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Benefits of Equine-Based Therapy for Individuals with Dementia

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Benefits of Equine-Based Therapy for Individuals with Dementia

Chapter 1: Introduction

The purpose of this capstone proposal is to determine how occupational therapists (OT) can use equine-based therapy (EBT) to benefit individuals with memory deficits to enhance functional performance in daily routines and activities.

Background

The use of horses for physical, emotional, and psychosocial therapeutic purposes first became in 5 B.C. and reemerged in World War I to assist veterans experiencing negative side effects from participation in war (White-Lewis, 2019). Animals have been found to relieve, relax, and discharge individuals from daily strains of life (Koukourikos et al., 2019). Common animals used during therapy are dogs, cats, horses, rabbits, birds, or dolphins (Koukourikos et al., 2019). Animal-assisted therapy is effective in improving nonverbal skills, social skills, language, communication, physical activity, self-control, restraint, memory, self-care, hygiene, motivation, and cleanliness (Koukourikos et al., 2019). Additionally, dog assisted therapy is found to decrease depression scale ratings in elderly clients (Ambrosi et al., 2018).

Common terms to describe the use of horses in a therapeutic setting are equine assisted therapy, therapeutic horse riding, therapeutic horseback riding, hippotherapy, equine psychotherapy, equine facilitated therapy, horse therapy, and guide horses (White-Lewis, 2019). For consistency, this paper will use equine-based therapy (EBT) as a global term for the inclusion of horses in a therapeutic setting to assist in treatment outcomes for a client (Burgon et al., 2018).

The focus of EBT is to meet specific needs of individuals with disabilities by modifying or adapting the sport of horseback riding and horse care (Sergiou et al., 2017). Positive benefits include improvements in cognitive, physical, emotional, leisure, and social elements of

individuals daily lives (Sergiou et al., 2017). Conditions including cerebral palsy, orthopedic pathologies, stroke, multiple sclerosis, spinal cord injury, autism spectrum disorder, sexual abuse, and emotional distress have all experienced statistically significant gains from EBT (Gabriels et al., 2015; Guerino et al., 2015; Sergiou et al., 2017; Ungermann & Gras, 2011; Zadnikar & Kastrin, 2011).

Various certifications that require unique skill sets are available within the domain of EBT. The Hippotherapy Certification is a billable service provided by health professionals such as occupational, speech, and physical therapists (Gabriels et al., 2015). Other well-known certifications are the Professional Association of Therapeutic Horsemanship International (PATH) and the Eagala Certification. A license is not required to become a PATH instructor, but training is required (Professional Association of Therapeutic Horsemanship International, n.d.). To acquire an Eagala Certification there must be a team of two people, one who is a mental health professional and one who is an equine specialist (Eagala, n.d.). Further prerequisite training and is also required to achieve an Eagala Certification (Eagala, n.d.).

Occupational therapists employ the therapeutic use of activities to help individuals across the lifespan participate in their everyday activities, otherwise known as occupations (American Occupational Therapy Association [AOTA], 2014). Equine-based therapy fits into the category of occupation because it is an activity that individuals desire to perform in order to gain a physical, social, and psychological functional outcome (Llambias et al., 2016). Occupational therapists have a defined role in hippotherapy to help people improve functional performance through the use of the horse (Gabriels et al., 2015). The most common age group that OTs work with in hippotherapy is children aged twelve and under and the most common conditions being cerebral palsy, autism, and multiple sclerosis (Hoesly et al., 2016). There is limited evidence on the benefits of EBT for elderly individuals with dementia (Lai et al., 2019).

Individuals living with dementia typically experience progressive, cognitive, and functional decline which limits their ability to communicate and fully perform activities (Pimouguet el al., 2019). Dementia is characterized by a gradual decline in cognitive skills often beginning with memory problems and progressing with language, judgement, spatial orientation, and apathy deficits (Chiberska, 2018). Behavioral symptoms are also sometimes observed and include agitation, aggression, and wandering (Chiberska, 2018). Occupational therapists provide meaningful interventions for individuals with dementia and their family members which include environmental modifications, behavior management, physical activity, and emotional support (Pimouguet et al., 2019). Internal and external memory strategies are also often taught by OTs to promote participation in daily activities and include categorizing, diaries, lists, and reminder notes (Coe et al., 2019). These memory strategies were found to have statistically significant improvements in memory, quality of life, and performance satisfaction (Coe et al., 2019).

Animal-assisted therapy has been shown to be effective in helping individuals with dementia improve physical, psychological, and behavioral elements (Wesenberg et al., 2018). Physical benefits include improved balance, improved motor skills, increased nutritional input, lowered blood pressure and cholesterol, and increased serotonin levels (Chiberska, 2018; Wesenberg et al., 2018). Psychological benefits include increases in purpose of life and feeling of love, reduced loneliness, decreased stress, and declined anxiety (Chiberska, 2018). Behavioral benefits include increased social interaction, improved emotional expression, decreased agitation, and decreased depression symptoms (Wesenberg et al., 2018). Dogs are the most common animals used in animal-assisted therapy for dementia patients and there is limited evidence of the benefits of EBT for individuals with dementia (Wesenberg et al., 2018).

Theories guiding the focus of this capstone will include concepts from Allen Cognitive Levels and the Person-Environment-Occupation-Performance Model, or PEOP. (Allen, 1991; Law et al., 1996).

Allen Cognitive Levels explains predictable patterns of performance of adults with memory deficits (Allen Cognitive Group, n.d.). The levels are characterized from the simplest form of cognitive capabilities and functional capacities to the most complex cognitive level (Allen Cognitive Group, n.d.). This frame of reference helps OTs to determine the level of care, guidance, and form of communication that best suits the individual at their current memory stage (Allen, 1991). By acknowledging this frame of reference, OTs will better determine the adequate therapeutic approach during EBT to better meet their client's unique needs (Allen, 1991). For example, a client who is at a low functioning level may benefit from a sequenced task that is goal oriented, such as grooming a horse with a written or verbal list of steps and equipment (Allen, 1991). An individual that is higher functioning may benefit from a task that has an end goal but is less sequenced, such as grooming a horse without a written or verbal list of steps and equipment (Allen, 1991). The Allen Cognitive Level Frame will provide a structured framework and ensure the development of an appropriate program adapted for varying cognitive levels with this emerging topic.

The PEOP Model explains the interrelation of occupation, performance, person, and environment interaction to achieve optimal occupational performance (Law et al., 1996). Additionally, it considers the person's cognitive, emotional, spiritual, and physical elements (Law et al., 1996). Ensuring that the environment is set up appropriately to accommodate the person while working with a new population will increase the clients' occupational performance of EBT (Law et al., 1996). The use of the PEOP model with EBT will also ensure that OTs keep a holistic view to promote successful outcomes through interventions (Law et al., 1996). The

PEOP model influences this project by ensuring that the environment is properly set up on an individual basis to promote successful performance (Law et al., 1996). The PEOP Model correlates with the Allen Cognitive Level Frame by influencing the environmental setup of the treatment session while considering the level that the individual is performing at. If an individual is performing at a more advanced level the environment may be more complex, including more equipment available or a larger sequence of steps in a task.

Statement of the Problem

There are known benefits of EBT for conditions including neuromuscular diseases, autism spectrum disorder, stroke, spinal cord injury, and post-traumatic stress disorder (Barakat & McClusky, 2018; Gabriels et al., 2015; Sergiou et al., 2017). However, there is very limited research on the benefits for individuals diagnosed with memory deficits including dementia and Alzheimer's (Lai et al., 2019). With the use of EBT, OTs will be able to tailor treatments that provide benefits in physical, mental, and emotional elements for individuals with dementia.

