, & Eliasziw, M., 2004; Nakanishi, Nakashima & Sawamura, 2012).

Conclusions

Despite the future growth of the dementia population, this review demonstrated that there is no consensus as it relates to dementia specific education and training for healthcare workers across care settings or levels of practice. As of 2012, CMS has begun to regulate training for CNAs as it pertains to people with dementia. While there are some

non-pharmacological programs for dementia management, they are not used often in residential care facilities. However, evidence suggests that there is a benefit for dementia specific education and training to ensure that the healthcare workforce can effectively deliver services to persons with dementia. With the anticipated future in increased incidence of people with dementia, it will be crucial for healthcare workers to be able to effectively serve this population.

OT practitioners cannot continually provide skilled services, but we can help educate and train nursing staff, caregivers and families on how best to serve those with dementia to improve positive outcomes and address unmet needs. This project is my effort to provide the OT profession with a useful, evidence-based alternative. My goal and objective is to bring to the forefront, the fact that people can and do benefit from engagement and participation in occupation. While people with dementia have limitations and deficits, they still do have remaining abilities (Warchol, 2000; Warchol, 2004). Hopefully, this study will enable and empower healthcare workers to address the special needs of people with dementia.

Chapter Three: Approach

Description of Project

The primary objective of this doctoral project was to increase participation in daily occupations (self-feeding) for people with dementia in residential care facilities. According to previous studies conducted by Lin et al., 2010; Lin, Huang, Watson, Wu & Lee, 2011, Nightingale, 2011; and Wu & Lin, 2013, there are four primary activities or exercises used in Montessori-based programming thought to promote improved self-feeding skills: scooping, pouring, squeezing and eye-hand coordination. These activities and exercises related to feeding and mimicked movements required for eating and drinking. The purpose of these types of activities was to assist in preparing the person's mind and body for the eating process (Camp, 1999). The repetitious nature of the activities tapped into the person's procedural memory, which typically remained even as the disease advanced (Camp, 1999).

A pilot study utilizing a case study design was used. This pilot study was conducted using Montessori-based occupational therapy interventions designed for people with dementia who have eating difficulties and reside in a residential care facility. This study also used a pretest-posttest design to examine and determine the effectiveness of Montessori-based occupational therapy interventions on self-feeding abilities, behaviors during mealtimes and food and fluid intake for people with dementia.

Institutional Review Board and Subject Protection

After completion of the required institutional training and application, St. Catherine University Institutional Review Board approved the study (see appendices A, B & C). The residential care facility's administrator and director of nursing approved access to the participants, staff and data. Due to the nature of dementia, participants were deemed legally incapacitated for decision-making purposes. However, written proxy consent for each participant was obtained from the participant's family member, guardian or healthcare power of attorney to take part in the study (see appendix D). All data were kept anonymous and confidential, with no identifiable information. The data was kept on a jump-drive by researcher until the publication process is completed. Five participants were chosen from one residential care facility in the Midwest. Sampling criteria included being diagnosed with ADRD and presenting with difficulties during self-feeding activities. A collaboration process between the researcher and nursing staff was utilized to identify suitable participants such as through recently documented decline in self-feeding abilities.

Design

There were three distinct periods in this study as outlined in Table 1. The pre-intervention period, the intervention period and the post-intervention period. The overall length of this study was 10 weeks with an eight week intervention period. During the pre-intervention period, baseline data were collected for each of the five participants. In addition to continued data collection, the intervention period also consisted of Montessori-based occupational therapy. Activities or exercises were provided 1:1 in 15 – 30 minute sessions three days per week, for eight weeks just prior to a meal (see

appendix E). Since repetition and routine are paramount to the *Montessori Method*, there was a specific schedule of interventions that was followed. On each intervention day, participants were given their assigned intervention: cognitive, life skills or sensory based activities or exercises (see appendix F). During the post-intervention period, data were again collected for each of the five participants.

Table 1

Description of the Three Periods During the Self-Feeding Study

	Pre-intervention Period (1 week)	**Intervention Period** (8 weeks)	**Post-intervention Period** (1 week)
Feeding Observation Tool	EdFED-Q		EdFED-Q
Cognitive; life skills; or sensory-based activities or exercises		Montessori-based occupational therapy	
Recording and tracking of participants' behaviors, verbal and physical assist during meals	Observation of 3 meals for behaviors, caregiver verbal and physical assistance (average)	Observation during a meal for behaviors, caregiver verbal and physical assistance	Observation of 3 meals for behaviors, caregiver verbal and physical assistance (average)
Recording and tracking of Participants' meal consumption	Food and fluid intake (percentage)	Weekly food and fluid intake (percentage)	Food and fluid intake (percentage)

Recording and tracking of participants' weight	Gross body weight (pounds)	Bi-weekly gross body Weight (pounds)	Gross body weight (pounds)
Recording and tracking of time participants' spent during meals	Length of meal (minutes)	Length of meal (minutes)	Length of meal (minutes)

Study Methods

The methods for this pilot study were modified from studies done by Lin et al., 2010; Lin, Huang, Watson, Wu & Lee, 2011, Nightingale, 2011; and Wu & Lin, 2013 that met my specific aim of improving feeding outcomes. The pilot study targeted five people who were identified as having self-feeding problems such as an inability to bring food to mouth or use utensils, lack of interest or aversion to food, or decreased food and fluid intake.

Pre-intervention data were collected and recorded by the researcher to measure participant's amount of feeding difficulty and nursing intervention for self-feeding using the Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q (see appendix G) (Lin, Huang, Watson, Wu & Lee, 2011). Each participant was observed during three different mealtimes to quantify self-feeding abilities and duration of mealtimes (Lin, Huang, Watson, Wu & Lee, 2011). This was observed and collected for each participant during the pre-intervention period (Lin, Huang, Watson, Wu & Lee, 2011).

Post-intervention data were collected and recorded by the researcher to measure participant's amount of feeding difficulty and nursing intervention for self-feeding using

the EdFED-Q (Lin, Huang, Watson, Wu & Lee, 2011). Each participant was observed during three different mealtimes to quantify self-feeding abilities and eating time (Lin, Huang, Watson, Wu & Lee, 2011). A stopwatch and clock was used to measure meal duration (see appendix H). This was observed and collected for each participant during the post-intervention period (Lin, Huang, Watson, Wu & Lee, 2011).

In this study, Montessori-based programming served as a precursor to the occupation of self-feeding. Montessori-based occupational therapy interventions included a variety of stimulating, visually-appealing materials taken from the everyday environment. Activities and exercises were selected for their relevance to the skills required for eating and drinking such as scooping, pouring and squeezing (Lin et al., 2010; Lin, Huang, Watson, Wu & Lee, 2011, Nightingale, 2011; and Wu & Lin, 2013). Specific examples of Montessori-based activities related to eating and drinking include squeezing food items in tongs, pouring dry corn kernels into containers or smelling spices (Lin et al., 2010; Lin, Huang, Watson, Wu & Lee, 2011, Nightingale, 2011; and Wu & Lin, 2013).

Activities were packaged in "kits" that were developed and prepared for in advance based on several factors: information obtained about the participants' background and interest and data gathered from previous studies (Lin et al., 2010; Lin, Huang, Watson, Wu & Lee, 2011, Nightingale, 2011; and Wu & Lin, 2013). The researcher created activity "kits" fashioned from lists of materials and activities from Camp (1999). These kits consisted of a shoe-box size container that held all of the materials necessary for that activity (Femia, 2006) (see appendix I). Activity kits represented three domains of activity: cognitive stimulation; life skills; and sensory

stimulation (Femia, 2006). Each domain represented an important component related to eating. Cognitive components involved engagement, decision-making or problem-solving such as food or drink choice. Life skills components consisted of the movements needed to feed oneself as well as the feeding activity itself. Sensory components included the perceived color, shape, smell or taste of the food or drink. Participants were familiar with the foods that were used, but not consumed, during training sessions such as small, whole potatoes, and gummy candy. (Lin, Huang, Watson, Wu & Lee, 2011; Wu & Lin, 2013).

In each session, only one type of Montessori-based occupational therapy intervention was practiced (see appendix E). The 1:1 intervention lasted 15–30 minutes and was practiced just prior to the mealtime. This occurred three days per week, on discontinuous days (e.g. Monday, Wednesday, and Friday) for eight weeks (Nightingale, 2011; Wu & Lin, 2013; Lin, Huang, Watson, Wu & Lee, 2011) (see appendix J). A meal, with additional support and cuing, followed the Montessori-based occupational therapy interventions.

Instruments

Edinburgh Feeding Evaluation in Dementia.

The EdFED-Q is a valid and reliable observational instrument used to identify eating and feeding difficulties and determine the level of assistance needed (Amella, 2007). The EdFED-Q was developed and tested extensively in psychogeriatric units and nursing homes (Amella, 2007). Mokken scaling of the seven behavior items formed a hierarchy of mealtime behavior so that behavior can be predicted. The EdFED-Q has been used as both a caregiver report and observational instrument. When observing a

caregiver assisting a person with dementia at meals, it was possible to also assess the quality of their interaction even though the EdFED-Q only measured the behavior of the person with dementia (Amella, 2007).

Body Weight and Meal Consumption.

Data were collected for gross body weight, percentage of food intake and percentage of fluid intake. Data containing gross body weight, percentage of food intake and percentage of fluid intake were collected and recorded for each participant during both the pre-intervention and post-intervention periods for comparison. Data for gross body weight were obtained by nursing staff and retrieved by the researcher from the participant's medical records (see appendix H). Gross body weight were collected, tracked and recorded by researcher on a bi-weekly basis during the intervention period as a method of measuring progress. Percentages of food and percentages of fluid intake were collected, tracked and recorded by researcher on a weekly basis during the intervention period as a method of measuring progress (see appendix H).

Clinical Observation

Pre-intervention data for behaviors consisted of tracking and recording the cumulative frequency of difficult behaviors during mealtimes (see appendix J). Specific behaviors include "constant unwarranted request for attention or help", "exit seeking", "repetitive sentences or questions", "general restlessness or agitation" and "yelling out" (Elliot, 2011; Elliot, 2013). Behaviors of each participant were recorded during mealtimes. Ongoing data for behaviors were collected, tracked and recorded by researcher as a method of measuring progress. Data for behaviors were also collected and recorded for each participant during the post-intervention period for comparison.

In addition, pre-intervention data for caregiver verbal assistance and caregiver physical assistance consisted of tracking and recording the cumulative frequency of assistance during mealtimes (see appendix J). Ongoing data for caregiver verbal assistance and caregiver physical assistance were collected, tracked and recorded by researcher as a method of measuring progress. Data for caregiver verbal assistance and caregiver physical assistance were also collected and recorded for each participant during the post-intervention period for comparison.

Both direct and indirect staff interactions with participants were observed during mealtimes. Field notes about environment were also recorded such as whether there was music playing or whether there were other residents sitting at the same table. Other general observations of participants included affect and mood or whether the participant was alert, talkative or sleepy.

Chapter Four: Outcomes

Purpose of project

The purpose of this project was to determine whether the *Montessori Method* for dementia may be an effective intervention that helps people with dementia experience improved self-feeding abilities, reduced behaviors during meal-times and increased food intake.

The specific aims of this project were to:

- Use the *Montessori Method* for dementia to trial a feeding protocol at a resident care facility.
- Examine the outcome of the Montessori-based occupational therapy interventions on self-feeding abilities, behaviors during mealtime and food intake for people with dementia.

There were five participants in this study. The age for the participants ranged from 81 to 92 years. The majority of the participants were female (4) with only one male. The participants were a dynamic group of individuals. All of the participants had physical challenges such as needing glasses or hearing aids. Some of the participants had communication difficulties. However, none of these conditions prevented their ability to both initiate and complete the physical actions necessary to participate in the project. All participants were able to fully complete this study.

Quantitative project outcomes

Pre-intervention and post-intervention data for participants were collected using the EdFED-Q (Watson & Dreary, 1997). Table 2 depicts the participants' scores both pre-intervention and post-intervention. The EdFED-Q consists of a 'feeding difficulty'

indicator and a 'nursing intervention' indicator. A higher score is indicative of more feeding difficulties. There was a difference between the pre-intervention and the post-intervention scores. Each of the participants' scores decreased from the pre-intervention period to the post-intervention period. Scores on the post-intervention EdFED-Q for all participants were less than the pre-intervention scores.

