TUMMY TIME TOOLKIT: INCORPORATING SOCIAL-EMOTIONAL STRATEGIES TO INCREASE CAREGIVER HOME PROGRAMMING COMPLIANCE

By

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Bachelor of Science - Kinesiological Science
University of Nevada, Las Vegas
2020

A doctoral project submitted in partial fulfillment
of the requirements for the

Occupational Therapy Doctorate

Department of Brain Health
School of Integrated Health Sciences
The Graduate College

University of Nevada, Las Vegas
May 2024

UNLV | GRADUATE COLLEGE

Doctoral Project Approval

The Graduate College
The University of Nevada, Las Vegas

May 3, 2024

This doctoral project prepared by

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entitled

Tummy Time Toolkit: Incorporating Social-Emotional Strategies to Increase Caregiver Home Programming Compliance

is approved in partial fulfillment of the requirements for the degree of

Occupational Therapy Doctorate
Department of Brain Health

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Abstract

Tummy time is a crucial developmental activity for infants. However, many infants are not receiving the recommended amount of time in prone positioning. This doctoral capstone project aims to address this gap through the implementation of an occupational therapy (OT) based tummy time educational resource titled *Bonding Through Tummy Time: A Caregiver's Guide*. The resource, a tummy time toolkit, focuses on caregiver and infant interaction during the co-occupation of play using social-emotional developmental strategies as a driving force to complete more tummy time in the home environment. Recruitment of caregivers was done through purposive sampling and participants were surveyed to assess changes in tummy time practices before and after receiving education. Survey results indicated that the educational resource was well-received, and caregivers and their infants increased the quality and quantity of time spent in tummy time. The infant population and OT profession would benefit from further research in this area to contribute to the body of knowledge of caregiver education on tummy time practices.

Acknowledgement

I would like to acknowledge my mentors who helped guide me throughout this capstone project, Dr. Kaitlin Ploeger and Linda Ng, OTR/L. I am grateful for their mentorship, support, and encouragement throughout my capstone experience. I would like to thank Dr. Donnamarie Krause and the UNLV OTD faculty for their support and guidance throughout my time in the program. Additionally, I would like to thank my family, friends, and loved ones for providing endless love, encouragement, patience, and support.

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Introduction

Tummy time, also known as prone positioning, is a term that refers to the dedicated period during which infants are placed on their stomach while awake and supervised (Hewitt et al., 2020). It is a crucial activity during infancy and aids in growth and development. When an infant is on their stomach they develop and practice skills such as lifting their head and looking around and moving their legs and pushing up through their arms to aid motor planning and development. Tummy time promotes upper extremity and core strength, encourages spinal extension, enhances proper posture, and facilitates key developmental milestones such as rolling over, sitting, and crawling (Graham, 2006; Hewitt et al., 2020). As infants engage in the developmental play activity, they develop not only motor skills but also build the foundation for a range of emotional, social, sensory, and cognitive skills, including sensory and fine motor abilities, emotional connection, and communication with their caregivers, and guards against future developmental problems. Encouraging tummy time can improve neurodevelopmental outcomes in infants and is vital to infant health and wellness. Additionally, tummy time provides infants with alternative viewpoints that promote environmental exploration by stimulating their curiosity and desire to move. Implementing tummy time is a way to provide postural support that has immediate and long-term benefits and impacts an infant's overall development.

In addition to being a developmental play activity, tummy time is considered a physical activity for infants. The World Health Organization (WHO) physical activity guidelines for infants under one year of age recommend infants who are not yet mobile engage in at least thirty minutes of tummy time throughout the day (2022). The WHO recommends infants be physically active several times a day in a variety of ways, stating that interactive floor-based play is better

and that infants should not be restrained in supported positioning equipment, such as car seats, infant swings, jumpers, or walkers, for more than one hour at a time (WHO, 2022).

A child's early months and years are fundamental for their social-emotional development. Social-emotional development is a child's ability to express and manage their emotions and create meaningful relationships (Bagdi & Vacca, 2005). The core competencies of healthy social-emotional develop include the ability to form close relationships, express and regulate emotions, and environmental exploration (Cousins, 2013). Shared positive experiences between caregivers and their infants serve as a building block and reinforcement for the development of social and emotional learning, which is crucial to the development of cognitive, language, and adaptive behaviors (Bagdi & Vacca, 2005; Case-Smith, 2013). Yogman et al., (2018) highlights how developmentally appropriate play with parents is an opportunity for infants and children to promote social-emotional skills. It is through play that safe, stable, and nurturing relationships are formed.