Purpose Statement

The purpose of the project is to determine how OTs can use EBT to benefit individuals with memory deficits to enhance functional performance in daily routines and activities. It is hypothesized that individuals with dementia will experience benefits in memory, communication, quality of life, and social and leisure engagement by participation in EBT.

Rationale for Project

The project will increase the knowledge of EBT for OTs and create opportunities for individuals with dementia to benefit from EBT. The project will advocate for OTs in this setting who are fit for the role because of the holistic perspective that they take on treatments (AOTA, 2014). Occupational therapists will understand how the person's cultural background, current situation, and functional impairments affect their everyday life and performance of activities of

daily living (ADL) (AOTA, 2014). Using EBT, occupational therapists will help to improve functional performance of daily activities for individuals with dementia and their caregivers. By enhancing functional performance of ADLs, quality of life will also be improved.

Significance of Project

Individuals who regularly participate in EBT experience benefits in cognitive, physical, emotional, spiritual, social, and leisure participation (Sergiou et al., 2017). There is limited evidence on the benefits of EBT for individuals with dementia, but it is to be assumed that they may also experience similar benefits that will improve their functional performance in daily activities and quality of life which can be determined through previous evidence of the benefits of animal-assisted therapy this population (Lai et al., 2019). It would be advantageous for the profession to determine the benefits of EBT for a new population so that OTs can continue to advocate and expand their role in emerging practice treatments. Occupational therapists have a role in an EBT setting because they focus on improving the quality of life and functional independence of their clients (AOTA, 2014). Individuals with dementia often decline in cognitive functions, social participations, and daily independence (Lai et al., 2019). Using EBT, occupational therapists can help this population by prolonging their functional independence, increasing their social and leisure exposure, and improving their quality of life (Lai et al., 2019).

Project Objectives

1. Observe current practices in EBT to learn more about present treatments performed on the populations served and to identify environmental factors, activity options, facility interest, caregiver input, and staff and provider's perspectives of need for the program
2. Assess current EBT facilities environmental setup to gather ideas for the new population

3. Perform activity analysis on horse care tasks to determine upgrades and downgrades to meet the new populations needs
4. Advocate for OTs role in enhancing EBT
5. Advocate for OTs specific role in using EBT with individuals with dementia
6. Enhance engagement in EBT for individuals with dementia and their caregivers by developing an easily accessible program
7. Inform OTs about the benefits of EBT for individuals with dementia through presentations about the program

Definitions of Terms

Various terms are used throughout the capstone paper that may not be commonly known. For ease of understanding, the terms are defined as follows.

Adaptive/therapeutic riding: Horseback riding lessons for individuals with special needs conducted by instructors who have received specialized training in working with individuals with disabilities. Instructors may have obtained certifications through various organizations (i.e., PATH, Eagala). Therapeutic and adaptive riding are synonyms; however, the American Hippotherapy Association recommends using the term adaptive riding because it is easier to distinguish the purpose of the occupation (American Hippotherapy Association, n.d.).

Equine: A general term for horses, ponies, miniature horses, mules, or donkeys (American Hippotherapy Association, n.d.).

Dementia: A broad term for diseases characterized by a decline in memory, language, problem-solving and other thinking skills that affect a person's ability to perform everyday activities (Alzheimer's Association, n.d.).

Equine-based therapy: A broad term to describe the therapeutic use of a horse by a healthcare professional to provide a beneficial outcome for a client or participant (American Hippotherapy Association, n.d.).

Hippotherapy: The manipulation of the horse's movement, or gait, by an occupational, physical, or speech therapy to improve clients' sensory, neuromotor, and cognitive systems to promote functional outcomes (American Hippotherapy Association, n.d.).

Assumptions

An assumption of the project is that people with dementia will show a beneficial outcome from EBT. This is assumed based on studies on the benefits of animal-assisted therapy on people with dementia (Wesenberg et al., 2018). A second assumption is that caregivers of individuals with dementia will find benefit and value in the participation in EBT (Pimouguet et al., 2019). A final assumption is that EBT facilities typically help children rather than older adults and that the most common conditions treated are those other than dementia (Hoesly et al., 2016).

Limitations and Delimitations

A limitation of the capstone project is the potential lack of transportation from a senior center or dementia care facility to an EBT facility which could limit access and participation for seniors. Another limitation is the project coordinators will not have any control of any other interventions that the clients are receiving. It may also be difficult to assess the effectiveness of the EBT intervention due to the characteristics of the dementia symptoms. Additional limitations include lack of money and resources, limited facility access, uncontrollable environmental conditions, and the intervention being a high-risk activity. The project defines the boundaries of the capstone by considering delimitations. The project focuses on specific client criteria including only clients diagnosed with dementia and who are part of a community-based program. Another delimitation is that EBT will be the only intervention provided.

Chapter 2: Literature Review

Available research on the benefits of EBT for individuals with dementia is limited. The evidence found in the literature was classified into the following themes: benefits of equine-based therapy, and the role of OTs in equine-based therapies.

Benefits of Equine-Based Therapy

Equine-based therapy interventions have been beneficial for individuals with various conditions including Autism Spectrum Disorder (ASD), neurologic conditions, mental health disorders, orthopedic pathologies, and dementia (Fields et al., 2018; Gabriels et al., 2015; Guerino et al., 2015; Sergiou et al., 2017; Ungermann & Gras, 2011).

Autism Spectrum Disorder

Individuals with ASD may have difficulties with self-regulation, socialization, communication, adaptation, and motor behaviors (Gabriels et al., 2015). Because horses are intuitive beings, they mirror behaviors and emotions that they sense from humans around them. This helps children with ASD to acknowledge their behaviors and to discover self-regulation (Srinivasan et al., 2018). Individuals with ASD often engage in activities by focusing on objects rather than people, compromising their learning experience (Llambias et al., 2016). Horses help children to shift their attention from objects to living beings, increasing their engagement and communication and improving their learning experience (Llambias et al., 2016). Equine-based therapy also helps to improve irritability, decrease hyperactivity, increase social cognition, and expand social communication in children with ASD (Gabriels et al., 2015). The positive benefits that result from EBT have been reported to last for days following the session and have been proven to transfer into the classroom setting (Llambias et al., 2016).

Neurologic Conditions

Individuals with central nervous system conditions such as cerebral palsy (CP), stroke, multiple sclerosis (MS), or spinal cord injury, often have abnormal gait patterns (Sergiou et al., 2017). These result from abnormal muscle tone, reduced voluntary muscle control, incoordination, asymmetry of agonist and antagonist muscles, and poor muscle equilibrium reflexes (Sergiou et al., 2017). In individuals with CP chronic muscle imbalance can cause increased disability with age (Wesenberg et al., 2018). They may also experience secondary consequences of brain damage including learning disability, cognitive/sensory impairments, speech and language disorders, orthopedic complications, and epilepsy (Wesenberg et al., 2018). These deficits result in difficulties successfully performing daily activities (Wesenberg et al., 2018).

A horse's walking gait provides a smooth, rhythmic, and repetitive pattern of movement with a three-dimensionally displaced center of gravity (Wesenberg et al., 2018). This movement sends sensory signals to the rider's brain to adjust their trunk to balance and stay upright (Govender et al., 2016). The combined movements of the trunk and pelvis while riding the horse are similar to walking, helping to normalize the riders body movements while on the horse and on the ground (Govender et al., 2016).