Table 2

Participants' EdFED-Q Pre-intervention and Post-intervention Scores

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
Pre-intervention	11	8	19	9	15
Post-intervention	6	6	12	4	7
Total change	-5	-2	-7	-6	-8

Pre-intervention and post-intervention data for participants were collected using their gross body weight which was measured in pounds. Gross body weights were also collected bi-weekly. Table 3 reveals pre-intervention, post-intervention and bi-weekly gross body weights. While weights did fluctuate, all participants' weights either were maintained or increased.

Table 3

Participants' Gross body weight (pounds)

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
Pre-Intervention	120.8	181.1	147.3	133.9	167.8
Week 2	119.7	180.7	146.4	133.7	168.4
Week 4	121.3	182.2	148.0	134.2	169.7
Week 6	120.4	181.8	149.9	134.0	170.4
Week 8	121.9	182.9	150.7	133.7	170.9
Post-Intervention	122.4	183.7	151.6	134.2	171.9
Total Weight Change	+1.6	+2.6	+4.3	+0.3	+4.1

Pre-intervention and post-intervention data for participants were collected through observation of three meals to quantify self-feeding abilities. Areas of interest focused on behaviors, caregiver verbal assistance and caregiver physical assistance. Figure 1 shows that all participants except participant 3 experienced decreases in focus areas from pre-intervention to post-intervention. Participant 3, however, showed no change.

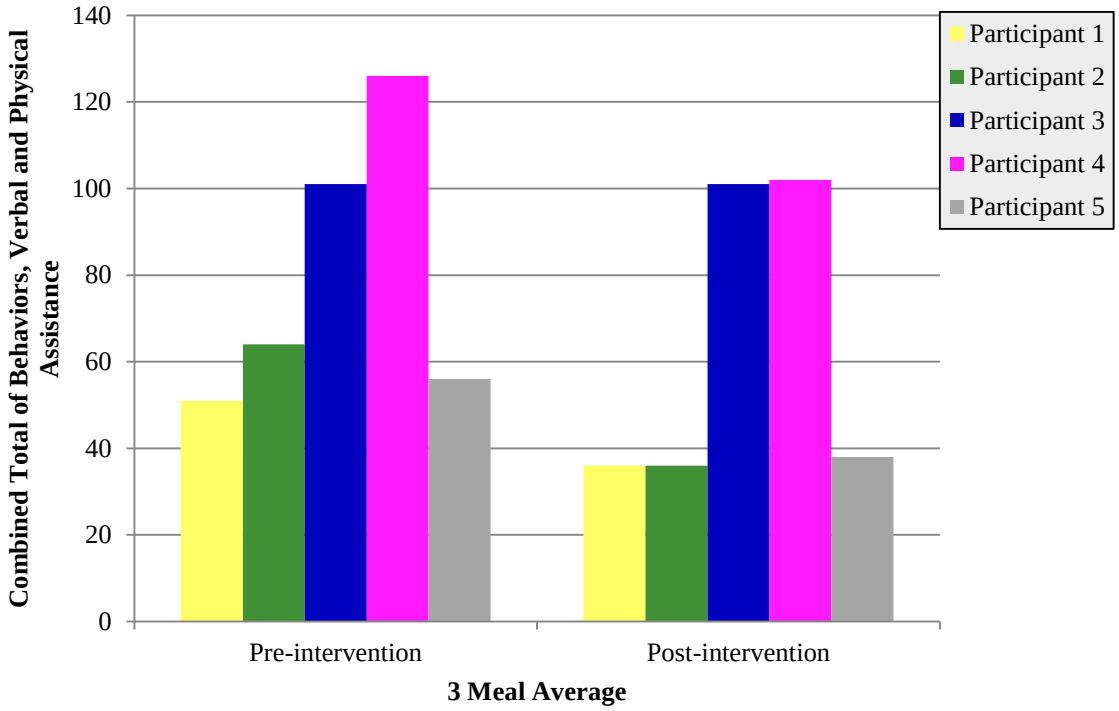

Figure 1. Pre-intervention and Post-intervention data.

Pre-intervention and post-intervention data for participants concerning meal intake were collected and averaged on a weekly basis. Figure 2 demonstrated pre-intervention, post-intervention and weekly averages of meal intake. Meal intake averages either remained status quo or increased. Measurements were reflected in percentage format using increments of 25 such as 0%, 25%, 50%, 75% and 100%. The data were collected and recorded by nursing staff, not by the researcher. This data were then retrieved from the participant's medical chart.

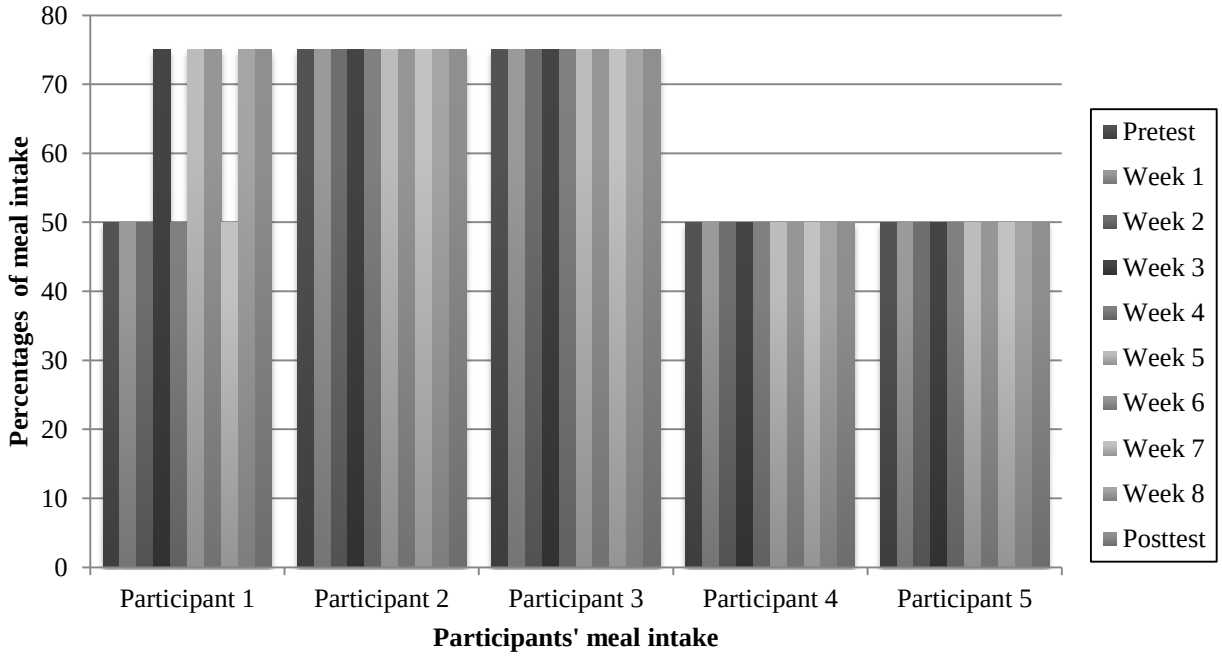

Figure 2. Participants' Bi-weekly Percentages of Meal Intake.

Data collection for participants during the intervention period looked at three primary areas. The first area tracked and recorded were behaviors during mealtimes. Specific behaviors included 'constant unwarranted request for attention or help', 'exit seeking', 'repetitive sentences or questions', 'general restlessness or agitation' and 'yelling out' (Elliot, 2011; Elliot, 2013). Every episode, occurrence or incidence was marked and tallied. Figure 3 highlights the total of any episode, occurrence or incidence of the above listed behaviors during the 24 intervention sessions. Behaviors recorded in Figure 3 could be any or all combinations of the above listed behaviors but is not reflective of any one specific behavior. All participants showed a downward trend in behaviors with participants 2, 4 and 5 demonstrating a more pronounced decrease. Participants 1 and 3 showed variability throughout the 24 sessions. Participant 1

concluded the study fairly close to where she started in terms of total behaviors. Participant 3 increased her behaviors and concluded the study slightly higher in terms of total behaviors. However, participant 1 did show a decrease in the specific behavior of constant unwarranted request for attention or help. Participant 3 did show a decrease in the specific behavior of yelling out.

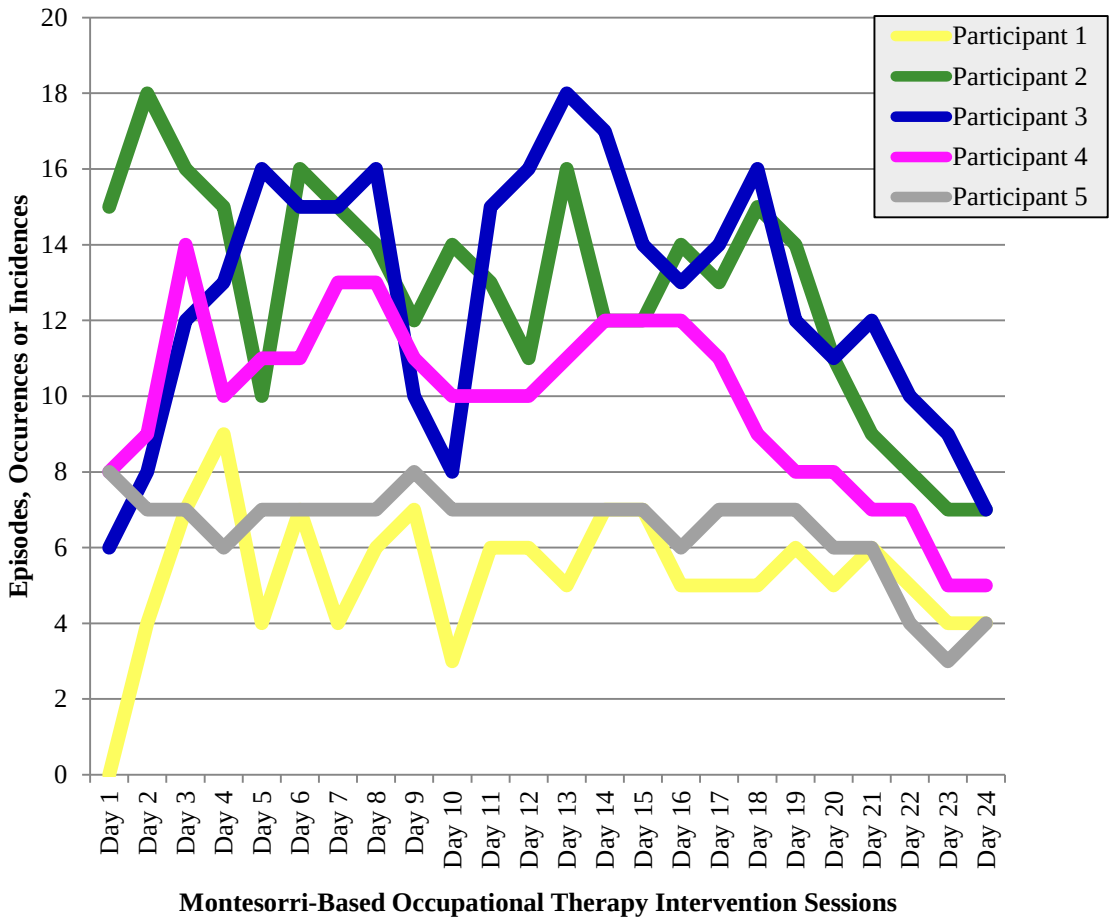

Figure 3. Participants' behaviors observed during mealtimes.

The second area tracked and recorded during mealtimes were episode, occurrence or incidence of caregiver verbal assistance. Every episode, occurrence or incidence was

marked and tallied during each of the 24 intervention sessions. Figure 4 highlights the total of any episode, occurrence or incidence of caregiver verbal assistance provided during the 24 intervention sessions. Participants 1, 4 and 5 showed a downward trend in caregiver verbal assistance. Participant 3 once again showed variability throughout the 24 sessions and concluded the study with a decrease in required caregiver verbal assistance, generally speaking. Participant 2 remained status quo throughout the study in terms of caregiver verbal assistance. Caregiver verbal assistance was still necessary for all participants after employing Montessori-based occupational therapy interventions.