The supervised and interactive nature of tummy time becomes a platform for caregivers to attune to their infants' cues, fostering a secure attachment. It lays the foundation for emotional well-being, thus supporting the infants' social-emotional learning. The concept of tummy time is based on the premise that caregivers and infants can readily engage in it, increasing the likelihood of intervention success. While caregivers are receiving education on tummy time from their pediatricians and national efforts, there is a gap in adherence to the recommended guidelines that promote physical and cognitive milestones, suggesting the need to amplify the promotion of tummy time in infants (Dudek-Schreiber & Zelazny, 2007; Felzer-Kim et al., 2020; Mendres-Smith et al., 2020; Zachry & Kitzmann, 2011). Despite the significance of tummy time, there is a notable gap in the formalized education provided to caregivers to support

developmental play and a consistent follow-through with home programming. This gap could hinder an infant's overall well-being and developmental progress. To bridge this gap, implementing a tummy time home programming toolkit incorporating developmentally appropriate social-emotional strategies can help motivate infants to participate actively in tummy time. This approach will allow caregivers more hands-on experience and education regarding the benefits of tummy time and the positioning and handling of their infant.

PIO Question

Will the inclusion of social-emotional learning strategies in a tummy time toolkit increase caregiver compliance with home programming?

Proposed Solution

The proposed solution included developing and implementing an evidence-based tummy time resource for caregivers. This resource, a toolkit focused on encouraging positive interaction with infants during tummy time, aimed to enhance social-emotional development through social engagement and sensory-based strategies to drive increased compliance to home programming recommendations. Additionally, the toolkit is intended to improve the caregiver's quality and quantity of tummy time spent with their infant. The toolkit provided caregivers with education on the benefits of various skills tummy time promotes, information on infant social-emotional learning and sensory development, and recommendations and strategies for promoting appropriate developmental play skills to implement in the home environment.

Significance of Project to Occupational Therapy

The project holds significance to the OT profession due to its holistic approach to tummy time. While there is great emphasis on the physical benefits of tummy time, such as gross motor development, the focus of this toolkit shifts towards social-emotional developmental milestones paired with caregiver interactions. OTs specializing in infant care promote physiological

stability, occupations, and co-occupations of infants and their caregivers, offer sensory opportunities to promote neurodevelopmental outcomes, and support caregivers in fulfilling their occupational roles through education, coaching, and practice of skills to care for their infant. OTs can help facilitate prone play through caregiver education to improve infant development. OTs emerge as interventionists and educators, providing essential knowledge to caregivers on the interplay between play and developmental milestones. Additionally, it is within the scope of OT practice to promote healthy growth in infants and children's social and emotional development by guiding and supporting the caregivers to recognize, understand, and support social and emotional development to nurture bonding and building interactive relationships (AOTA, 2020; Center for Early Childhood Mental Health Consultation, n.d.).

Furthermore, this project aligns with the American Occupational Therapy Association (AOTA) Vision 2025, which envisions the OT profession maximizing the health and well-being of caregivers and infants across the lifespan (AOTA, 2017). Through meaningful co-occupation between caregivers and their infants, this project enhances social-emotional development, contributing to infants' immediate well-being and laying the foundation for lifelong benefits. Encouraging tummy time emerges as a key strategy with numerous physical benefits, aligns well with AOTA's emphasis on early intervention and prevention, and supports their objectives of preventing illness, promoting positive mental health, enhancing social participation, reducing health disparities, and quality of life improvement (AOTA, 2020). Furthermore, this capstone project aligns with the American Occupational Therapy Foundation (AOTF) research priorities by addressing family and caregiver support, resiliency, well-being, and health promotion, prevention, and management of chronic conditions (AOTF, n.d.). By focusing on caregivers of pre-crawling infants, this project highlights the essential role of families in infant development,

fostering physical and emotional well-being through social-emotional strategies, and embraces health promotion via preventative measures such as tummy time to optimize infant neurodevelopmental outcomes, aligning with AOTF's emphasis on comprehensive family support.