Riding horses also helps to decrease hypertonicity while improving relaxation, strength, range of motion, muscle contraction, joint stability, weight shift, postural alignment, flexibility, endurance, and postural equilibrium in individuals with neurologic conditions (Sergiou et al., 2017; Wesenberg et al., 2018). Another study found that riding horses resulted in significant improvement and regression of the signs of kyphosis and enhancing imbalances of the spine (Guerino et al., 2015). These benefits helped to correct abnormal movement patterns which

enhanced individuals with neurologic conditions performance in their daily activities and quality of life (Sergiou et al., 2017).

Psychosocial Impact

Individuals that have been through traumatic experiences often experience anxiety, depression, post-traumatic stress disorder (PTSD), and decreased engagement (Burgon et al., 2018; Guerino et al., 2015). Horses have an intuitive nature and can sense and react to people's behaviors and emotions (Isaacson et al., 2018). A horse's trusting personality can give people a safe relationship and can help with identity development in youths experiencing trauma (Isaacson et al.,2018). Native Americans, who have a cultural history with horses, believe in the importance of a horse as a teacher, friend, and guide that can teach anxious youth respect, self-esteem, and self-control (Isaacson et al., 2018).

Using equines in therapy is also effective in reducing the symptoms of PTSD in veterans which improves their functional performance in daily activities (Barakat & McCluskey, 2018). Additionally, equine-based therapy addresses psychosocial issues by improving non-verbal communication, mindfulness, attachment, interest/curiosity, acceptance of physical contact, and emotional expression (Burgon et al., 2018; Guerino et al., 2015).

Orthopedic Conditions

There is limited research on the benefits of EBT for people with orthopedic pathologies.

Dementia

A study performed on six participants determined the benefits that EBT had on quality of life for people with dementia by measuring time use and emotional well-being (Fields et al., 2018). Participants were recruited from a long-term care facility using a two-stage screening process that consisted of an in-person interview and an administrator recommendation of individuals with an interest in or experience with horses (Fields et al., 2018). During the eight-

week study, the participants rode, groomed, and petted the horses (Fields et al., 2018). Observations used to measure quality of life outcomes included gaze, position and movement, conversation, participation, apparent affect, and agitation (Fields et al., 2018). There were observed improvements in both domains of time use and emotional well-being from the EBT treatment resulting in an improved quality of life for the participants (Fields et al., 2018).

Another study performed on nine participants discovered the benefits of EBT on balance, functional capacity, and cognition in older adults with mild to moderate Alzheimer's disease (Borges-de-Araujo et al., 2019). The participants were still independent in ADLs (Borges-de-Araugo et al., 2019). The intervention was riding the horse at varying gaits, either walk or trot, with a dual task component to promote attention conditioning (Borges-de-Araugo et al., 2019). The results of the study determined that there were statistically significant benefits of EBT for balance and functional capacity (Borges-de-Araujo et al., 2019). Further, there was no decline in cognition during the ten-week intervention (Borges-de-Araujo et al., 2019).

From a practitioners' perspective, Fields et al. (2019) observed that individuals with dementia who participated in an EBT program experienced improved well-being, functional performance, and social relationships. Improved well-being was seen through participants' demonstrations of excitement, confidence, and competence throughout and after the program (Fields et al., 2019). Improved functional performance was detected through enhanced strength and cognition as measured by the Activity in Context and Time instrument (Fields et al., 2019). Improved social relationships were observed through verbal and non-verbal communication with staff and animals (Fields et al., 2019). Practitioners determined that horses had a calming effect on the participants and helped them to reconnect to meaningful moments, therefore enhancing their quality of life, functional performance, and social participation (Fields et al., 2019).

Role of Occupational Therapists in Equine-Based Therapies

Occupational therapists (OT) can use equine-based therapies to assist with enhancing individuals overall occupational performance in their daily activities (Govender et al., 2016). If an individual is committed to their occupation, then there is a statistically significant improvement in task performance (Wang et al., 2019). Individuals who find a passion in riding and caring for horses may demonstrate increased occupational commitment and improved physical, cognitive, and emotional skills as a result of equine-based therapy (Wang et al., 2019). Horses can assist in the neurodevelopmental, sensory, motor control, motor learning, and psychosocial approaches for OT treatment (Govender et al., 2016). However, there may be limited knowledge among OTs of the benefits that equine-based therapy can offer clients with varying diagnoses (Govender et al., 2016). Most OTs believe that equine-based therapy benefits neurologic conditions, postural control, mobility, processing, integration, self-confidence, self-esteem, mood, and motivation (Govender et al., 2016). However, despite research findings that have presented the benefits, OTs disagree that EBT benefits learning and language disorders and psychiatric (Govender et al., 2016). Therefore, OTs would profit from further education and exposure to hippotherapy services to benefit clients of various conditions (Govender et al., 2016).

Gaps in the Literature

There is research on the benefits of EBT for individuals with various conditions (Lai et al., 2019). However, there is limited research on EBT's benefits for individuals with dementia (Lai et al., 2019). The lack of accessible programs for the dementia population motivated this project to determine if there are similar benefits of EBT for this population. Within the two studies performed on people with dementia, there were limitations in sample size, length of the study, and amount of quantitative evidence (Borges-de-Araujo et al., 2019; Fields et al., 2018).

There were also noted limitations on qualitative caregiver and participant input describing their outcomes of the programs (Borges-de-Araujo et al., 2019; Fields et al., 2018). In my project I will address the gaps of qualitative caregiver and participant input of the program using interviews. The authors of both studies stated they were the first of their kind to perform research on the benefits of EBT for individuals with dementia (Borges-de-Araujo et al., 2019; Fields et al., 2018).

There is a need for further research to be performed on what benefits EBT can provide for people with dementia. The gaps in the literature will impact the project by requiring the project leader to monitor outcomes to determine additional benefits that may not have been identified within the available literature. Additionally, an OT perspective is appropriate for this project because of the holistic view that OTs have for their clients (AOTA, 2014). Using this perspective, OTs are able to benefit the participants in multiple areas of their lives, including ADLs living, instrumental activities of daily living (IADLs), social and leisure, and physical health (AOTA, 2014).

Chapter 3: Methods

Overview

The purpose of the capstone was to determine how an OT based EBT program benefits individuals with memory deficits to enhance functional performance in daily routines and activities. The term EBT was replaced by equine-assisted activities (EAA) to better describe the activities completed throughout the program.

The program was designed in a virtual format, which allowed for a versatile layout that could be utilized to bring an in-person horse experience to the participant's home. Because of the COVID-19 pandemic, allowing individuals to engage from home increased their accessibility to the program.

Needs Assessment

Timeline

The program duration was 18 weeks. The first five weeks consisted of a needs assessment to gather qualitative data about program and population necessities. Weeks six through nine were allotted for program planning, communication with key stakeholders to develop program goals, and a grant application. The program was implemented on weeks 10-17. The remainder of the project was allocated for data and outcome interpretation.

The needs assessment included data gathering through interviews and observations of environmental and safety factors, activity options, facility interest, caregiver input, and staff and provider's perspectives of need for the program.

Stakeholders

The stakeholders of the program were EBT facility staff, occupational therapists, dementia care facility staff, and participants. The stakeholders were imperative for gathering data from various perspectives to determine necessity for the program. The collective data gathered from different views of EBT and dementia helped to determine the most optimal format, activities, and environment for the program.