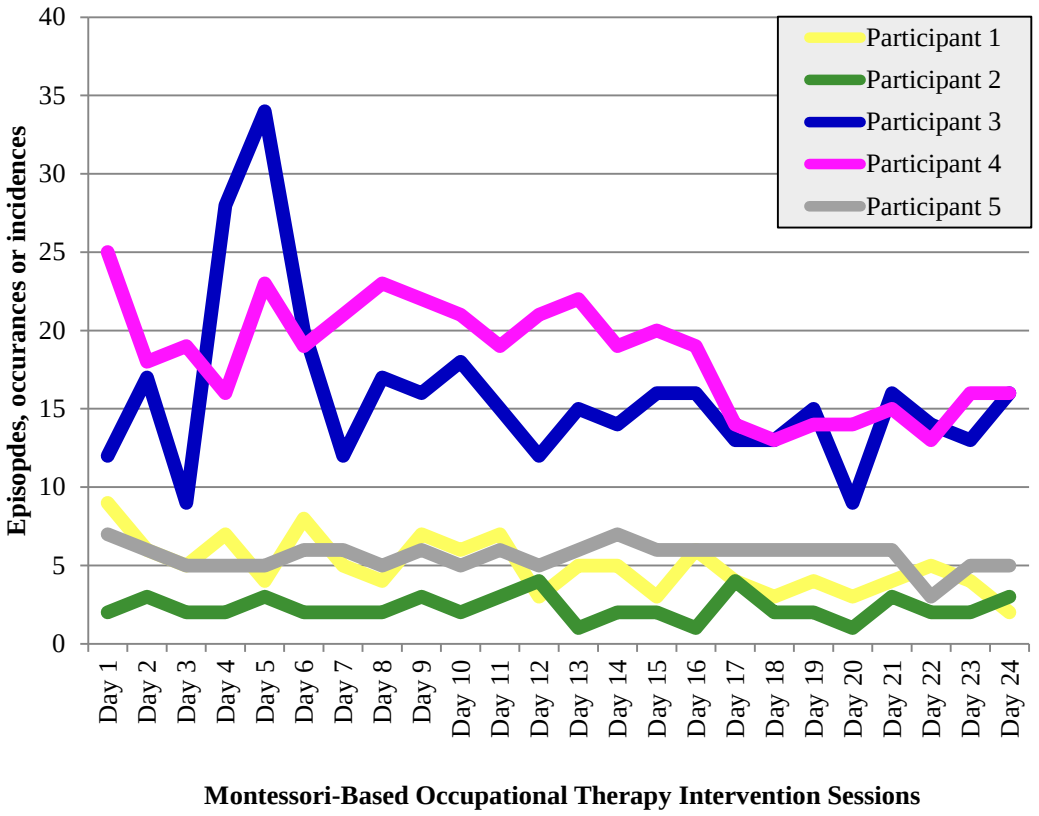

Figure 4 .Caregiver verbal assistance provided to participants during mealtimes.

The third area tracked during mealtimes was episode, occurrence or incidence of caregiver physical assistance. Every episode, occurrence or incidence was marked and tallied during each of the 24 intervention sessions. Figure 5 highlights the total of any episode, occurrence or incidence of caregiver physical assistance provided during the 24 intervention sessions. Participants 1, 2 and 5 showed a downward trend in caregiver physical assistance. Participant 3 continued to show variability throughout the 24 sessions and concluded the study with an overall decrease in required caregiver physical assistance. Participant 4 showed an overall upward trend for required caregiver physical assistance throughout the 24 sessions.

Caregiver physical assistance was still necessary for all participants after employing Montessori-based occupational therapy interventions. Some participants were being fed by caregivers before the intervention. After the intervention, participants had not improved enough to completely feed themselves but most did not need to be directly fed.

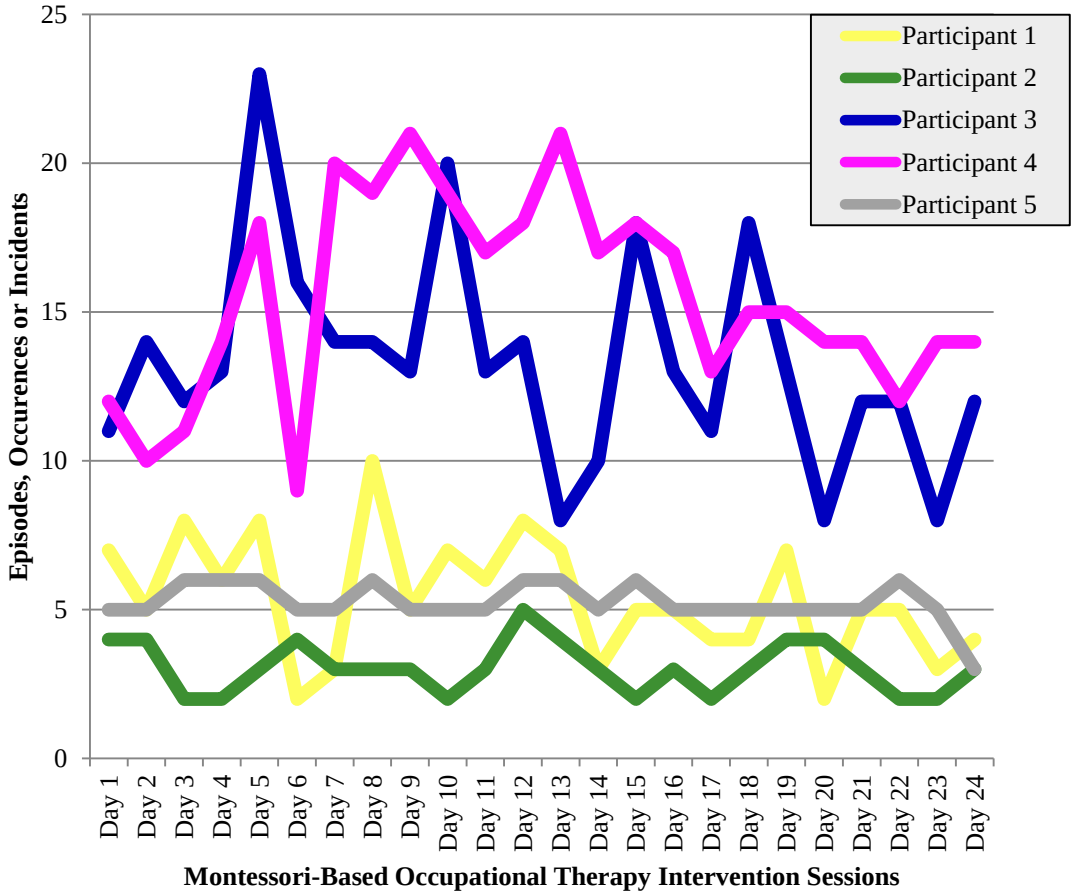

Figure 5. Caregiver physical assistance provided to participants during mealtimes.

Participants were observed for a total of 24 meals with eight each for breakfast, lunch and supper. Figure 6 represents the total combined averages for all episodes, occurrences or incidences of behaviors, caregiver verbal assistance and caregiver physical assistance based on different mealtimes for each of the five participants. The results clearly demonstrate little variability between breakfast, lunch and supper for each participant. Behaviors, caregiver verbal and caregiver physical assistance remained fairly consistent amongst each of the participants during the different mealtimes. Different types of meals yield different types of foods such as toast for breakfast which means

finger foods may be easier for the participant to manage rather than using utensils. In addition, supper, for instance, typically has a higher amount of food served than lunch or breakfast. Participants have also commented that there is too much food and at times seemed overwhelmed to the extent that they then did not even want to attempt to try eating.

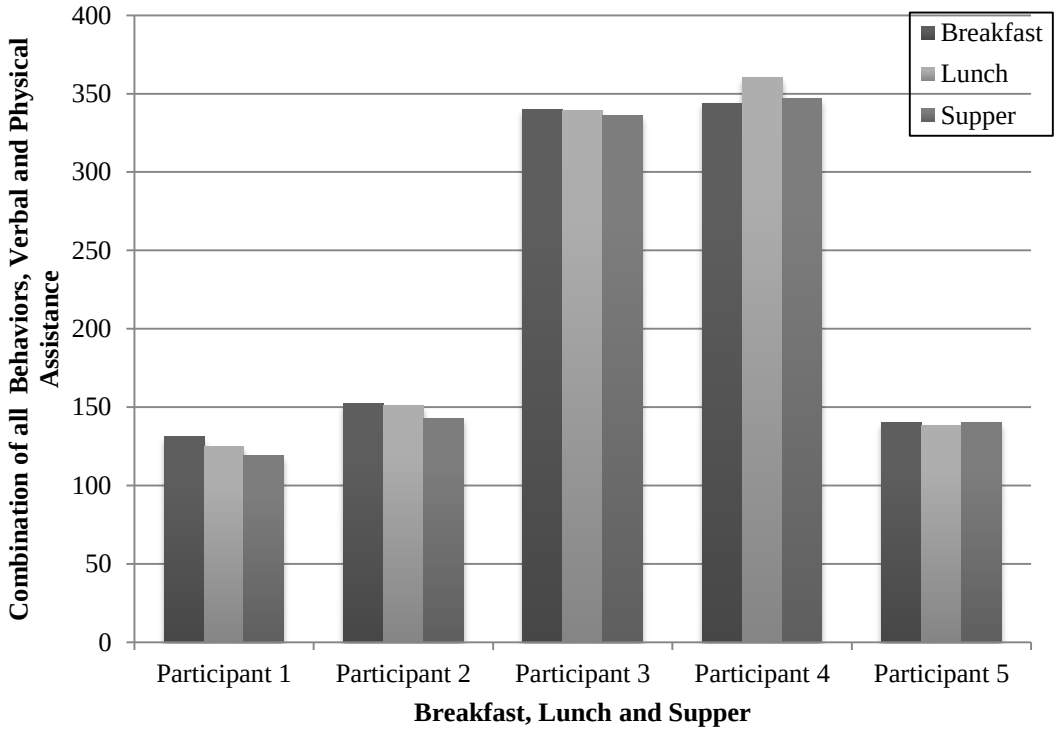

Figure 6. Total combined episodes, occurrences or incidences of behavior, caregiver verbal assistance and caregiver physical assistance during breakfast, lunch or supper.

Pre-intervention, intervention and post-intervention data for participants concerning the length of a meal were collected and averaged. Table 4 reflects average time of meals. Length of each meal was measured in minutes. The data represented in the 'meals' row are an average of all eating times from breakfast, lunch and supper. Pre-intervention and post-intervention are an average of three meals.

Table 4

Length of mealtimes reflected in minutes

	Participant 1	Participant 2	Participant 3	Participant 4	Participant 5
Pre-Intervention	29.5	31.4	27.9	30.8	26.4
Meals	30.3	32.9	28.4	34.1	27.8
Post-Intervention	31.2	33.7	29.1	34.9	27.1
Total change	+1.7	+2.3	+1.2	+4.1	+0.7

Qualitative project outcomes

Additional participant data were collected through observation during all three study periods. A couple of themes emerged as a result. For example, increased positive behavior and decreased sleep or boredom were exhibited more so by the participants both during and around mealtimes. The participants appeared more agreeable and willing to cooperate with staff such as for taking medications or vitals. Depressed mood, disruptive behaviors, and agitation or restlessness were exhibited less so by the participants. Participants demonstrated an interest in Montessori-based occupational therapy activities. Participants were also questioning when they will do this (referring to activities) again. There was increased recognition of researcher during times other than activities or meals such as in passing through the facility.

One unexpected outcome of this study was more perceived enjoyment of pre-feeding activities in comparison to the meal or eating. For example, the participants

appeared to display enjoyment and engagement during the pre-feeding activities as evidenced by increased talking, increased smiling and increased attention span.

Another unexpected outcome was the affect that environmental changes did or did not have on the participants. The participants' dining room is a moderately sized room with large banks of windows on two sides. There is a kitchenette in the corner of the room which creates noises and food smells. Each table seats up to four residents and will typically have the same residents attending for all three meals. During the study, participants remained at their usual, assigned tables with the same residents as before the study. As the study progressed, participants' demonstrated increased interactions such as eye contact and, at times, exchanging pleasantries with other residents at the table. There is a range of staff to resident ratios contingent upon the needs of the residents. For instance, residents who are dependent for self-feeding will require an increased staff to resident ratio. Background music from a radio playing did not appear to hinder or affect behaviors or level of assistance required during meals. However, participants became distracted by new residents or different staff in the dining room as evidenced by stopping the eating process or requiring redirection.