Statement of the Problem

Perceived Problem

The identified problem revolves around the insufficient engagement of infants in tummy time exercises, which is a crucial component of their developmental process. Despite recommendations readily available to parents, there are various reasons why infants are not achieving the daily tummy time recommendations. Literature indicates that the amount of tummy time an infant achieves is often related to their tolerance of the position (Dudek-Shriber & Zelazny, 2007; Felzer-Kim et al., 2020; Jennings et al., 2005; Zachry & Kitzmann, 2011). Some infants initially may not be comfortable in the prone position and exhibit signs of intolerance and distress, such as crying, negative vocalizations, head bobbing, and tensing of the body (Dudek-Shriber & Zelazny, 2007; Graham, 2006; Ricard & Metz, 2014; Salls et al., 2002). These negative aspects associated with tummy time can make it difficult for caregivers to implement consistently into their infant's daily routine if it reliably leads to infant fussiness or crying (Dudek-Schreiber & Zelazny, 2007; Koren et al., 2010).

Additional barriers to tummy time caregivers cite include being fearful, an overall lack of awareness about the importance of tummy time, difficulties with implementation, and finding the time throughout the day (Dudek-Shriber & Zelazny, 2007; Felzer-Kim et al., 2020; Salls et al., 2002; Wentz, 2016; Koren et al., 2010). If caregivers are unaware of the benefits of tummy time, they may not regularly give their infant enough floor play (Felzer-Kim et al., 2020; Zachry & Kitzmann, 2011). The need for the project stems from the absence of specialized tummy time educational resources for caregivers aimed at increasing their infant's tolerance for time spent in prone positions so the infant and caregiver enjoy implementing tummy time daily.

Definition of Terms

To ensure clarity of terminology used throughout this paper, operational definitions for tummy time, social-emotional learning, and home programming are provided below.

Tummy time/prone positioning

Tummy time is a form of developmental play and physical activity in which an infant is placed in prone positioning while awake and supervised.

Social-emotional development

An infant's emerging ability to experience, manage, and express emotions, build relationships, foster social interaction, and actively explore their environment.

Home Programming

Individualized therapeutic activities and exercises provided to caregivers to implement in the home environment, specifically to encourage their infant to spend time on their stomach for overall strengthening and motor development.

Problem Significance to Occupational Therapy

The relevance of this capstone project to OT lies in the multifaceted nature of tummy time. Beyond being a physical exercise, tummy time encompasses a broad spectrum of occupational activities crucial for an infant's overall development, including exploration of their environment, interacting with caregivers, and developing motor, visual, and sensory skills (Dudek-Shriber & Zelazny, 2011; Graham, 2006). Tummy time serves as a fundamental occupation that sets the stage for future developmental milestones. Insufficient education on proper prone positioning can contribute to a delay in developmental milestones, an elevated risk for positional plagiocephaly, and decreased caregiver-infant co-occupations, thereby hindering infants' active participation in their daily activities (Zachry & Kitzmann, 2011; Felzer-Kim et al., 2020). OTs can address these aspects through caregiver education, enabling infants to engage in

meaningful occupations and adapt to their environment. Moreover, it is within the OT's scope of practice to encourage social-emotional engagements that contribute to stronger bonds and emotional well-being between caregivers and infants. The need for this project arises from a noticeable gap in current research and practices, specifically regarding utilizing social-emotional strategies for increased compliance with tummy-time recommendations.

Anticipated Outcomes

The anticipated outcome of this project is increased caregiver compliance with home programming recommendations through the use of social-emotional learning strategies provided in a tummy time toolkit.

Literature Review

Background

The Centers for Disease Control and Prevention (CDC) estimates there are roughly 3,500 infant deaths each year due to sudden unexplained infant death syndrome (SUIDS) (CDC, 2023). Many of these deaths happen unexpectedly while the infant is sleeping. Although the numbers are still elevated, it is a stark contrast when compared with data collected in 1993, when roughly 4,700 infants died from SIDS (AAP, 2020). The reduction in SIDS-related deaths can be attributed to the American Academy of Pediatrics' "Back to Sleep" public health campaign, which was introduced in 1994 (AAP, 2020). The campaign aimed to reduce the incidence of SIDS by recommending that infants be supine on a firm mattress while sleeping, sharing a room without bed-sharing, and avoiding soft bedding and pillows (AAP, 2020). Most recently, the "Back to Sleep" efforts have been promoted as a "safe sleep environment" to reduce the risk of sleep-related deaths.

While safe sleep recommendations led to an overall reduction in SIDS rates, an unintended consequence was an overall decrease in placing infants in prone positions while awake. Infants were spending too much time in a supine position, resulting in complications such as delays in meeting motor milestones and deformational plagiocephaly (Hewitt et al., 2020; Williams & Galea, 2023). Deformational plagiocephaly is a condition in which flat spots develop on an infant's skull, usually due to increased pressure in one location (Ricard & Metz, 2014). The "Prone to Play" campaign was created to counteract these complications and to promote caregivers placing their infants into prone positioning during wakeful hours.