Interviews

Facilities were contacted through company websites, phone calls, and social media platforms (i.e., Facebook, Instagram). Five associations responded and interviews were performed. Informal interviews were conducted with facilities that provided services including therapeutic riding, senior living, hippotherapy, and Eagala.

The safety of the clients was a top priority from all the facilities interviewed. Each facility had specific safety protocols to be followed by clients, staff, and volunteers of the facilities. These protocols included wearing helmets and gait belts, providing ADA compliant

mounting ramps and bathrooms, and ensuring the facility contained horses of sound temperament. Additional safety concerns included always having a horse trainer on site and providing orientations to clients and family members before services began.

The majority of the EBT facilities provided riding services to children with physical disabilities. The Eagala facility provided on-ground EBT services for veterans with mental health issues. Elderly individuals from the senior living facility lightly participated in EBT relating to horse care including grooming, feeding, and mucking stalls. Benefits noticed through the use of EBT for various populations were increased communication, physical ability, mood, energy level, and self-awareness. There were no confirmed individuals who participated in EBT with a diagnosis of dementia from any of the facilities interviewed, nor was there a confirmed available program to their knowledge for elderly individuals with dementia.

Observations

Site tours were also performed to further assess environmental factors and safety precautions. Two California based facilities allowed site tours. The first site was an Eagala certified facility in Ojai, CA and the second was a PATH certified equine therapy facility in Norco, CA. A similarity in the sites was that they both contained horses of sound temperament to ensure safety with clients and families. The PATH certified site differed from the Eagala site because it complied with ADA regulations on safety and environmental modifications for individuals with disabilities including accessible mounting ramps, bathrooms, and tack. The Eagala facility did not offer on-horse riding services to people with disabilities so they did not have a need for accessible mounting ramps or tack.

Program Evaluation

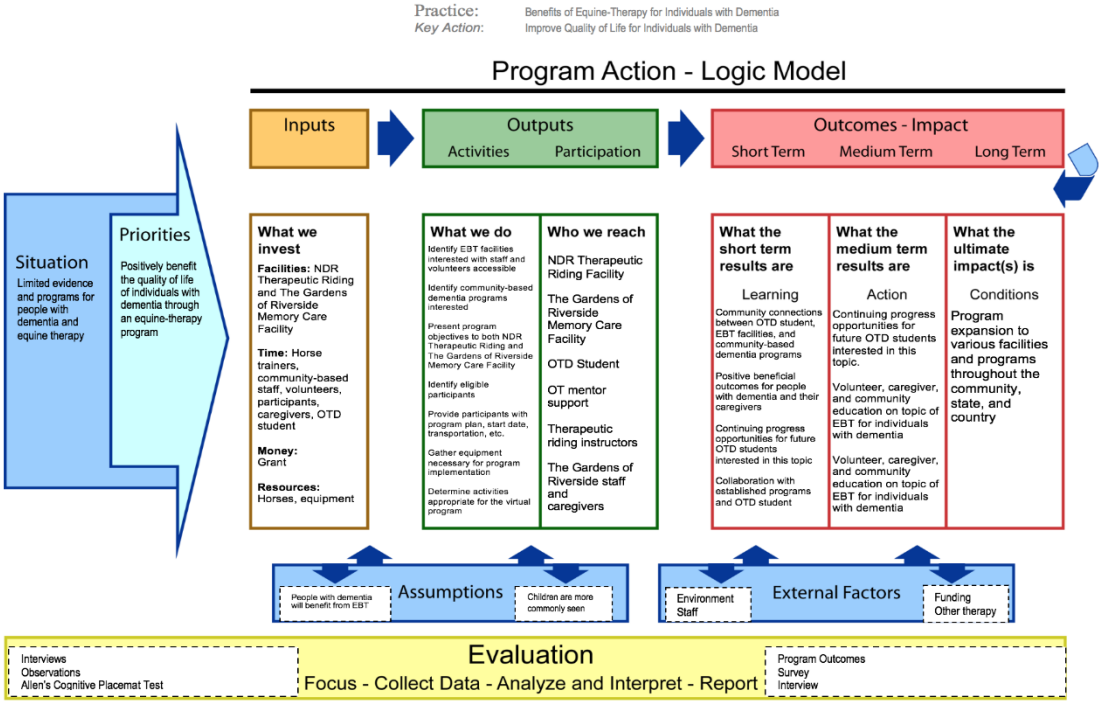
A survey and an informal interview were the outcome measures chosen to determine program results. Survey and interview questions were compiled through the outcome measures

of previous studies performed on this population (Fields et al., 2018; Kelley et al., 2019). The components of the outcome measures helped determine the impact of the quality of life of the participants. The survey and interview allowed for qualitative data to be measured effectively and efficiently with a steady income of weekly feedback that was provided by the activity's coordinator at The Gardens of Riverside.

Chapter 4: Results

Logic Model

A logic model was utilized to organize the programs inputs, outputs, and outcomes. A logic model is a visual representation that helps organize program components and identifies solutions to potential problems under various conditions (Anderson & Omodior, 2020). A logic model also helps connect the program assumptions to the overarching objectives (Anderson & Omodior, 2020). The logic model helped establish the necessary inputs of the EAA program to achieve optimal short, medium, and long term impacts. Outcomes were focused on the targeted population, future implications for OT, and program sustainability.



Collaborations

Following the interviews and observations of multiple facilities, a partnership was formed with a therapeutic riding facility and an assisted living facility in Norco, California. The facilities were NDR Therapeutic Riding and The Gardens of Riverside Memory Care Facility.

There was a previous program performed at NDR Therapeutic Riding and The Gardens of Riverside. The focus of the former program was to determine if EAA could be a beneficial OT intervention for individuals with mild to moderate dementia (Lim, 2020). The previous program's participants were residents from The Gardens of Riverside. The residents participated in the program by going to NDR Therapeutic Riding in-person to engage in equine-assisted activities including grooming, walking, painting, and feeding (Lim, 2020). The outcomes from the prior program yielded that individuals with dementia benefitted from EAA through increased relaxation, improvements in relationships, and confidence (Lim, 2020). The past program was to be used as a baseline to create a new virtual program of EAA for individuals with dementia.

Needs Assessment Results

One week before the commencement of the program, a modified version of the Allen's Cognitive Placemat Test was performed to determine participants' Allen's Cognitive Level (ACL). The Allen's Placemat Test is an assessment tool that identifies the ACL of an individual's working memory and other cognitive skills (Allen Diagnostic Module Canvas Placemat, n.d.). Lasting about 15 minutes, The Allen's Placemat Test is a fun and quick assessment for individuals to engage in as a group (Allen Diagnostic Module Canvas Placemat, n.d.). Based on the ACL, participants ranged from 3.9-4.6 on the Allen's Cognitive Scale. Individuals at level three typically require frequent tactile and proprioceptive cues with new tasks, concentration up to 30 minutes, and one-step demonstrations (Allen, 1991.). Individuals at a level four can imitate a sample of a task, recognize and acknowledge mistakes when comparing

their own project with a sample, and can comprehend multi-step directions (Allen, 1991). Both level threes and fours are easily diverted and worked well in environments with minimal sensory distractions (Allen, 1991). Knowledge of the participants cognitive level helped provide the most optimal cues (i.e., tactile, visual, auditory) and working environment for the participants (Allen, 1991). This knowledge also helped tailor activity plans and allow a client-centered program. Although the activities were to be performed in a group, components of the tasks were uniquely designed to fit each participant's ACL, which provided a just right challenge while giving an accomplishable task.