Chapter Five: Discussion

Montessori Methods

This project utilized the *Montessori Method* to engage people with dementia in meaningful, appropriate activities. By expanding on previous Montessori-based research, the goal was to decrease mealtime behaviors and increase self-feeding abilities (Lin et al., 2010; Lin, Huang, Watson, Wu & Lee, 2011, Nightingale, 2011; and Wu & Lin, 2013). The results of this study support previous findings and reveal that Montessori programming can decrease mealtime behaviors (Lin et al., 2010; Lin, Huang, Watson, Wu & Lee, 2011, Nightingale, 2011; and Wu & Lin, 2013). This study also suggested that Montessori-based occupational therapy interventions may increase meal duration time. Providing feeding assistance to people with dementia is one of the major nursing activities in LTC facilities (Passos, Sequeira, & Fernandes, 2012). Montessori-based occupational therapy interventions may also provide caregivers with an evidence-based strategy to deal with eating difficulties of people with dementia.

Improvement in self-feeding abilities was noted by decreased caregiver verbal assistance or caregiver physical assistance at the end the Montessori-based occupational therapy intervention period. Results showed that caregiver verbal assistance and caregiver physical assistance during the Montessori-based occupational therapy intervention period decreased over time for three of the five participants.

The average eating time during all periods was approximately 29 to 31 minutes and reflected appropriate meal consumption time. However, the participants were not

actually eating the whole time. Also, there were times during meals when caregivers were not attempting to feed or provide assistance to the participants. Longer eating times are recognized as a factor when people with dementia are assisted in eating by caregivers (Warchol, 2000; Warchol; 2004). A long eating time is commonly an issue related to the perception by caregivers to assist in the feeding of residents with dementia to reduce mealtime lengths and ultimately decrease the caregivers' workload (Lin et al., 2010). It is possible that the presence of the researcher caused caregivers to take more time with the participants or demonstrate an increased awareness during mealtimes. As a result of the study taking place, it is also possible that caregivers made of an effort to make mealtimes more personal and pleasurable for the participants.

To capture all three mealtimes, each participant was rotated through a breakfast-lunch-supper-scenario during the eight week Montessori-based occupational therapy intervention period. The purpose was to generate data as to whether time of day or particular meals yielded more positive outcomes. An important finding of this study revealed that the participants' behaviors, caregiver verbal assistance and caregiver physical assistance remained relatively stable throughout the different mealtimes.

Despite general improvements in eating ability for participants, no significant gains were found in meal intake or gross body weight. However, this is viewed as a positive outcome since the participants did not lose weight over time.

In general, Montessori-based occupational therapy presents a promising and useful intervention to engage and improve behavior and mood for people with dementia which in turn can provide a greater sense of self-worth, purpose, and quality of life (Camp, 1999; Camp, 2010).

Contributions to Occupational Therapy

For OT practitioners working in residential care settings, this intervention offered support that engagement or participation in occupations is beneficial. This intervention also provided reaffirmation that people with dementia can learn, especially when employing routines, rituals or tapping into procedural memory.

The principles of the *Montessori Method* are very much in line with OT practice and include enabling people to be as independent as possible, having meaningful places in their communities, having high self-esteem, and having the chance to make meaningful contributions to their communities (Elliot, 2007; Elliot, 2011).

The *Montessori Method* philosophy is consistent with occupation-based, patient-focused practice that emphasizes naturalistic treatment that can be graded for complexity. According to Dr. Cameron Camp, "activities involve immediate feedback, high probability of success, and repetition. Tasks are broken down into steps that can be mastered and then sequenced, an approach familiar to occupational therapists" (Camp, 2010, p. 4). Early Montessori-based occupational therapy intervention could give the person with dementia a better chance of maintaining independence. Interventions such as the *Montessori Method* that combine environmental modifications and caregiving approaches can help improve the person's affect, as well as independence in ADLs (Camp, 1999; Elliot, 2011; Elliot, 2013). OT interventions can also be effective when directed at maintaining or enhancing the quality of life of people with dementia (American Occupational Therapy Association, 2014; Elliott, 2011; Warchol, 2000; Warchol, 2004).

Challenges and Limitations

Though this study was based on previous *Montessori Method* programming research involving people with dementia, several limitations should be considered (Lin et al., 2010; Lin, Huang, Watson, Wu & Lee, 2011, Nightingale, 2011; and Wu & Lin, 2013). There were a number of variables that created some uncertainty about the effect of the *Montessori Method*. For instance, mealtimes had been changed through the course of the study which may have affected the outcome. Also, there is the possibility that participants responded to the increased attention and 1:1 nature of the study and not directly to the *Montessori Method*. Participants were recruited from one facility, which limited generalization of research findings. Additionally, generalizability of findings was further limited by the sample, which was comprised of five people living in a residential care facility. The small sample size may have reduced the power of the study and the ability to detect statistically significant results. Meal intake data were collected and recorded by nursing staff. The way in which this data were collected may not be an accurate reflection of more subtle meal intake changes. In addition, the way in which this data were recorded may not be an accurate representation of actual meal intake. Finally, participants in this study served as their own control group. Although there are advantages to this approach, utilizing a separate comparison group may have controlled for risks to internal validity.

Future implications

This study contributed to the field of dementia care by demonstrating the practical significance of Montessori-based occupational therapy intervention. Completion of this study and the utilization of *Montessori Method* principles have generated positive

outcomes by using an individualized approach for people with dementia in a residential care facility. There was a general perception of increased expressions of positive behavior such as pleasure, laughter and smiles following Montessori-based occupational therapy intervention. Participants' expressions of boredom such closing their eyes, sleeping or staring were decreased. Additionally, well-planned activities that support meaningful engagement can minimize disruptive mealtime behaviors in residential care settings (Camp, 1999; Camp, 2010).

Perhaps a standardized intervention can be designed and carried-out during routine activity time by trained nursing staff in residential care facilities. Scooping, squeezing and pouring are repetitive motions identified as necessary for facilitating the procedural learning required during eating and feeding activities (Camp, 1999). Nursing staff can be taught these activities to incorporate Montessori-based activities into a standardized intervention. Because the training materials come from daily life, this intervention is relatively inexpensive to put into practice. The next step of this project will be to work with staff to implement a protocol. Another idea to build on this project would be to trial Montessori-based occupational therapy interventions for other occupations such as grooming or toileting.

The results of this project and study may provide benefits for implementing Montessori-based occupational therapy interventions. Future research should involve a larger, more diverse sample and should incorporate a control group of participants who do not receive the intervention. It would also be helpful if a longitudinal study could be conducted.

Conclusion

These findings suggest that the *Montessori Method* may have a positive impact on the person's impairment despite levels of ADL function or cognitive impairment. The emphasis on progressive complexity and pre-planned activity modifications resonates with a person-centered approach to programming in which people facing significant challenges can experience success (Camp, 1999; Camp, 2010). Irrespective of activity content, application of Montessori principles enhanced interventions by engaging people with dementia in meaningful occupation that supports health, well-being and quality of life.

The implementation of Montessori-based programming, however, may offer some challenges. For example, the selection of activities that match the persons' abilities and interests is important (Camp, 1999; Camp, 2010). In addition, training staff on effective Montessori principles will be crucial. Staff interactions with the residents can mean the difference between them feeling frustration or pride and will ultimately be less successful in producing positive outcomes (Camp, 1999; Camp, 2010). In the end, the critical issue is whether this protocol or intervention can be integrated within residential care facilities in the light of staffing, scheduling and organizational constraints.

Chapter Six: Reflection

I am amazed at what I have accomplished during my past two plus years as an occupational therapy doctorate (OTD) student at St. Catherine University. I began the program feeling and believing that my final doctoral project would pertain to the dementia population in some fashion. Beyond that, I had no real direction on my project. I have gained new skills, abilities and knowledge throughout this process. My learning and growth has been immeasurable. Nevertheless, that is not to say it was an easy or seamless transition. It was a huge adjustment to organize and balance my life around the amount of work the OTD program entailed. However, I am grateful for my perseverance; it got me through the countless obstacles I've encountered along the way. Nonetheless, I have made every effort to ensure that each of my projects centered on the dementia population. I will recollect each of the courses taken in chronological order and correlate them to some of St. Catherine University's Student Learning Outcomes Matrix (SLOM): Occupation, Participation and Justice; Advanced Evidence Based Practice; Ethical Leadership; Organizational Administration; Educational Methods and Practices; Evolution of Ideas in Occupational therapy, Doctoral proposal; and Methods; Doctoral project.

My very first OTD course was Occupation, Participation and Justice. This was an interesting course with a strong focus on community. I wrote my first assignment about the critical disability model and related it to people with dementia. My practical application project was titled, "An Exploration for Occupation, Participation and Justice

among Persons with Dementia" which focused on exploring and researching existing dementia care models. As I reflect upon the SLOM, the outcome of *leading and influencing systemic change* comes to my mind. This objective prepared me to have the skills to lead and influence OT practice. One example from this course would be advocating for OT services to meet the needs of the dementia population.

My second course was Advanced Evidence Based Practice. This course was extremely time-consuming. Much of this course's content was unfamiliar to me and I needed to do a substantial amount of additional learning on my own. There were many new concepts I needed to understand before I could complete some of the assignments. I enjoyed locating data and literature as well as learning about statistics. My practical application project was titled, "Examining Characteristics of Residential Care Settings for Individuals with Dementia" which focused on whether an integrated versus segregated facility was most beneficial for individuals with dementia. The conclusion of this project resulted in learning that smaller, more home-like facilities contributed to increased quality of life for people with dementia. There were many assignments and each one served to create the final portfolio. Reflecting upon the SLOM, the outcome of *applying and creating evidence to support best practice* comes to my mind. This objective prepared me to apply evidence to OT current practice and research. One example from this course would be completing a critical analysis related to OT to influence effective use of evidence based practice.

My third course was Ethical Leadership. This course required a plethora of introspection and retrospection. The premise was that I needed to first identify and utilize my own strengths rather than improving upon my weaknesses. Initially, I did not

view myself as a leader. However, through completion of this course, I began to see that, indeed, I did function in the capacity of a leader. As I reflect upon the SLOM, the outcome of *advocating for justice guided by ethical principles* comes to mind. This objective reinforced the use of ethical decision making and principles when advocating for change. One example from this course would be pondering journaling about my own professional conduct as identified in the AOTA Code of Ethics and Ethics Standards (American Occupational Therapy Association, 2010).

My fourth course was Organizational Administration. This course focused on creating a plan outlining my intention to develop a dementia resource manual for a doctoral project. My practical application project was titled, "Product Planning for A Dementia Resource Manual: A Community Based Application Project" which focused on the steps involved in program/product planning.

My fifth course was Educational Methods and Practices. This course seemed to be "out of my scope of experience" in comparison to the other courses. The majority of this course was new learning and unfamiliar to me. I had not worked in the capacity as an educator. This course also required significant, additional learning on my own, as well. My practical application project was titled, "An education-based dementia program for nursing staff employed at a residential care facility" which focused on dementia training that was based upon a needs assessment. I was tasked with compiling a final portfolio of my educational training. As I reflect upon the SLOM, the outcome of *communicating with discernment and influence* comes to mind. This objective prepared me as a leader through proficient written and oral communication skills. One example

from this course would be developing an educational program that addressed occupational participation needs using pedagogical principles.

My sixth course was Evolution of Ideas in Occupational Therapy. This course was a lesson in the historical makeup and background of the OT profession. I was able to develop a deeper appreciation for our profession. The primary assignment was to identify the underlying theory that would inform my doctoral project. I chose Allen's Cognitive Disability Model to serve as the foundation of my project. Additionally, I lead an Eleanor Clarke Slagle lecture and completed a series of two PowerPoint presentations about relevant conceptual practice models.

My seventh and eighth courses were a hybrid consisting of the doctoral proposal course and the methods course. I started the semester with a firm grasp of my proposal idea. I quickly learned that idea, a dementia resource manual, was not a viable option. After much deliberation, my proposal idea had transformed into utilizing the *Montessori Method* to trial a feeding program for people with dementia.

My ninth and final OTD course was implementing and completing my doctoral project and paper. This course, by far, was the most labor intensive in terms of both time spent actually doing the project and time spent writing the chapters of the final paper.

Each of my practical application projects focused on the dementia population. A review my previous projects provided a useful reminder of all the countless hours of work I have already completed. I believe every one of these courses have served in some capacity to inform my final doctoral project. I can honestly report that these courses have been challenging, rigorous, and demanding. Each course has taken me outside of my comfort zone into unfamiliar territory. I have pushed myself beyond what I believed

were my capabilities. I see tremendous growth in myself both personally and professionally.