Updated 2022 AAP policy statement and recommendations advise caregivers to place their infant in tummy time while awake and supervised for short intervals of time, beginning soon after hospital discharge to facilitate development and prevent positional plagiocephaly

(AAP, 2020). Caregivers are encouraged to increase tummy time play to at least 15 - 30 minutes a day by the time their infant is seven weeks old (AAP, 2020). The SIDS statistics presented support the need for caregiver education on positioning to reduce the incidence of SUIDS and the number of infants with adverse outcomes from reduced prone play.

Tummy Time

Motor development is essential for effective occupational performance in infants and children, impacting their ability to engage in play, activities of daily living (ADL), social interaction, and academic activities (Case-Smith et al., 2013). Improvements in motor performance can result in functional gains in domains such as cognition and social skills (Case-Smith et al., 2013). Tummy time is a crucial activity for motor development as it facilitates head control, stability in prone weight-bearing positions, and anti-gravity movements (Pin et al., 2007). Lack of exposure to tummy time restricts an infant's opportunities to learn and practice motor skills requiring anti-gravity extension (Majnemer & Barr, 2006). Infants who spend more time in prone positioning achieve motor milestones earlier, such as rolling from supine to prone, tripod sitting, and belly crawling (Kuo et al., 2008; Majnemer & Barr, 2006).

A review of the literature has demonstrated a positive correlation between tummy time and motor development (Dudek-Shriber & Zelazny, 2007; Kuo et al., 2008, Majnemer & Barr, 2006, Salls et al., 2002). A study by Zhang and colleagues (2023) examined the characteristics and dose-response of tummy time to infant development, with results showing that infants who received an average of 30-44 minutes of tummy time a day over a two-month span achieved higher developmental scores in communication, fine motor, gross motor, problem-solving, and personal-social domains, than infants who did not engage in tummy time. Additionally, the study

determined that the infant's tummy time bout frequency, bout length, and preferences significantly increased over time. Kuo and colleagues (2008) reported that while most babies had tummy time experience by three to four months of age, only 5% of these babies were prone for more than 60 minutes per day, and 42% of the infants reported engaging in 20 minutes or less of daily tummy time. For developmental milestones such as rolling supine to prone, belly crawling, and 4-point crawling, infants who engaged in daily tummy time achieved these milestones significantly earlier (Kuo et al., 2008).

Majnemer & Barr (2005) studied the effects of positioning on motor skills in 71 infants, and if any delays in motor skills are associated with decreased tummy time. Results of the study showed that the amount of tummy time the infants received positively correlated with the Alberta Infant Motor Scale (AIMS) and Peabody Developmental Motor Scale (PDMS) fine and gross motor quotients. In another study examining the effects of tummy time on the acquisition of motor milestones, Dudek-Shriber & Zelazny (2007) used parent questionnaires to analyze how time spent in different positions correlated with prone, supine, and sitting milestones. The four-month-old infants who spent time in prone position attained gross motor milestones quicker compared to those who had limited time in prone.

Social-Emotional Learning and Development

Infants' mental health and social-emotional development develop within secure caregiving relationships and daily routines, such as through the practice of tummy time (Center for Early Childhood Mental Health Consultation, n.d.). Responsive connections made through engaging in daily routines or co-occupations help infants establish an emotional bond with their caregivers. Co-occupations, defined as occupations completed by two or more individuals

(AOTA, 2020), play a vital role in infancy, as infants rely on their caregivers for positioning until they develop the muscle tone to move independently.

Caregiving, an occupation that requires active participation from both the caregiver and infant, encompasses activities such as feeding, sleep, bathing, and touch-based interventions such as holding, which deepens social engagement (AOTA, 2020). This bond is strengthened through one-on-one time, play, gentle touch, established routines, and gentle talking or singing (Center on the Social and Emotional Foundations for Early Learning, n.d.). These co-occupations are instrumental in supporting an infant's social and emotional development, provided the caregivers are engaging in an age-appropriate way (Center for Early Childhood Mental Health Consultation, n.d.). It is through these nurturing and secure bonds that infants are driven to explore and learn about the environment around them.