Results from the needs assessment concluded that there was a need for an EAA program for individuals with dementia to address functional performance, social and leisure activity, communication, and quality of life.

An example of how activities in the program were modified based on the ACL was by modifying components of a felt horse puzzle. In order to meet the needs of each individual's cognitive level, the puzzle pieces varied by size and number. The participants engaged in the activity by gluing the pieces of the puzzle onto a cardboard paper while following a sample. Cues were given to each participant individually. Participants were encouraged to help each other complete the task to promote problem solving and communication. The challenge level and individuality of the activity led to an increase in confidence and decrease in frustration during the sessions because there was a high success rate for completion. Alternate horse-related activities were available if a participant did not wish to engage in the task at hand such as coloring, painting, or social engagement.

Chapter 5: Virtual Horses in the Moment

The program plan was created for Virtual Horses in the Moment using evidence-based research on previous hippotherapy and therapeutic riding programs, dementia care, and

occupational therapy interventions for individuals with dementia. The Connected Horse Program is an example of a currently existing EBT program for individuals with dementia (Connected Horse, n.d.). The program offers on-site EBT activities for the participants including grooming, leading, and group exercises (Connected Horse, n.d.). These activities are common occupations performed in everyday horse care, and they help individuals develop confidence and grow a relationship with the horse (Burgon et al., 2018). The outcomes of the program included gaining confidence, self-awareness, communication, stress reduction strategies, and learning to become present (Connected Horse, n.d.).

Program sessions were planned with the intent of targeting multiple skills required to improve quality of life including fine motor, communication, problem solving, and memory. Each session's focus was on an element of horse care that the participants could potentially complete in real life such as grooming, riding, and tacking the horse. The plan was to show a short video at the beginning of the session and then complete an activity related to the video. Connecting an activity to a video was designed to help enhance the participants' memory and connection making skills (Shinkawa & Yamada, 2018). The activities to be completed during the sessions were designed to each require fine motor components, multi-step directions, and problem solving to enhance the carryover of skills to ADLs and improvement in quality of life (Majlesi & Ekström, 2016; Pimouguet et al., 2019). Although the activities were designed to target certain skills, they were simple and lighthearted which encouraged increased conversations, energy, and mood (Majlesi & Ekström, 2016). Each activity produced a tangible product that could be shown to families and friends, which motivated participants to socialize and share their experiences and work. Family involvement resulted in a more meaningful experience for the individuals with dementia (Kelley et al., 2019).

Budget

The program required external funding for items for activities to be completed during the sessions. A detailed budget was created with a list of supplies used (see Appendix A). A grant was provided by the University of St. Augustine for Health Sciences to fund the materials needed for the program. Supplies were gathered through sending website links to a member of the faculty of the university. Items were purchased in advance of the program session in which they were to be used. Additional items that were not used were donated to The Gardens of Riverside and NDR Therapeutic Riding. The total cost to fund the program was $291.70.

Participants

The Gardens of Riverside was contacted to inquire about residents at their facility, explain the EAA program, and determine if the residents would be eligible to participate. To be eligible to join in the program, participants were required to be diagnosed with dementia and have an interest in horses. Once it was confirmed that the facility administrators were interested and clients met inclusion criteria, the facility leaders gathered individuals who wanted to participate. Six residents agreed to engage in the program, four of which had participated in the previous research study at NDR Therapeutic Riding facility.

Schedule

The program was conducted twice a week for six weeks. Each session lasted one hour and consisted of a short video along with a hands-on activity.

Goals and Objectives

Goal 1

The goal of Virtual Horses in the Moment is to create an accessible EAA program for individuals with dementia and their caregivers.

Objectives

- At the end of the six week program, YouTube videos on horse care occupations with related activities will be available for use by NDR Therapeutic Riding.
- At the end of the six week program, a detailed schedule will be provided to NDR Therapeutic Riding explaining the program activities.
- At the end of the six week program, a budget will be available to NDR Therapeutic Riding with a list of supplies used to sustain the program.

Goal 2

The goal of Virtual Horses in the Moment is to establish a defined OT role for EAA with the dementia population

Objectives

- At the end of the six week program, twelve program activities driven by OT goals and theories will be created.
- At the end of the six week program, outcomes will be presented to OTs. Future OT implications will be considered and shared during the presentation process for the purpose of sustainability and improving the program.

Goal 3

The goal of Virtual Horses in the Moment is to provide benefits for improving the quality of life for individuals with dementia through an EAA based program.

Objectives

- At the end of the six week program, survey results will be interpreted to determine the outcomes and benefits of the EAA program on the participants quality of life.

- At the end of the six week program, participants will demonstrate an improvement in quality of life elements including mood, social participation, engagement, memory, and energy level.

Implementation

The participants gathered in a secluded area away from other residents of the facility to minimize distraction. A video was shown on either computer or television screen at the beginning of each session. The participants watched the video as a group and at the end of the video, questions and comments were discussed. Following the video, a multi-step activity and/or a game was provided. The activities focused on the topic that was presented in the video at the beginning of the session. Participants worked on activities individually and in groups depending on the components of the task. The goal of the activities were to increase participants' mood, communication, socialization, memory, energy level, and engagement to promote an improved quality of life. The tasks performed during the hands on portion included painting horse shoes, planting carrots, building a diorama via an example, making horse treats, and completing a felt horse puzzle of various difficulty depending on the participants cognitive level (see Appendix B). There were also activities to challenge the participants problem solving, socialization, and memory skills. These activities included group games that focused on the same topic that was shown in the video from the beginning of the session. For example, the participants working together to label horse parts on a large board. There were two staff for all six participants, making the ratio of staff to participants 1:3.

During two of the sessions, a simulated horse was brought in to help bring to life an in-person horse experience. The simulated horse was battery powered and demonstrated typical movements of a real horse such as whinnying, blinking, tail swishing, and head moving. The simulated horse gave the participants an opportunity to experience the sensory components of

being around horses. The participants' mood benefitted from this activity significantly because they were able to openly express joy, such as laughter, and communicate with each other about the common focus of the activity. For example, when the session started a few participants were disengaged, irritated, and observed falling asleep. When the simulated horse was present, their moods changed to bright eyed, uplifted, and joyful. The change in mood was present throughout the entire session.

At the end of the program, a scrapbook was made of all of the activities that had been created during the program. For activities that could not be put into a scrapbook, pictures were taken to fill the memories of the activity. The scrapbook gave the participants the opportunity to reminisce about the program. It also helped them to remember the activities they had completed, how the program made them feel, and make connections between each of the activities and the big picture of the program. The scrapbooks were to be shared with the participants' families when they were allotted to see them. The verbal feedback from the participants demonstrated appreciation, hope, and connectivity during the scrapbook activity.

Evaluation

Survey

A survey was completed by the activity's coordinator at The Gardens of Riverside after each week of the program (see Appendix C). The survey questions were influenced from the outcome measures of previous studies for individuals with dementia (Ambrosi et al., 2017; Borges-de-Araujo et al., 2019; Fields et al., 2018; Lai et al., 2019). Survey questions focused on elements of quality of life including mood, communication, socialization, energy level, and engagement. Survey results demonstrated an increase in all quality of life components of the participants. Additionally, the activities performed in the program encouraged participants to be more engaged, happy, excited, sociable, and talkative than they usually were. These

improvements were found to carry over to other situations throughout the day. For example, participants were noted initiating conversations with other residents, who were not in the program, on days that the program was performed. Results of the survey are as follows:

Question 1: Did you notice an improvement in the participants mood before/during/after the session?