Additionally, I see aspects of the seven SLOM areas in my previous course projects. I believe I have been a diligent advocate for the OT profession and for my patients. I also believe I have conducted myself in an ethical manner. This project tested my boundaries in so many respects. In particular, I have had to put myself in leadership roles. While my natural inclination was to be a quiet leader, I had to step up and put myself out there. In the past, I would most likely not have sought out opportunities to function as a leader. I am definitely more confident in these seven SLOM areas and now have the words, such as occupational justice, to define what I was already doing.

Enhancing life for people with dementia is a mission I know will be important for my entire career. The statistics on the projected number of people that will be diagnosed with dementia is astonishing. Serving this population will continue to be an integral part of OT intervention. Our society needs to continue to examine and explore better ways to help this population maintain abilities and skills for as long as possible. It is my hope that this project contributes to the development of OT protocols for the dementia population. It has been quite a journey thus far. I look forward to the end and to a new beginning, a new chapter and a new season of life.

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Appendix A:

Citi Training Certificate

COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI)

SOCIAL & BEHAVIORAL RESEARCH - BASIC/REFRESHER CURRICULUM COMPLETION REPORT

Printed on 10/29/2014

LEARNER	Jill Fyksen (ID: 4186477)
DEPARTMENT	Occupational therapy
EMAIL	jvfyksen@stkate.edu
INSTITUTION	St. Catherine University
EXPIRATION DATE	10/25/2018

ALL IRB APPLICANT INVESTIGATORS AND ADVISORS: SOCIAL AND BEHAVIORAL RESEARCH : Choose this group to satisfy CITI training requirements for investigators and staff involved primarily in Social/Behavioral Research with human subjects.

COURSE/STAGE:	Basic Course/1
PASSED ON:	10/26/2014
REFERENCE ID:	13116702

REQUIRED MODULES	DATE COMPLETED	SCORE
History and Ethical Principles - SBE	10/26/14	5/5 (100%)
Defining Research with Human Subjects - SBE	10/26/14	5/5 (100%)
Assessing Risk - SBE	10/26/14	5/5 (100%)
Informed Consent - SBE	10/26/14	5/5 (100%)
Privacy and Confidentiality - SBE	10/26/14	5/5 (100%)
Unanticipated Problems and Reporting Requirements in Social and Behavioral Research	10/26/14	5/5 (100%)

For this Completion Report to be valid, the learner listed above must be affiliated with a CITI Program participating institution or be a paid Independent Learner. Falsified information and unauthorized use of the CITI Program course site is unethical, and may be considered research misconduct by your institution.

Paul Braunschweiger Ph.D.
Professor, University of Miami
Director Office of Research Education
CITI Program Course Coordinator

Appendix B:

Institutional Review Board Proposal Application

ST. CATHERINE UNIVERSITY

ST. CATHERINE UNIVERSITY REQUEST FOR APPROVAL FOR THE USE OF HUMAN SUBJECTS IN RESEARCH APPLICATION

Protocol ID: _____

Complete the following application in its entirety. You may excerpt material from your thesis or grant proposal, but your application should be relatively concise. Consent forms and additional supporting documents may be uploaded to separately; see Mentor IRB Directions. For questions, contact the IRB Assistant at 651-690-6204 or irb@stkate.edu.

Date of application:
11/22/14

Investigator name(s) and credentials (e.g., PhD, RN, etc.): (*List all co-investigators*)
Jill V. Fyksen, MS OTR/L

Project Title:
A case study in self-feeding using Montessori-based occupational therapy interventions for people with dementia.

Department:
OSOT – OTD Program

Level of Review:
In the Mentor IRB system, you must select the Review Type; selecting Exempt and Expedited will prompt additional questions for you to fill out. The default level of review is Full if not selected. For more information on the levels of review, go to the IRB website: https://www2.stkate.edu/irb/levels-review.

[ ] **Exempt** [ ] **Expedited** [X] **Full**

Has this research been reviewed by another IRB?

[ ] **Yes** [X] **No**

(If YES, please provide a copy of the letter of approval, or indicate the status of your application.

Will this research be reviewed by another IRB?

[ ] **Yes** [X] No, my institution does not have an IRB.

(If YES, please indicate your plans for review)

Note: *In cases where a research protocol requires approval from outside institutions (e.g., a hospital IRB or other college/university) as well as St. Catherine University, it is expected that the SCU IRB application will be submitted and approved before the researcher applies to the outside organization. Requests for exceptions to this protocol may be submitted by an SCU faculty member on his/her own behalf, or by the research advisor on behalf of student researchers. Contact the IRB chair (John Schmitt, PT, PhD; jsschmitt@stkate.edu) with these requests.*

1. **RESEARCH SUMMARY:** *Complete each section in clear, easy to read language that can be understood by a person unfamiliar with your research and your field.*

   a. **Purpose of the research:** *Provide a clear, concise statement of your purpose*.

      The purpose of this proposed doctoral project is to:

      - use the *Montessori Method* for dementia to trial a feeding program at a resident care facility to increase participation in self-feeding and;
      - examine the outcomes of Montessori-based occupational therapy interventions on the self-feeding, behaviors during mealtime, and food intake for people with dementia.

   b. **Background:** *Provide a concise summary in 1 - 2 brief paragraphs to explain the importance of the research and how it fits with previous research*.

      People with dementia have a basic human right to experience enhanced health, well-being, and quality of life through use of occupation or co-occupation irrespective of their ability to actively participate. Remaining abilities do exist, yet people with dementia display learned helplessness due to decreased participation in occupations. As a result, there is excessive disability amongst people with dementia living in residential care facilities. The value of occupation for people with dementia is two-fold: participation in occupation enhances health, well-being and quality of life and it decreases disruptive

behaviors that can result from boredom or lack of engagement. Improving the ability to self-feed for a person with dementia can result in other positive consequences. For example, research has shown that increased participation in self-feeding is likely to lead to decreased disruptive behaviors and increased in food and drink intake.

The *Montessori Method* for dementia is a specific approach to dementia care that can be implemented as an alternative to pharmaceutical intervention with its focus on purposeful and meaningful activity. The principles of the *Montessori Method* are very much in line with occupational therapy practice and include: enabling people to be as independent as possible, having a meaningful place in their community, having high self-esteem, and having the chance to make meaningful contributions to their community. The Montessori-based activities will include a variety of stimulating, multi-sensorially appealing materials taken from the everyday environment and selected for their relevance to the skills required for eating and drinking such as squeezing garlic in a garlic press, pouring dry corn kernels into containers or smelling spices.

c. **Research Methods and Questions:** *Give a general description of the study design and specific methods you will use in your investigation. Specify all of your research questions and/or hypotheses. Reviewers will consider whether the information you are gathering is necessary to answer your research question(s), so this should be clear in your application.*

Research questions:

1. Are Montessori-based occupational therapy interventions effective in improving self-feeding abilities for persons with dementia?
2. Are Montessori-based occupational therapy interventions effective in reducing disruptive behaviors in persons with dementia during mealtimes?
3. Are Montessori-based occupational therapy interventions effective in increasing food and drink intake for persons with dementia?
4. Are Montessori-based occupational therapy interventions effective in increasing gross body weight for people with dementia?

The methods for this pilot study will be modified from studies done by Lin, Huang, Su, Watson, Tsai & Wu, 2010; Lin, Huang, Watson, Wu & Lee, 2011, Nightingale, 2011; and Wu & Lin, 2013 to meet my specific aim of improving feeding outcomes. The case study will target 5 individuals with dementia who are identified as having self-feeding problems such as an inability to bring food to mouth or use utensils, lack of interest, aversion to food or decreased food or fluid intake.

Pre-test, baseline and post-test data will be calculated to establish overall effectiveness of Montessori-based occupational therapy interventions for improving participation in self-feeding of people with dementia. The data will

include level of feeding assistance, type and amount of disruptive behaviors during meals, percentages of food and drink intake and the participant's gross body weight. Level of feeding assistance and type and type and amount of disruptive behaviors will be observed by researcher. The Modified Barthel Index (MBI) will be used to collect data for level of feeding ability. The Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q) will be used to collect data for type and amount of disruptive behaviors during mealtimes. Percentages of food and drink intake and gross body weight will be obtained from medical records collected by the nursing department. The researcher will also be taking notes immediately following each intervention. The data will be analyzed to determine whether Montessori-based occupational therapy interventions can improve self-feeding abilities, decrease mealtime behaviors and increase food intake, fluid intake or gross body weight.

d. Expectations of Participants: *Give a step by step description of all procedures that you will have participants do. Attach any surveys, tests, instruments, interview questions, data collection forms, etc. that you will use with participants*.

1. Once participants are identified as appropriate for the intervention, nursing staff will introduce the idea to their guardians and give them the researcher's contact information.
2. The participants and their guardians will be introduced to the study after contacting the researcher and the consent process will occur.
3. Participants will be observed during 3 mealtimes for 30 minutes each to establish a baseline of feeding abilities, and disruptive behaviors.
4. Then they will participate in the Montessori intervention for 8 weeks, 3 times per week for approximately 15-30 minutes each time.
5. Each participant will be provided with Montessori-based activities such as scooping, pouring, squeezing or involving eye-hand coordination. The activities will come in the form of a box of items where they will be instructed to take all items out and sort through the contents. Further instructions will be provided only if needed.
6. During each session, only one type of Montessori activity will be practiced.
7. The activity session will last 15–30 minutes.
8. Each activity session will be practiced just prior to a mealtime.
9. Then they will be observed during their mealtime (with standard support and cuing) for self-feeding, behaviors and food intake.

e. Estimated Time Commitment for Participants:

The study is 3 times per week for 8 weeks equaling 24 visits. The week prior to the study and the week following the study are for observation purposes to establish pre and posttest data.

24sessions	**Number of sessions for each participant**
30-60 minutes	**Time commitment per session for each participant**
Up to 35 hours each	**Total time commitment for each participant**

f. **Access to Existing Data:** *If you are analyzing existing data, records, or specimens, explain the source and type, means of access, and permission(s) to use them*.

N/A

2. SUBJECTS: *Provide your best estimates below*.

a. Age Range of Subjects Included: 65 years or older

b. Number :

1 Male 4 Female 5 Total

c. Target Population: Describe your target population (the group you will be studying; e.g. seniors, children ages 9-12, healthy adults 18 or over, etc.).

People with dementia living in a residential care facility, ages 65 and older. A person functioning at any stage of dementia will be deemed as appropriate provided the person demonstrates ability to minimally participate during self-feeding such as holding a cup or utensil.

d. Specific Exclusions: *If women and/or minorities are to be excluded from the study, a clear rationale should be provided in section "f" below*.
NA

e. Special Populations Included: *Select any special population that will be the focus of your research.*
NOTE: *These groups require special consideration by federal regulatory agencies and by the IRB.*

- [ ] **Minors (under age 18)**
- [ ] **HIV/AIDS patients**
- [ ] **St. Catherine Employees**
- [ ] **Economically disadvantaged**
- [ ] **Students**
- [ ] **Educationally disadvantaged**
- [ ] **Pregnant women**
- [ ] **Hospital patients or outpatients**
- [ ] **Elderly/aged persons**
- [ ] **Prisoners**
- [X] **Cognitively impaired persons**
- [ ] **Minority group(s) and/or non-English speakers** _____

☐ ***(please specify)*** _____

☐ **Other Special Characteristics and Special Populations**
(please specify) _____

f. Provide reasons for targeting or excluding any special populations listed above.

I have worked in residential care settings for almost 20 years. In an effort to increase participation in occupation of persons with dementia, I want to learn and practice evidenced-based interventions. I have support from my facility and access to this population.