The infant's communication of emotions and needs, coupled with the caregiver's response, establishes pathways in the brain leading to physical, cognitive, and emotional learning (Bagdi & Vacca, 2005; Center for Early Childhood Mental Health Consultation, n.d.; Yogman et al., 2018). Social-emotional skills develop early in life, beginning with the infant's bonding with their caregivers. Examples include the infant signaling the caregiver to take care of their immediate needs and comforting the infant through feeding, touching, rocking, and soothing. Social-emotional development is believed to be foundational to developing cognition, language, and adaptive life skills (Case-Smith, 2013). An infant's initial social interactions include eye contact and cuddling with caregivers; touch and holding appear to be essential to an infant's social-emotional growth. Interventions to promote social-emotional growth in infants primarily focus on the caregiver-child interaction (Case-Smith, 2013).

Case-Smith (2013) conducted a systematic review of interventions used by OTs to promote early social-emotional development in young children ages zero to five and found effective interventions included relationship-based interventions such as teaching caregivers how to read the infant's cues and respond accordingly to facilitate positive caregiver-infant interactions, using touch-based interventions such as skin to skin and massage to calm the infant and to promote caregiver-infant bonding, and promoting caregiver-child joint attention. An infant's initial social interactions include eye contact, touch, and holding with the caregiver, which is essential to their social-emotional growth. Interventions in which caregivers are coached on strategies to increase their social-emotional support and positive affect on their infant were found to have positive effects (Case-Smith, 2013). OT can promote bonding and positive caregiver-infant bonding and interaction by coaching caregivers to use touch-based interventions and strategies that promote joint attention while coaching parents to improve responsiveness, and positive affect can promote positive behaviors in infants (Case-Smith, 2013).

Play represents an infant's fundamental and primary occupation and is one of the earliest co-occupations shared between infants and their caregivers. Caregivers play an essential role in their infant's development through reciprocal interactions within play (Pickens & Pizur-Barnekow, 2009; Yogman et al., 2018). Co-occupation occurring within the context of play is a vital aspect within play itself, as play is transactional, and each participant's occupational performance relies upon the other. Play is foundational to developing safe, secure, and supportive caregiver relationships. Play is vital to an infant's development to enhance learning and facilitate healthy child development.

The AAP Clinical Report on the role of play in enhancing development in early childhood outlines how play with caregivers and peers offers an opportunity to promote social-emotional, cognitive, language, and self-regulation skills in children and supports the formation of safe and nurturing relationships with caregivers that children need to succeed (Yogman et al., 2018). Yogman and colleagues recommend fostering social interaction with infants through smiles and nonverbal gestures and encouraging unstructured play to promote motor skill development (Ginsburg, 2007; Yogman et al., 2018). Early play is a fundamentally social activity that combines exploration with the development of social-emotional skills (Yogman et al., 2018). Various types of play enhance the bonding skills of infants and caregivers, fostering healthy development and social-emotional involvement (Yogman et al., 2018).

Sensory Development

While motor delays are often the focus of an infant's care in during therapy, it is equally important to address their developing sensory systems. Early motor skills and sensory processing play a pivotal role in the development of the occupations of play, social participation, and self-care and promotes cognitive and perceptual development (Mitchell et al., 2015). Motor and sensory development are necessary components in the infant developmental process, and necessary for them to meet their milestones. Motor skills in particular are developed through sensory exploration and play (Case-Smith et al., 2013). Mobility, a key aspect of an infant's development, is closely linked to an infant's ability to explore more of their world (Rosen, 2021). Furthermore, sensory information is a crucial building block for adaptive behaviors including learning, organizing, and self-control, which are vital for social-emotional learning (Mitchell et al., 2015).

Caregiver Education and Home Programming·

Evidence shows that only roughly 30% of caregivers adhere to tummy time recommendations (Hewitt et al., 2020). Zachry & Kitzmann (2011) surveyed 205 caregivers on their awareness of tummy time recommendations, with results showing 25% of caregivers reported being unaware of prone play, 53% of infants in the sample received less than 30 minutes of tummy time daily, and 35% of caregivers reported their infant was intolerant of the position. Evidence indicates that inadequate tummy time adversely affects an infant's motor development and places overall development at risk (Kuo et al., 2008; Majnemer & Barr, 2006; Dudek-Schreiber & Zelazny, 2007; Salls et al., 2002). A systematic review by Case-Smith et al., (2013) highlights the effectiveness of using caregivers as an active participant or focus of the intervention, such as through caregiver education practices. Utilizing the whole family unit when providing education has been shown to improve infant developmental outcomes (Case-Smith et al., 2013)