> Prior to the activity residents were quiet and to themselves watching tv. Once the activity started taking place, the residents smiled more and became more engaged during and after the activity. (Activity Coordinator; Week 5: What Horses Eat/Painting Horseshoes)

Question 2: Did you notice an improvement in the participants' communication before/during/after the session?

> They usually communicate towards staff or small group of friends but with the activity they feel more encouraged to associate with different groups of people. The residents participated in more conversations with other people that were not from their usual circle of friends. (Activity Coordinator; Week 5: What Horses Eat/Painting Horseshoes)

Question 3: Did you notice an improvement in the participants' socialization before/during/after the session?

> The ones who don't socialize as much, socialized more with other residents. They found similarities between each other. (Activity Coordinator; Week 1: Orientation Day/Grooming)

Question 4: Did you notice an improvement in the participants energy level before/during/after the session?

> I think their energy levels change once the activity starts up. At first, they are a little unsure, but then once they get the hang of it, they are thoroughly enjoying what they are doing. (Activity Coordinator; Week 3: Building Stalls/Planting Horse Treats)

Question 5: Did you notice a difference in the participants' engagement from the least session?

> Each week they are more excited than the last. They become more familiar with the consistency of the program. (Activity Coordinator; Week 3: Building Stalls/Planting Horse Treats)

Informal Focus Group

An informal focus group with the activities coordinator and participants was performed following the completion of the program. The focus group was an open discussion on how the participants liked the program, what they were excited about to show their families, and aspects of the program that could be improved. The activity coordinator highlighted that there was an improvement in participants' memory due to the consistency of the program. After about three weeks of the program start date, participants began to remember the focus of the program sessions. The routine of the program became regular to the participants, and they would remember their daily activities after the sessions (i.e., hair salon, nail salon, snack). The activities coordinator also mentioned that EAA performed by an OT was profitable for the dementia population because of the holistic perspective, focus on autonomy, and client-centered approach benefitted the participants greatly in various aspects of their life.

The participants also gave feedback about the program. They stated that the program often made them feel as if they had a purpose. They also mentioned that the activities in the program were "fun and exciting". Many of the participants valued the tangible aspect of the activities that were completed in the program, because it gave them an opportunity to show their families and friends. Engagement in the program also brought up memories of the previous research study that was completed a few months prior where the participants went to the ranch and partook in activities in real time with the horses.

The results from the survey and informal focus group concluded that the program yielded an improvement in quality of life of the participants. The elements that were improved were socialization, mood, communication, energy level, engagement, and memory.

Sustainability

Program sustainability is important to ensure that a program continues to work over time (Ceptureanu et al., 2018). To ensure sustainability of this program a detailed schedule, budget, and list of activity supplies was compiled and provided to NDR Therapeutic Riding. These resources contain enough extensive detail to carry on the program. The virtual format of the program also permits the ability to be easily extended because a site is not necessary. Marketing to other facilities and programs to educate on the outcomes would also help to enhance sustainability of the program. It would be beneficial for the program to be continued to advocate for the OT profession, benefit the dementia population, and explore the role of OT with the emerging practice of EBT.

Chapter 6: Discussion

COVID-19 Impact

The program was impacted by the COVID-19 pandemic in multiple ways. Interviews and observations for the initial needs assessment were limited to five interviews and two observations. The needs assessment allowed for an understanding of the topic, but opportunities at more sites may have led to a more in depth understanding.

The program was originally designed to be an in-person program that would have been an adaptation and continuation from the previous OT capstone program that was completed at NDR Therapeutic Riding. Because of the closings of facilities, the program plan changed to be completely virtual. Due to COVID-19, The Gardens of Riverside had limited staff available to help lead the program virtually. The program plan then changed again. Assistance was required

during the sessions so that there would be an adequate number of staff to participants to complete the activities, taking away from the virtual aspect of the program.

An interruption occurred during the program which caused the time frame to go from eight weeks to six weeks in length. This interruption may have impacted the program outcomes. Toward the latter half of the program, the participants began to remember the major focus of the previous sessions. Participants had started to develop a routine and connect other activities that they typically did on program days. If the program did not have an interruption, these connections may have been stronger and more apparent.

The program was originally designed to include family members and caregivers of the participants. Because of the pandemic, family members were not permitted in the dementia care facility during the time of the program. Participants often mentioned their wish to share their completed activities with their families. If families and caregivers were able to be involved, memories and experiences could have been shared with them, which may have had a greater positive impact on the participants quality of life. If able, it may have been beneficial to interact with family members virtually. Family members would need to be available during times the session was conducted, have ample technology, and knowledge on how to use the technology. A training session at the beginning of the program would be beneficial if this concept will be implemented into future programs.

Although there were setbacks due to the pandemic, the virtual program allowed for advantages in comparison to an in-person program. From discussions with NDR Therapeutic Riding and The Gardens of Riverside staff, residents from the facility were more likely to participate in the program because of elimination of the need for transportation to and from the horse facility. The virtual platform also allowed for flexibility in scheduling and less allotted time for the program sessions, which also contributed to the increased likelihood of participation.

The virtual program was designed to be easily adapted to various conditions, making it a versatile program which can be used by NDR Therapeutic Riding in the future for both people with and without dementia. The program activities were designed to be completed by an OT with beginner to advanced horse experience.

Session Implications

The program was led by an OT student and an activities coordinator with six participants, having a 3:1 ratio of participants to staff. It would be beneficial in the future to provide a 2:1 ratio of staff to participants to encourage inclusive treatments and provide a more individualized program. A smaller ratio of participants to staff could also help encourage accomplishments with tasks and increased communication within the groups. Modifying the groups based on the ACL scores may also be beneficial for optimal performance of the participants.

The participants tended to sit in the same seats and socialize with the people who were sitting close to them while engaging in the activities. In the future, splitting the participants into smaller, two person groups of a different person each session would promote further socialization and increased communication with a multitude of people. This could potentially increase overall communication and initiation of conversation.

Implications for Occupational Therapy

This capstone project was developed with the intent of being occupation-based and specific to components of horse care. The project began with needs assessment and gathering data from various perspectives and populations. The development and implementation of the program that was designed to be versatile, holistic, and accessible. The needs assessment started with a literature review about current OT based EBT practices and expanded to EBT practices performed by various professionals. A complete literature review was also performed on typical OT interventions for individuals with dementia related and not related to AAT and EBT.

Activities were planned with close collaboration with an OT. Tasks performed in the program required skills including fine motor, gross motor, problem solving, and executive functioning, which all are present in everyday ADL tasks such as grooming, dressing, and bathing. The quality of life components that were measured also pertained to improving ADLs by maintaining and enhancing overall mental health and well-being.

Common OT models and frames of references were used to develop and implement the program including the PEOP model and Allen's Cognitive Frame of Reference. These theories are utilized in OT practice. The Allen's Cognitive Model helped to determine the levels of the participants and the activities appropriate for the program which was important to help determine how to develop and grade the activities based on the participants ACL. The PEOP model helped the program plan to incorporate all components of the person, environment, occupation, and performance to help enhance the participants experience and achieve optimal capability.