3. RECRUITMENT: LOCATION OF SUBJECTS *(Select all that apply)* **:**

☐ **St. Catherine University students**

☐ **School setting (PreK – 12)**

☐ **Hospital or clinic**

☒ **Other Institution *(Specify)*:** Residential Care Facility

☐ **None of the above *(Describe location of subjects)*:** _____

NOTE: *If subjects are recruited or research is conducted through an agency or institution other than St. Catherine University, submit either written or electronic documentation of approval and/or cooperation. An electronic version should be sent from the email system of that particular institution. The document should include the name and title of the appropriate administrator sending the approval*.

a. Recruitment Method: *Describe how you will recruit your subjects? Attach a copy of any advertisement, flyer, letter, or statement that you will use for recruitment purposes.*

Participants will be identified as appropriate for the intervention if they have a diagnosis of Alzheimer's disease or related dementias and a decreased ability to self-feed independently. Referrals will be made in collaboration with nursing staff that will assist in identifying candidates. Nursing staff will then invite the candidates and guardians in person using a flyer. They then will need to contact the researcher if they want to hear more or are interested in participating.

b. Incentives: *Will the subjects be offered inducements for participation? If yes, explain.*

No

4. RISKS AND BENEFITS OF PARTICIPATION

a. Select all that apply. Does the research involve:

[X] **Use of private records (medical or educational records)**

[X] **Possible invasion of privacy of the subjects and/or their family**

[ ] **Manipulation of psychological or social variables**

[X] **Probing for personal or sensitive information in surveys or interviews**

[ ] **Use of deception**

[ ] **Presentation of materials which subjects might consider offensive, threatening or degrading**

[ ] **Risk of physical injury to subjects**

[ ] **Other risks:**

b. Risks: ***Briefly describe the risks of participation in your study, if any. Describe the precautions taken to minimize these risks.***

The participants may not want to do the Montessori activities and the activities may make them more agitated. If the participant refuses to do the pre-meal activities, I will stop. I will try again in 2 days. If the participant continues to refuse (2 times in a row), then I will stop the intervention all together. Participants and guardians will be told they can stop the study at any time for any reason.

c. Benefits: *List any anticipated direct benefits to your subjects. If none, state that here and in the consent form.*

1. Direct Benefits: *List any anticipated direct benefits to your subjects. If none, state that here and in the consent form.*

The expected direct benefits of this project are that they can participate in the Montessori activities that may be enjoyable and stimulating.

2. Other Benefits: *List any potential benefits of this research to society, including your field of Study.*

Montessori-based occupational therapy interventions may be effective in reducing behaviors during mealtimes for persons with dementia. Additionally, Montessori-based occupational therapy interventions may be effective in increasing food and drink intake for persons with dementia. If effective, this will contribute to both clinical practice and evidenced-based literature. In turn, this may influence change in geriatric occupational therapy practice through a renewed focus on the value of participation in occupation for persons with dementia.

d. Risk/Benefit Ratio: *Justify the statement that the potential benefits (including direct and other benefits) of this research study outweigh any probable risks*.

There are minimal risks in this study. The Montessori activities used prior to feeding are simple game-like activities that are harmless and the occupational therapist (OT) will be present at all times. For example, they will practice scooping food items such as dried corn kernels or practice pouring liquids such as water. The benefits of improved self-feeding abilities, reduced behaviors during mealtimes and increased food intake for persons with dementia outweigh risks identified.

e. Deception: *The use of deception in research poses particular risks and should only be used if necessary to accomplish the research, and when risks are minimized as much as possible. The researcher should not use deception when it would affect the subject's willingness to participate in the study (e.g., physical risks, unpleasant emotional or physical experiences, etc.).*

Will you be using deception in your research?

[ ] **Yes** [X] **No**

If yes, justify why the deceptive techniques are necessary in terms of study's scientific, educational or applied value. Explain what other alternatives were considered that do not use deception and why they would not meet the researcher's objective. Attach a copy of a debriefing statement explaining the deception to participants.

5. CONFIDENTIALITY OF DATA

a. Will your data be anonymous?

[X] **Yes** [ ] **No**

(*Anonymous data means that the researcher cannot identify subjects from their data, while confidential data means that the researcher can identify a subject's response, but promises not to do so publicly*.)

b. ***How will you maintain anonymity/confidentiality of the information obtained from your subjects*****?**

In a written report, pseudonyms will be used when describing participant data. Nothing that can identify participants will be shared in public dissemination.

c. **Data Storage:** *Where will the data be kept, and who will have access to it during that time*?

Data will be stored on password-protected removable digital disk drives. It will be stored in a locked file cabinet at the researcher's home. The identifiers will be kept in a separate location from the study data with no identifiers stored with the study data on the removable digital disk drive. The identifiers will be kept on its own removable digital disk drive separate from the study data. It will not be stored on a personal computer. As soon as the data is analyzed, written up, and disseminated, the data will be deleted.

d. **Data Destruction*:*** *How long will it be kept? What is the date when original data will be destroyed? (All studies must specify a date when original data that could be linked back to a subject's identity will be destroyed. Data that is stripped of all identifiers may be kept indefinitely).*

All data will be stripped of identifiers. De-identified data will be destroyed in December, 2015.

e. **Availability of Data:** *Will data identifying subjects be made available to anyone other than you or your advisor? If yes, please explain who will receive the data, and justify the need.*

No

f. **Official Records:** *Will the data become a part of the medical or school record? If yes, explain.*

No

6. INFORMED CONSENT

a. How will you gain consent? *State what you will say to the subjects to explain your research.*

Once appropriate candidates are identified by the nursing staff, a nursing representative will tell them about the project and provide my contact information. If they are interested in hearing more about it and contact me,

I will explain the study to them (participant and/or guardian). If they wish to continue with the study, a consent form will be provided and a signature obtained. Participants and/or guardians will be asked if they have any questions about the project and will be reassured that participation is voluntary.

b. <u>Consent Document</u>: *Attach the consent or assent form or text of oral statement. A template is available in Mentor IRB.*

Attached.

c. <u>Timing of Consent Process</u>: *Note: In studies with significant risk or volunteer burden, the IRB may require that subjects be given an interim period of 24 hours or more before agreeing to participate in a study*

Consents will be obtained at least one week prior to the start of the pilot study.

d. <u>Assurance of Participant Understanding</u>: *How you will assess that the subject understands what they have been asked to do* (Note: *It is not sufficient to simply ask a yes/no question, such as "do you understand what you are being asked to do?")*

I will ask each participant and/or participant's guardian to repeat back what they understand will happen in the study: "Tell me in your own words what we're going to do." Prior to each practice session, I will give a brief explanation of what I would like them to do. I will ask the participant to repeat back what they understand and say "tell me in your own words what we're going to do."

7. ASSURANCES

By submitting this application, the researcher certifies that:

- **The information furnished concerning the procedures to be taken for the protection of human subjects is correct.**
- **The investigator, to the best of his/her knowledge, is complying with Federal regulations governing human subjects in research.**
- **The investigator will seek and obtain prior written approval from the IRB for any substantive modification in the proposal, including, but not limited to changes in cooperating investigators, procedures and subject population.**
- **The investigator will promptly report in writing to the IRB any unexpected or otherwise significant adverse events that occur in the course of the study.**
- **The investigator will promptly report in writing to the IRB and to the subjects any significant findings which develop during the course of the**

study which may affect the risks and benefits to the subjects who participate in the study.

- **The research will not be initiated until the IRB provides written approval.**
- **The term of approval will be for one year. To extend the study beyond that term, a new application must be submitted.**
- **The research, once approved, is subject to continuing review and approval by the IRB.**
- **The researcher will comply with all requests from the IRB to report on the status of the study and will maintain records of the research according to IRB guidelines.**

- **If these conditions are not met, approval of this research may be suspended.**

ST. CATHERINE UNIVERSITY

ST. CATHERINE UNIVERSITY REQUEST FOR APPROVAL FOR THE USE OF HUMAN SUBJECTS IN RESEARCH APPLICATION

IRB APPLICATION DOCUMENT CHECKLIST

The items listed below are the application, forms and supporting documents to be uploaded to Mentor IRB for your protocol/application submission. Consent forms and additional supporting documents may be uploaded to separately; see Mentor IRB Directions. For questions, contact the IRB Assistant at 651-690-6204 or irb@stkate.edu.

- [x] IRB Application
- [ ] PI Documentation for Investigator(s)*
- [ ] PI Documentation for Faculty Adviser (if applicable)*
- [x] informed consent form
- [ ] child assent form (if applicable)
- [x] recruiting materials (phone script, fliers, ads, etc.)
- [x] survey/questionnaire(s), focus group or interview questions (if applicable)
- [ ] conflict of interest/financial interest disclosure (if applicable)
- [x] letter(s) of support (if you are conducting research at another agency, school, etc.).

*PI Documentation is the completion report received for fulfilling the required Human Subjects Research education requirements in CITI Program. Each person will need to upload their PI Documentation to their individual Mentor IRB account. Directions are located in Mentor IRB.

Appendix C:

Institutional Review Board Proposal Application-Approval Letter

Using Montessori-based interventions for persons with dementia: A pilot study in self-feeding

IRB Application/ Protocol ID	365
PI	Jill Fyksen
PI Type	Student
Faculty/Research Advisor	Kathleen Matuska
Faculty/Research Advisor Acceptance Status	Accepted
Department	MA Occupational Therapy
Submitted By	Jill Fyksen
Co-PI's	
External P.I.'s	
Approval Status	New - Full Review
Date Received	12/03/2014
Date Approved	
Proposed Start Date	12/03/2014
End Date	
Date Closed	
Funding Source	
IRB Review Fee	
Consent Waived	Not Requested
Waiver of Documentation of Informed Consent	Not Requested
Subjects	• Individuals with Intellectual Disability
Number Of Subjects	5
Protocol/Application Description	12/03/2014 Fyksen_IRB_Application_final.docx
Consent Form	12/03/2014 Fyksen_IRB_Consent_Form_final.doc
Additional Documentation	12/03/2014 Fyksen_Modified_Barthel_Index.pdf 12/03/2014 Fyksen_Edinburgh Feeding Evaluation in Dementia Questionnaire.docx 12/03/2014 Fyksen_Letter_of_Support_Administrator.pdf 12/03/2014 Fyksen_Letter_of_Support_Director_of_Nursing.pdf
Protocol Advertisement	12/03/2014 Fyksen_Recruitment_Flyer_final.docx 12/03/2014 Fyksen_Script_for_nurses_recruiting_participants.docx

Renewal s

Amendments

Adverse Events

Event / Date	Status / Comments / Files	Submitted By
No Adverse Events Found.		

Appendix D:

Participant Consent Form

Introduction:
You are invited to participate in a research study investigating Montessori-based interventions for persons with dementia. This study is being conducted by Jill V. Fyksen, a doctoral student at St. Catherine University under the supervision of Dr. Kathleen Matuska, a faculty member in the Department of Occupational Science and Occupational Therapy. Your family member was selected as a possible participant in this research because he or she was identified as a person with dementia who is having difficulty with eating or drinking. Please read this form and ask questions before you agree to allow your family member to be in the study.

Background Information:
The purpose of this study is to determine whether Montessori-based occupational therapy interventions are effective in improving self-feeding abilities for persons with dementia. Approximately 5 people are expected to participate in this research.

Procedures:
If you agree to allow your family member to participate, he/she will be asked to do several specific activities or exercises just prior to meal time. Each person will be provided with Montessori-based activities such as scooping, pouring, squeezing or involving eye-hand coordination. During each session, only one type of Montessori activity will be practiced. The activity session will last 15–30 minutes. Each activity session will be practiced just prior to a mealtime. Each activity session will occur three days per week, on discontinuous days (e.g. Monday, Wednesday, and Friday) for eight weeks. A meal, with additional support and cuing, will follow the Montessori-based occupational therapy interventions. This study will take approximately 15-30 minutes over 24 sessions. Baseline data will be collected from the participant's medical records that include percentages of food intake, percentages of fluid intake and gross body weight. Pretest and posttest data will be collected the week prior to the study and the week following the completion of the study to assess feeding abilities and disruptive behaviors during mealtimes.

Risks and Benefits of being in the study:
The study has minimal risks. First, your family member may not want to do the activities or it may increase his/her agitation. In that case, the activities will be stopped immediately. The benefits to participation are threefold: your family member may experience improved self-feeding abilities, reduced behaviors during mealtimes, or increased food and drink intake.

Confidentiality:
Any information obtained in connection with this research study that can be identified with your family member will be disclosed only with your permission; the results will be kept confidential. In any written reports or publications, no one will be identified or identifiable and only group data will be presented. I will keep the research results in a locked file cabinet in my home office and only I and my advisor will have access to the records while I work on this project. I will finish analyzing the data by December 2015. I will then destroy all original reports and identifying information that can be linked back to you.

Voluntary nature of the study:
Participation in this research study is voluntary. Your decision whether or not to participate will not affect your future relations with the Care Center or St. Catherine University in any way. If you decide to participate, you are free to stop at any time without affecting these relationships.

Contacts and questions:
If you have any questions, please feel free to contact me, Jill V. Fyksen. You may ask questions now, or if you have any additional questions later, the faculty advisor, Dr. Kathleen Matuska, will be happy to answer them. If you have other questions or concerns regarding the study and would like to talk to someone other than the researcher(s), you may also contact Dr. John Schmitt, Chair of the St. Catherine University Institutional Review Board, at (651) 690-7739 or jsschmitt@stkate.edu.