There is room for continued OT development for this program and other similar programs currently and in the future. There is currently an active OT role in hippotherapy for a multitude of conditions including autism, cerebral palsy, spinal cord injury, and stroke (Gabriels et al., 2015; Sergiou et al., 2017;). This project concludes with the primary objectives of advocating for the profession in the setting of EBT for individuals with dementia, educating OTs about the expanding OTs role in EBT for various populations, and advancing development of OT based EBT programs for individuals with dementia to promote engagement in such programs, and inform OTs about the benefits of EBT for individuals with dementia through the results of this program. Results of the program confirmed that OTs can use EBT and EAA to help the dementia population improve quality of life. The program also established the ability to provide EBT remotely and with a modified approach based on environments.

Need for Program

Equine-based therapy is a type of treatment method used to meet specific needs of individuals with disabilities by modifying or adapting the sport of horseback riding and horse care (Sergiou et al., 2017). Positive benefits include improvements in cognitive, physical, emotional, leisure, and social elements of individuals daily lives (Sergiou et al., 2017). Individuals with dementia experience cognitive and behavioral decline which affect their ability to functionally perform everyday activities of daily living (Pimouguet el al., 2019). The dementia population has experienced improvements as a result of EBT including emotional well-being, balance, functional capacity, social relationships, functional performance, and quality of life (Borges-de-Araugo et al., 2019; Fields et al., 2018; Fields et al., 2019).

This capstone project explored how OTs can use EBT to benefit individuals with memory deficits to enhance functional performance in daily routines and activities. The hypothesized benefits of improvements in memory, communication, quality of life, and social and leisure engagement by participation in EAA all proved to be validated by the qualitative data gathered through surveys and interviews at the conclusion of the program. Additional benefits found were improvements in mood, engagement, and energy level. The program can be continued and progressed by OTs with the intention of enhancing the quality of life of individuals with dementia, expanding typical treatments performed for the dementia population, and advocating for the role of OT in EBT treatments.

Future Program Implications

Future implications for the program and for OT include providing a wider range of assessments to determine effectiveness in improvement of skills necessary to perform ADLs, a smaller ratio of staff to participants to promote more individualized care, and more group work.

Assessments may include the Mini Mental State Exam, Montreal Cognitive Assessment, or Cognitive Abilities Screening Instrument (Hung et al., 2021).

The activities in the program were targeted to impact the quality of life of the participants and were designed to also work on skills that would help the participants in their everyday activities of daily living. Skills including fine motor, gross motor, problem solving, and executive functioning skills were incorporated into the activities. Continued program implications include the need for outcome measures focusing on ADLs to determine if there is a correlation between participation in the program and improvements in skills required to complete ADLs.

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Appendix A

Detailed Budget

Item	Cost	Link
White paper	$3.97	https://www.walmart.com/ip/Pen-Gear-Copy-Paper-White-500-Sheets/487634010
Construction paper	$4.96	https://www.walmart.com/ip/Crayola-Construction-Paper-in-12-Colors-240-Sheets/17176160
Lamination slides	$15.18	https://www.walmart.com/ip/Scotch-Thermal-Laminating-Pouches-100-Count-8-5-x-11-3-mil-Thick/29891514
Paint brushes	$5.86	https://www.walmart.com/ip/Go-Create-Assorted-Paint-Brushes-25-ct/19613465
Paint	$28.00	https://www.walmart.com/ip/Apple-Barrel-5214E-Acrylic-Craft-Paint-Matte-Finish-Essentials-2-fl-oz-Set-of-13/484659680
Yarn (brown)	$3.49	https://www.michaels.com/impeccable-yarn-solid/10108920.html?r=g&cm_mmc=PLASearch-_-google-_-

		MICH_Shopping_US_N_Knitting+%26+Crochet_N_Smart_BOPIS_N-_-&Kenshoo_ida=&kpid=go_cmp-9982987191_adg-102401875802_ad-433378147608_pla-938221103243_dev-c_ext-_prd-10108920&gclid=Cj0KCQjwwOz6BRCgARIsAKEG4FXl1txL_-Sw5zyIYNQiZmmvmY4z2APEgt3_y_iZ9USFqPEIAEBUQJgaAiItEALw_wcB
Markers (x3)	$4.97 x3 = $14.91	https://www.walmart.com/ip/Crayola-20-Count-Classic-Ultra-Clean-Washable-Broad-Line-Markers/170910778
Photo paper	$10.49	https://www.walmart.com/ip/HP-Everyday-Photo-Paper-Ideal-For-All-Inkjet-Printers-Glossy-Surface-Finish-4x6-in/28969243
Black and colored ink	$45.99	https://store.hp.com/us/en/pdp/hp-61-2-pack-black-tri-color-original-ink-cartridges-p-cr259fn-140--1?jumpid=cs_wwsupplies&utm_medium=cs&utm_source=wwsupplies&utm_campaign=hp_us_branded_print_supplies_Priority+Ink+Supplies+Product_regional_opex_google_do_en_pla_cov_hp&utm_content=sp&adid=336395239599&addisttype=gpla&CR259FN%23140&gclid=Cj0KCQjws536BRDTARIsANeUZ5_7JDrWUWj1CB

		sevIv-p0scqtxSukUx8VJEPseK8jWEXXTljc4gRzYaAoEVEALw_wcB&gclsrc=aw.ds
Felt pieces	$7.25	https://www.walmart.com/ip/40pcs-set-Non-Woven-Felt-Fabric-Polyester-Cloth-Felt-Fabric-DIY-Bundle-for-Sewing-Doll-Handmade-Craft-Thick-Home-Decor-Colorful/777877039
3 Pack Scissors (2)	$3.97	https://www.walmart.com/ip/Westcott-8-All-Purpose-Scissors-Black-3-Pack/20850637
Glue	$1.44 x 3 = $4.32	https://www.walmart.com/ip/Elmer-s-Liquid-School-Glue-White-Washable-8-oz/16828188
Velcro	$2.97	https://www.walmart.com/ip/VELCRO-Brand-Sticky-Back-24in-x-3-4in-Roll-White/17190459
Google eyes	$3.47	https://www.walmart.com/ip/Go-Create-Small-Self-Adhesive-Wiggly-Eyes-300-ct-Total/19526547

Toy horses	$11.95	https://www.amazon.com/dp/B07T86FFY5/ref=sspa_dk_detail_6?psc=1&pd_rd_i=B07T86FFY5&pd_rd_w=veG4p&pf_rd_p=f0355a48-7e73-489a-9590-564e12837b93&pd_rd_wg=kPhvo&pf_rd_r=CZ01TZ9CVS3Y77HFV8DV&pd_rd_r=860035f5-0490-4bf1-9785-aa02eeabf64f&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUEyRUVCQkc4S1NRQTREJmVuY3J5cHRlZElkPUEwNDQ1MDk1MjhXWU1FS0ZHVFE0NiZlbmNyeXB0ZWRBZElkPUEwOTMzMzE0MjNFR1pHUjBPR0w1RCZ3aWRnZXROYW1lPXNwX2RldGFpbF90aGVtYXRpYyZhY3Rpb249Y2xpY2tSZWRpcmVjdCZkb05vdExvZ0NsaWNrPXRydWU=
Toy barrels	$12.99	https://www.amazon.com/Unfinished-Miniatures-Woodworking-Projects-Woodpeckers/dp/B07TM123GY/ref=sr_1_5?dchild=1&keywords=toy+barrels&qid=1598548147&s=toys-and-games&sr=1-5
Toy hay bales	$7.89	https://www.walmart.com/ip/JTT-Scenery-Hay-Bale-Mix-75-to-1-21-Pkg-5-Round-16-Rectangular/46399736

Paper bags	$7.97	https://www.walmart.com/ip/40-Pc-Paper-Bags-Sandwich-Container-Snack-Food-Party-favors-Lunch-Bag-Grocery/677950254
Jewels	$12.34	https://www.walmart.com/ip/Horizon-Group-USA-0-75-Lb-Rainbow-Acrylic-Jewels-Tub-1-Each/187556031
Toy trees	$6.39	https://www.walmart.com/ip/20-Pcs-70mm-Scale-Architectural-Model-Trees-Railroad-Layout-Garden-Landscape-Scenery-Miniatures-Tree-Building-Kits-Toy-for-Kids-Style-2/818145652
Toy fence posts	$10.99	https://www.amazon.com/dp/B07M65PB2V/ref=sspa_dk_detail_1?psc=1&pd_rd_i=B07M65PB2V&pd_rd_w=cHW0L&pf_rd_p=48d372c1-f7e1-4b8b-9d02-4bd86f5158c5&pd_rd_wg=17Klo&pf_rd_r=9WNQXZDQYCCPV3P0WWBD&pd_rd_r=9d2725cb-feb4-4c95-96d2-f6d5c02a90aa&spLa=ZW5jcnlwdGVkUXVhbGlmaWVyPUEyMFJKQlJJSklHRTJNJmVuY3J5cHRlZElkPUExMDMxNjM5MVNLMTdWRzk1OTJCWSZlbmNyeXB0ZWRBZElkPUEwNzc3OTkyMUpCOVNKMlBZRE9YRSZ3aWRnZXROYW1lPXNwX2RldGFpbC

		ZhY3Rpb249Y2xpY2tSZWRpcmVjdCZkb05vdExvZ0NsaWNrPXRydWU=
Peppermints	$13.99	https://www.amazon.com/Brachs-Brites-Peppermint-Starlight-5Pound/dp/B0754TVV2R/ref=sr_1_6?dchild=1&keywords=peppermints&qid=1600807561&s=grocery&sr=1-6
Molasses	$9.99	https://www.amazon.com/Golden-Barrel-Unsulfured-Black-molasses/dp/B00M1ZYF9E/ref=sxin_11_sk-bs-v3-tn-desktop-na_cd80d4e71ea61dd12213c4ba4b49092e838978cb?cv_ct_cx=molasses&dchild=1&keywords=molasses&pd_rd_i=B00M1ZYF9E&pd_rd_r=071f0552-4db3-4858-9d4d-1d6601bfa62d&pd_rd_w=3zFWd&pd_rd_wg=L2bTe&pf_rd_p=adb03412-2691-4eec-88cf-c5da0ec64ba6&pf_rd_r=0R8HTCCVECSWM798MNH2&qid=1600807391&sr=1-1-64fffb07-64c9-4706-8615-4b3719e1ca2e
Rolled oats	$5.29	https://www.amazon.com/365-Everyday-Value-Organic-Old-Fashioned/dp/B07NSRM5G3/ref=sr_1_19_0g_wf?dchild=1&keywords=rolled+oats&qid=1600807763&s=grocery&sr=1-19

Appendix B

Activity Schedule

Date	Activities
Week 1 **9/22/2020**	**Orientation Day** ● 9:30-9:40: Set up ● 9:40-10:00: Introduction to NDR Therapeutic Riding, staff, horses via video ● 10:00-10:15: Get to know the participants ○ Ice breakers: Name and fun fact on a sheet of paper, write down and put in a hat and then pull out and read outloud to see who's card it is ○ Share favorite story related to horses ● 10:15-10:30: Overview of the program and hybrid platform ○ Activity: ■ Participants verbalize what they like about horses ■ Horse coloring pages
Week 1 **9/24/2020**	**Grooming** ● 9:30-9:40: Set up/welcoming participants ● 9:40-9:55: Introducing grooming tools & purpose ● 9:55-10:05: Video of grooming Holly: Explain grooming sequencing and methods ● 10:05-10:30: Participants groom Buttercup using grooming tools, clips, and bows
Week 2 **9/29/2020**	**Learning about tack & tacking up Buttercup** ● 9:30-9:40: Set up/welcoming participants ● 9:40-10:05: Video of horse being tacked up and talking about gear/tack ● 10:05-10:15: Pass around bridle and explain purpose. Worksheet of english vs western saddles ● 10:15-10:30: Participants use tack to "tack up buttercup" with real tack
Week 2 **10/1/2020**	**Building Horse** ● 9:30-9:40: Set up/welcoming participants ● 9:40-10:00: Video of identification of horse body parts with participants following along with an activity of labeling the

	body parts • 10:00-10:30: Building your own horse with felt pieces (demonstration provided) ○ Participants name their horse

Week 3
10/6/2020
	Building Stalls
	• 9:30-9:40: Set up/welcoming participants
	• 9:40-9:55: Fun fact activity
	  ○ Participants pick fun fact out of a jar
	  ○ Share what they pick
	• 9:55-10:30: Participants build their own stalls using shoe boxes, felt pieces, and props (demonstration provided)
	  ○ Participants my share a few words about their horse

Week 3 **10/8/2020**	**Planting Horse Treats** • 9:30-9:40: Set up/welcoming participants • 9:40-10:00: Lesson on what horses can/can not eat with worksheet • 10:00-10:30: Planting treats (carrots) for the horses ○ Participants will be able to see the carrots grow and at once they are big enough, they will be fed to the horses with pictures so that the participants can see their work

Week 4
10/13/2020
	Learn Horses Markings
	• 9:30-9:40: Set up/welcoming participants
	• 9:40-10:05: Video about the horses and their different facial markings
	  ○ Activity to go along (worksheet)
	• 10:05-10:30: Horse bingo
	  ○ Ask participants to verbalize what other things they want to do with the horses and what activities they would like to enjoy

Week 5
11/3/2020
	What Horses Eat
	• 9:30-9:40: Set up/welcoming participants .
	• 9:40-9:50: Introduce what horses can and can not eat
	  ○ Participants can follow along with felt pieces
	• 9:50-10:30: Making treats activity
	  ○ While treats are cooking, participants can participate in activity (i.e., painting, coloring, grooming buttercup)
	https://thephoenixfilly.com/2018/06/19/homemade-horse-treats-with-4-ingredients/

Week 5 **11/5/2020**	**Painting Horseshoes** ● 9:30-9:40: Set up/welcoming participants ● 9:40-9:50: Video of me painting the horse ● 9:50-10:30: Painting horseshoes activity ○ 10:20-10:30: When finished, participants share their creations
Week 6 **11/10/2020**	**Making Scrapbooks** ● 9:30-9:40: Set up/welcoming participants ● 9:40-10:30: Make scrapbooks with the participants ○ Print out pictures of the horses and farm supplies at the ranch before hand ○ Participants use scissors and glue to make their own scrapbook that they can keep and share with their families
Week 6 **11/12/2020**	**Goodbye Party** ● 9:30-10:00: ○ Gather feedback from participants ○ Participants enjoy a lighthearted conversations while enjoying coffee and donuts

Appendix C

Quality of Life Survey

Please answer to the best of your ability:

- Did you notice an improvement in the participants mood before/during/after the session?
    - Yes No
    - How?
- Did you notice an improvement in the participants' communication before/during/after the session?
    - Yes No
    - How?
- Did you notice an improvement in the participants' socialization before/during/after the session?
    - Yes No
    - How?
- Did you notice an improvement in the participants energy level before/during/after the session?
    - Yes No
    - How?
- Did you notice a difference in the participants' engagement from the last session?
    - Yes No
    - How?
- Is there anything that could have been better in the session? If so, what?