You may keep a copy of this form for your records.

Statement of Consent:
You are making a decision whether or not to participate. Your signature indicates that you have read this information and your questions have been answered. Even after signing this form, please know that you may withdraw from the study.

_____

I consent to participate in the study.

_____

Signature of Participant Date

_____

Signature of Parent, Legal Guardian, or Witness Date

_____

Signature of Researcher Date

Appendix E:

Participant Meal Schedule

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Pre-test 1&2						
Week 1	1-breakfast 2-lunch		1-supper 2-breakfast		1-lunch 2-supper	
Week 2	1-breakfast 2-lunch		1-supper 2-breakfast		1-lunch 2-supper	
Week 3	1-breakfast 2-lunch		1-supper 2-breakfast		1-lunch 2-supper	
Week 4	1-breakfast 2-lunch		1-supper 2-breakfast		1-lunch 2-supper	
Week 5 ***Pre-test 3,4,5***	1-breakfast 2-lunch		1-supper 2-breakfast		1-lunch 2-supper	
Week 6 **Week 1**	1-breakfast 2-lunch 3-supper	4-lunch 5-supper	1-supper 2-breakfast 3-lunch	4-supper 5-breakfast	1-lunch 2-supper 3-breakfast	4-breakfast 5-lunch
Week 7 **Week 2**	1-breakfast 2-lunch 3-supper	4-lunch 5-supper	1-supper 2-breakfast 3-lunch	4-supper 5-breakfast	1-lunch 2-supper 3-breakfast	4-breakfast 5-lunch
Week 8 **Week 3**	1-breakfast 2-lunch 3-supper	4-lunch 5-supper	1-supper 2-breakfast 3-lunch	4-supper 5-breakfast	1-lunch 2-supper 3-breakfast	4-breakfast 5-lunch
Post-test **Week 4**	3-Breakfast 4-Lunch 5-Supper		3-lunch 4-supper 5-breakfast		3-supper 4-breakfast 5-lunch	
Week 5	3-breakfast 4-lunch 5-supper		3-lunch 4-supper 5-breakfast		3-supper 4-breakfast 5-lunch	
Week 6	3-breakfast 4-lunch 5-supper		3-lunch 4-supper 5-breakfast		3-supper 4-breakfast 5-lunch	
Week 7	3-breakfast 4-lunch 5-supper		3-lunch 4-supper 5-breakfast		3-supper 4-breakfast 5-lunch	
Week 8	3-breakfast 4-lunch 5-supper		3-lunch 4-supper 5-breakfast		3-supper 4-breakfast 5-lunch	
Post-test **3,4,5**						

***1, 2, 3, 4 denotes participant 1, 2, 3 or 4 in the study**

Appendix F:

Activity Log from Study

Pre-intervention period for participants 1 and 2.

- Consent obtained for **participant 1**. (Appendix D)
- Consent obtained for **participant 2**. (Appendix D)
- Pre-test data were collected by the researcher to measure the amount of caregivers' verbal and physical assistance for self-feeding using the Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q) for **participant 1**. (Appendix G)
- Pre-test data were collected by the researcher to measure the amount of caregivers' verbal and physical assistance for self-feeding using the Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q) for **participant 2**. (Appendix G)
- **Participant 1** was observed for three different meals to quantify self-feeding abilities and mealtime duration. (Appendices H & J)
- **Participant 2** was observed for three different meals to quantify self-feeding abilities and mealtime duration. (Appendices H & J)
- Baseline data looking for specific behaviors of **participant 1** included "constant unwarranted request for attention or help", "exit seeking", "repetitive sentences or questions", "general restlessness or agitation" and "yelling out" were collected for the cumulative frequency of difficulty behaviors during mealtimes. (Appendix J)
- Baseline data looking for specific behaviors of **participant 2** included "constant unwarranted request for attention or help", "exit seeking", "repetitive sentences or questions", "general restlessness or agitation" and "yelling out" were collected for the cumulative frequency of difficulty behaviors during mealtimes. (Appendix J)
- Baseline data for **participant 1** was collected for percentage of food intake, percentage of fluid intake and gross body weight. This data were obtained by nursing staff and retrieved by the researcher from the participant's medical records. (Appendix H)
- Baseline data for **participant 2** was collected for percentage of food intake, percentage of fluid intake and gross body weight. This data were obtained by nursing staff and retrieved by the researcher from the participant's medical records. (Appendix H)

Intervention period for participants 1 and 2.

Monday

- **Participant 1**: 23 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Matching food picture cards into different food groups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during breakfast on Monday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 25 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Matching food picture cards into different food groups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 1**: 21 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 28 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring and water pouring. Squeezing exercises consisted of picking up gummy candy with tongs. Demonstration offered to participant to initiate and imitate activities.

Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 2** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

Friday

- **Participant 1**: 23 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 29 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

*****Description of activity kits can be found in Appendix L*****

Intervention period for participants 1 and 2.

Monday

- **Participant 1**: 17 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during breakfast on Monday.

- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 27 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Matching food picture cards into different food groups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 1**: 26 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 19 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

Friday

- **Participant 1**: 29 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the

materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 1** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 18 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Intervention period for participants 1 and 2.

Monday

- **Participant 1**: 29 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Matching food picture cards into different food groups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during breakfast on Monday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 27 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 1**: 16 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Squeezing exercises consisted of picking up gummy fish candies with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 18 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

Friday

- **Participant 1**: 19 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 25 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during supper on Friday.

- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Intervention period for participants 1 and 2.

Monday

- **Participant 1**: 28 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Matching food picture cards into different food groups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during breakfast on Monday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 15 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 1**: 24 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Squeezing exercises consisted of picking up candy with tongs. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)

- **Participant 2**: 16 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

Friday

- **Participant 1**: 27 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 20 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Intervention period for participants 1 and 2. Pre-intervention period for participants 3, 4 and 5.

Monday

- **Participant 1**: 16 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Matching

food picture cards into different food groups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 1** observed during breakfast on Monday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 23 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 1**: 22 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 17 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

Friday

- **Participant 1**: 23 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 23 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Pre-intervention

- Consent obtained for **participant 3**. (Appendix D)
- Consent obtained for **participant 4**. (Appendix D)
- Consent obtained for **participant 5.** (Appendix D)
- Pre-test data were collected by the researcher to measure the amount of caregivers' verbal and physical assistance for self-feeding using the Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q) for **participant 3**. (Appendix G)
- Pre-test data were collected by the researcher to measure the amount of caregivers' verbal and physical assistance for self-feeding using the Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q) for **participant 4**. (Appendix G)
- Pre-test data were collected by the researcher to measure the amount of caregivers' verbal and physical assistance for self-feeding using the Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q) for **participant 5**. (Appendix G)
- **Participant 3** was observed for three different meals to quantify self-feeding abilities and mealtime duration. (Appendices H & J)

- **Participant 4** was observed for three different meals to quantify self-feeding abilities and mealtime duration. (Appendices H & J)
- **Participant 5** was observed for three different meals to quantify self-feeding abilities and mealtime duration. (Appendices H & J)
- Baseline data looking for specific behaviors of **participant 3** included "constant unwarranted request for attention or help", "exit seeking", "repetitive sentences or questions", "general restlessness or agitation" and "yelling out" were collected for the cumulative frequency of difficulty behaviors during mealtimes. (Appendix J)
- Baseline data looking for specific behaviors of **participant 4** included "constant unwarranted request for attention or help", "exit seeking", "repetitive sentences or questions", "general restlessness or agitation" and "yelling out" were collected for the cumulative frequency of difficulty behaviors during mealtimes. (Appendix J)
- Baseline data looking for specific behaviors of **participant 5** included "constant unwarranted request for attention or help", "exit seeking", "repetitive sentences or questions", "general restlessness or agitation" and "yelling out" were collected for the cumulative frequency of difficulty behaviors during mealtimes. (Appendix J)
- Baseline data for **participant 3** were collected for percentage of food intake, percentage of fluid intake and gross body weight. This data were obtained by nursing staff and retrieved by the researcher from the participant's medical records. (Appendix H)
- Baseline data for **participant 4** was collected for percentage of food intake, percentage of fluid intake and gross body weight. This data were obtained by nursing staff and retrieved by the researcher from the participant's medical records. (Appendix H)
- Baseline data for **participant 5** was collected for percentage of food intake, percentage of fluid intake and gross body weight. This data were obtained by nursing staff and retrieved by the researcher from the participant's medical records. (Appendix H)

Intervention period for participants 1,2,3,4 and 5.

Monday

- **Participant 1**: 26 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Matching food picture cards into different food groups. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during breakfast on Monday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 17 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Sorting several

different sets of multi-colored measuring spoons and measuring cups. Matching food picture cards into different food groups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 2** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)
- **Participant 3**: 29 minutes of Montessori-based occupational therapy prior to supper. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during supper on Monday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)

Tuesday

- **Participant 4**: 19 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Matching food picture cards into different food groups. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 17 minutes of Montessori-based occupational therapy prior to supper. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during supper on Monday.

- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 1**: 22 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 16 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)
- **Participant 3**: 23 minutes of Montessori-based occupational therapy prior to lunch. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up gummy candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during lunch on Wednesday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)

Thursday

- **Participant 4**: 19 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Squeezing exercises consisted of picking up candy with tongs. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and

water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 4** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 22 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Friday

- **Participant 1**: 22 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 18 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)
- **Participant 3**: 30 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the

materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 3** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)

Saturday

- **Participant 4**: 26 minutes of Montessori-based occupational therapy prior to breakfast. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during breakfast on Saturday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 18 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during lunch on Saturday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Intervention period for participants 1,2,3,4 and 5.

Monday

- **Participant 1**: 16 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Matching food picture cards into different food groups. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during breakfast on Monday.

- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 22 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Matching food picture cards into different food groups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)
- **Participant 3**: 23 minutes of Montessori-based occupational therapy prior to supper. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during supper on Monday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)

Tuesday

- **Participant 4**: 24 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Matching food picture cards into different food groups. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 22 minutes of Montessori-based occupational therapy prior to supper. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the

materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 5** observed during supper on Monday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 1**: 29 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 19 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)
- **Participant 3**: 18 minutes of Montessori-based occupational therapy prior to lunch. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up gummy candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during lunch on Wednesday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)

Thursday

- **Participant 4**: 25 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Squeezing exercises consisted of

picking up candy with tongs. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 4** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 27 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Friday

- **Participant 1**: 17 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 26 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)
- **Participant 3**: 19 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and

lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 3** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)

Saturday

- **Participant 4**: 17 minutes of Montessori-based occupational therapy prior to breakfast. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during breakfast on Saturday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 27 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during lunch on Saturday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Intervention period for participants 1,2,3,4 and 5.

Monday

- **Participant 1**: 25 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Matching food picture cards into different food groups. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during breakfast on Monday.

- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 23 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Matching food picture cards into different food groups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)
- **Participant 3**: 17 minutes of Montessori-based occupational therapy prior to supper. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during supper on Monday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)

Tuesday

- **Participant 4**: 22 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Matching food picture cards into different food groups. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 25 minutes of Montessori-based occupational therapy prior to supper. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the

materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 5** observed during supper on Monday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 1**: 28 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix J)
- **Participant 2**: 29 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)
- **Participant 3**: 16 minutes of Montessori-based occupational therapy prior to lunch. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up gummy candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during lunch on Wednesday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)

Thursday

- **Participant 4**: 17 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Squeezing exercises consisted of

picking up candy with tongs. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 4** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 28 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Friday

- **Participant 1**: 18 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 1** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 1** was recorded during mealtime. (Appendix M)
- **Participant 2**: 22 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 2** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 2** was recorded during mealtime. (Appendix J)
- **Participant 3**: 21 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and

lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 3** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)

Saturday

- **Participant 4**: 19 minutes of Montessori-based occupational therapy prior to breakfast. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during breakfast on Saturday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 22 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during lunch on Saturday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Intervention period for participants 3, 4 and 5. Post-intervention period for participants 1 and 2.

Monday

- **Participant 3**: 19 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 3** observed during breakfast on Monday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 15 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Matching food picture cards into different food groups. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 23 minutes of Montessori-based occupational therapy prior to supper. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during supper on Monday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 3**: 28 minutes of Montessori-based occupational therapy prior to lunch. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up gummy candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during lunch on Wednesday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 25 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Squeezing exercises consisted of picking up candy with tongs. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate

and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 4** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 28 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Friday

- **Participant 3**: 15 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 24 minutes of Montessori-based occupational therapy prior to breakfast. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during breakfast on Friday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 30 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 5** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Post-intervention

- Post-test data were collected by the researcher to measure the amount of caregivers' verbal and physical assistance for self-feeding using the Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q) for **participant 1**. (Appendix G)
- Post-test data were collected by the researcher to measure the amount of caregivers' verbal and physical assistance for self-feeding using the Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q) for **participant 2**. (Appendix G)
- **Participant 1** was observed for three different meals to quantify self-feeding abilities and mealtime duration. (Appendices H & J)
- **Participant 2** was observed for three different meals to quantify self-feeding abilities and mealtime duration. (Appendices H & J)
- Post-intervention data looking for specific behaviors of **participant 1** included "constant unwarranted request for attention or help", "exit seeking", "repetitive sentences or questions", "general restlessness or agitation" and "yelling out" were collected for the cumulative frequency of difficulty behaviors during mealtimes. (Appendix J)
- Post-intervention data looking for specific behaviors of **participant 2** included "constant unwarranted request for attention or help", "exit seeking", "repetitive sentences or questions", "general restlessness or agitation" and "yelling out" were collected for the cumulative frequency of difficulty behaviors during mealtimes. (Appendix J)
- Post-intervention data for **participant 1** were collected for percentage of food intake, percentage of fluid intake and gross body weight. This data were obtained by nursing staff and retrieved by the researcher from the participant's medical records. (Appendix H)
- Post-intervention data for **participant 2** were collected for percentage of food intake, percentage of fluid intake and gross body weight. This data were obtained by nursing staff and retrieved by the researcher from the participant's medical records. (Appendix H)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Intervention period for participants 3, 4 and 5.

Monday

- **Participant 3**: 17 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Sorting several

different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 3** observed during breakfast on Monday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 23 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Matching food picture cards into different food groups. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 23 minutes of Montessori-based occupational therapy prior to supper. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during supper on Monday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 3**: 29 minutes of Montessori-based occupational therapy prior to lunch. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up gummy candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during lunch on Wednesday.

- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 25 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Squeezing exercises consisted of picking up candy with tongs. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 16 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Friday

- **Participant 3**: 30 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 15 minutes of Montessori-based occupational therapy prior to breakfast. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during breakfast on Friday.

- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 23 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Intervention period for participants 3, 4 and 5.

Monday

- **Participant 3**: 17 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during breakfast on Monday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 26 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Matching food picture cards into different food groups. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 15 minutes of Montessori-based occupational therapy prior to supper. Cognitive stimulation activities kit was used today. Sorting several

different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 5** observed during supper on Monday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 3**: 29 minutes of Montessori-based occupational therapy prior to lunch. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up gummy candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during lunch on Wednesday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 24 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Squeezing exercises consisted of picking up candy with tongs. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 28 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during breakfast on Wednesday.

- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Friday

- **Participant 3**: 23 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 30 minutes of Montessori-based occupational therapy prior to breakfast. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during breakfast on Friday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 23 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Intervention period for participants 3, 4 and 5.

Monday

- **Participant 3**: 22 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them,

physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 3** observed during breakfast on Monday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 21 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Matching food picture cards into different food groups. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 25 minutes of Montessori-based occupational therapy prior to supper. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during supper on Monday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 3**: 27 minutes of Montessori-based occupational therapy prior to lunch. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up gummy candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during lunch on Wednesday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 23 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Squeezing exercises consisted of

picking up candy with tongs. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 4** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 27 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Friday

- **Participant 3**: 25 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 18 minutes of Montessori-based occupational therapy prior to breakfast. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during breakfast on Friday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 21 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and

lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 5** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Intervention period for participants 3, 4 and 5.

Monday

- **Participant 3**: 16 minutes of Montessori-based occupational therapy prior to breakfast. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during breakfast on Monday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 23 minutes of Montessori-based occupational therapy prior to lunch. Cognitive stimulation activities kit was used today. Matching food picture cards into different food groups. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during lunch on Monday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 23 minutes of Montessori-based occupational therapy prior to supper. Cognitive stimulation activities kit was used today. Sorting several different sets of multi-colored measuring spoons and measuring cups. Discussion of favorite foods/holidays. Matching food picture cards into different food groups. Participant was permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, arrange, or reminisce about the objects. Reviewed that day's activities, put the

materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 5** observed during supper on Monday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Wednesday

- **Participant 3**: 28 minutes of Montessori-based occupational therapy prior to lunch. Life skill activities kit was used today. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up gummy candy with tongs. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 3** observed during lunch on Wednesday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 26 minutes of Montessori-based occupational therapy prior to supper. Life skill activities kit was used today. Squeezing exercises consisted of picking up candy with tongs. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during supper on Wednesday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 16 minutes of Montessori-based occupational therapy prior to breakfast. Life skill activities kit was used today. Pouring exercises included dry corn kernel pouring into funnel and water pouring with small pitcher. Scooping exercises consisted of scooping small potatoes using serving spoon, scooping dry beans and scooping dry peas with tablespoon. Squeezing exercises consisted of picking up candy with tongs. Demonstration provided to participant to initiate and imitate activities. Scooping exercises consisted of scooping small potatoes using tablespoon. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during breakfast on Wednesday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

Friday

- **Participant 3**: 17 minutes of Montessori-based occupational therapy prior to supper. Sensory activities kit was used today. Participant started session finding

hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.

- **Participant 3** observed during supper on Friday.
- Behaviors and feeding abilities of **participant 3** was recorded during mealtime. (Appendix J)
- **Participant 4**: 20 minutes of Montessori-based occupational therapy prior to breakfast. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 4** observed during breakfast on Friday.
- Behaviors and feeding abilities of **participant 4** was recorded during mealtime. (Appendix J)
- **Participant 5**: 23 minutes of Montessori-based occupational therapy prior to lunch. Sensory activities kit was used today. Participant started session finding hidden items in rice. Next participant opened smelling jars of cinnamon spice and lemon essential oil. Activity session ended with massaging hands with scented hand lotion of participant's choice. Reviewed that day's activities, put the materials away and announced of the activity to be carried out at the next scheduled session.
- **Participant 5** observed during lunch on Friday.
- Behaviors and feeding abilities of **participant 5** was recorded during mealtime. (Appendix J)

*Percentages of food intake, fluid intake each participant will be noted on a weekly basis. Gross body weight of each participant will be noted on a bi-weekly basis. (Appendix H)

Post-intervention period for participants 3, 4 and 5.

Post-intervention

- Post-test data were collected by the researcher to measure the amount of caregivers' verbal and physical assistance for self-feeding using the Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q) for **participant 3**. (Appendix G)
- Post-test data were collected by the researcher to measure the amount of caregivers' verbal and physical assistance for self-feeding using the Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q) for **participant 4**. (Appendix G)

- Post-test data were collected by the researcher to measure the amount of caregivers' verbal and physical assistance for self-feeding using the Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q) for **participant 5**. (Appendix G)
- **Participant 3** was observed for three different meals to quantify self-feeding abilities and mealtime duration. (Appendices H & J)
- **Participant 4** was observed for three different meals to quantify self-feeding abilities and mealtime duration. (Appendices H & J)
- **Participant 5** was observed for three different meals to quantify self-feeding abilities and mealtime duration. (Appendices H & J)
- Post-intervention data looking for specific behaviors of **participant 3** included "constant unwarranted request for attention or help", "exit seeking", "repetitive sentences or questions", "general restlessness or agitation" and "yelling out" were collected for the cumulative frequency of difficulty behaviors during mealtimes. (Appendix J)
- Post-intervention data looking for specific behaviors of **participant 4** included "constant unwarranted request for attention or help", "exit seeking", "repetitive sentences or questions", "general restlessness or agitation" and "yelling out" were collected for the cumulative frequency of difficulty behaviors during mealtimes. (Appendix J)
- Post-intervention data looking for specific behaviors of **participant 5** included "constant unwarranted request for attention or help", "exit seeking", "repetitive sentences or questions", "general restlessness or agitation" and "yelling out" were collected for the cumulative frequency of difficulty behaviors during mealtimes. (Appendix J)
- Post-intervention data for **participant 3** were collected for percentage of food intake, percentage of fluid intake and gross body weight. This data were obtained by nursing staff and retrieved by the researcher from the participant's medical records. (Appendix H)
- Post-intervention data for **participant 4** was collected for percentage of food intake, percentage of fluid intake and gross body weight. This data were obtained by nursing staff and retrieved by the researcher from the participant's medical records. (Appendix H)
- Post-intervention data for **participant 5** was collected for percentage of food intake, percentage of fluid intake and gross body weight. This data were obtained by nursing staff and retrieved by the researcher from the participant's medical records. (Appendix H)

Appendix G:

Survey, Edinburgh Feeding Evaluation in Dementia Questionnaire

Edinburgh Feeding Evaluation in Dementia Questionnaire (EdFED-Q)

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

Appendix H:

Data Collection, Food and Fluid; Body Weight; Meal Duration Intake Form

Intake	Amount of food eaten	Amount of fluid intake
Check One: ☐ **Snack** ☐ **Breakfast** ☐ **Lunch** ☐ **Supper**	☐ 0% ☐ 25% ☐ 50% ☐ 75% ☐ 100%	☐ 0% ☐ 25% ☐ 50% ☐ 75% ☐ 100%

Body weight (pounds):_____

Meal start time (minutes):_____

Meal end time (minutes):_____

Participant name: _____

Date: _____

Appendix I:

Activity Kits and Protocol

Cognitive stimulation

Examples of cognitively stimulating activities that are meal related included containers full of multi-colored measuring spoons and measuring cups for sorting. In addition, activities also included matching cards related to food groups, discussion of favorite foods and holidays. Participants were permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, or spell, arrange, or reminisce about the objects (Femia, 2006). Finally, the protocol will consist of reviewing the day's activities, materials being put away and an announcement of the activity to be carried out at the next scheduled session (Lin, Huang, Watson, Wu & Lee, 2011).

Life skills

Examples of activities utilizing life skill functions that are meal related included pouring, squeezing, hand–eye coordination and scooping (Lin, Huang, Watson, Wu & Lee, 2011). (Lin, Huang, Watson, Wu & Lee, 2011). Participants were permitted and encouraged to sort utensils. (Femia, 2006). Examples of scooping activities consisted of scooping small potatoes. Examples of pouring activities included dry bean and corn pouring, juice and water pouring. Examples of squeezing activities consisted of picking up gummy candy with tongs. (Lin, Huang, Watson, Wu & Lee, 2011). (Lin, Huang, Watson, Wu & Lee, 2011). Participants were permitted and encouraged to spread out the

objects and sort them, physically move them, examine relationships between the objects, count them, or spell, arrange, or reminisce about the objects (Femia, 2006). The protocol consisted of reviewing the day's activities, materials being put away and an announcement of the activity to be carried out at the next scheduled session (Lin, Huang, Watson, Wu & Lee, 2011).

Sensory stimulation

Examples of sensory activities that are meal related included massaging hands with scented hand lotion, finding hidden items in rice (Femia, 2006). Additional examples of sensory activities included smelling jars such as spices and essential oils. Participants were permitted and encouraged to spread out the objects and sort them, physically move them, examine relationships between the objects, count them, or spell, arrange, or reminisce about the objects (Femia, 2006). The protocol consisted of reviewing the day's activities, materials being put away and an announcement of the activity to be carried out at the next scheduled session (Lin, Huang, Watson, Wu & Lee, 2011).

Appendix J:

Data Collection, Behaviors Tracking Form

Constant unwarranted request for attention or help

_____

Exit seeking

_____

Repetitive sentences or questions

_____

General restlessness or agitation

_____

Yelling out

_____

**Each incidence, occurrence or episode will be recorded with a tick mark.*

Caregivers' verbal assistance for feeding

_____

**Each verbal cue episode, occurrence or incidence will be recorded with a tick mark.*

KEY: None (no verbal cues provided), Supervision (5 or less verbal cues), Minimal (6 to 10 verbal cues), Moderate (11 to 15 verbal cues), Maximum (16 or more verbal cues) ***Circle level of assistance***

Caregivers' physical assistance for feeding

_____

**Each incidence, occurrence or episode of physical help will be recorded with a tick mark.*

KEY: None (no physical help), Contact Guard Assist (5 or less times of physical help), Minimal (6 to 10 times of physical help), Moderate (11 to 16 times of physical help), Maximum (16 or more times of physical help) ***Circle level of assistance***

Participant name:_____

Date:_____