Home programming is often given to caregivers as a complement or supplement to therapy sessions. Home programming consists of specific activities or tasks to be completed in the home environment between therapy sessions. Tang and colleagues (2011) conducted a randomized controlled trial investigating the effects of clinic-only therapy versus clinic therapy plus a home activity program in seventy infants and toddlers with developmental delay. The OT-based home activity program consisted of task observation, discussion with parents, and goal-directed guidance on practicing and executing the daily recommendations at home. Results of the study indicated that children who received the home activity program had more significant improvement and outcomes in cognition, language, motor, and social domains and scored higher in the Pediatric Evaluation of Disability Inventory (PEDI) mobility and social development sub-domains than children who received clinic-only therapy. A pilot study by Novak et al. (2007)

examined the effects of a home program in children with cerebral palsy using a single-group pretest-posttest design. The study found a positive trend between the participant's baseline and post-intervention scores in the three outcome measures of Goal Attainment Scaling, the PEDI, and the Quality of Upper Extremity Skills Test (QUEST), suggesting that the home programming recommendations may have been effective.

Jennings and colleagues (2005) studied methods for delivering tummy time education to caregivers. Caregivers who received a printed family-friendly informational brochure explaining the importance of regular tummy time with helpful suggestions for varying the infant's positions reported an increase in their infant's time and tolerance of tummy time and an established routine/schedule. Jennings and colleagues determined that written information given to parents was beneficial, as the suggestions helped parents establish a tummy time predictable tummy schedule and offer solutions to questions parents may have about positioning.

Summary of the Literature

In summary, these topics support healthy, holistic development during the early years of an infant's life. Many caregivers report struggles with tummy time, showing the need for consultation, intervention, and education on the topic. The findings support the relevance of providing caregiver education and caregiver involvement in interventions to improve infant development. The benefits of written information on tummy time provided to caregivers can increase the consistency of routine tummy time. The literature supports the need for an educational toolkit on tummy time in infancy to support optimal development.

Statement of Purpose

The purpose of this doctoral capstone project was to increase caregivers' knowledge and utilization of developmentally appropriate social-emotional strategies during tummy time activities with their infant. The product, a comprehensive educational resource titled *Bonding Through Tummy Time: A Caregiver's Guide,* was created for caregivers of pre-crawling infants and included suggested social engagement and sensory-based strategies for use during tummy time. By educating caregivers to engage their infants in tummy time activities effectively, the anticipated outcome of this project aimed to increase caregiver adherence to home programming recommendations and enhance the infant's ability to tolerate prone positioning during tummy time.

Hypothesis

This capstone project hypothesized that after receiving education from the toolkit, caregivers would indicate increased quality and quantity of tummy time with their infants through social-emotional and sensory-based strategies, as measured by self-report.

Objectives

1. Develop an educational toolkit to provide caregivers with comprehensive information about tummy time.
2. Develop an educational toolkit to provide comprehensive information about infants' social-emotional learning and sensory development.
3. Measure caregivers' perceptions of the quality and quantity of tummy time with their infant after receiving education.

Theoretical Framework

This project is guided by two foundational frameworks: Kielhofner's Model of Human Occupation (MOHO) and Csikszentmihalyi's Flow of Occupational Engagement. These frameworks serve as the pillars of how occupations, such as the occupation of caregiving and the infant occupation of play, impact overall well-being and development. Integrating these theoretical frameworks is central to the project's goal of enhancing motivation and engagement. The project aims to increase the caregiver's motivation through social-emotional strategies while increasing the infant's motivation to tolerate tummy time. As a result, these strategies will foster stronger connections between the caregiver and their infant, ultimately contributing to overall well-being and growth.

Model of Human Occupation (MOHO)

The first framework, MOHO, offers a holistic perspective on how occupation influences well-being, encompassing the dynamic interplay of volition, habituation, and performance capacity, collectively shaping individuals' engagement in occupations (Taylor, 2017). Kielhofner (2008) highlights the impact of a person's volition (motivation, interests, and values), habituation (habits, roles, and routines), performance capacity (skills and abilities), and environment (physical and social settings in which one engages in occupations), on occupational performance. In this project, the motivational aspect of volition holds particular significance, playing a crucial role in influencing both the caregiver and infant's involvement in an occupation.

Volition and habituation are enhanced by increasing caregivers' knowledge and practice of skills, boosting their confidence and motivation in their roles and interactions with their infants. Simultaneously, the project recognizes the infants' inherent motivation, stimulated by the engaging interactions with caregivers, as a driving force for increased tummy time tolerance. Moreover, performance capacity is addressed through education on developmentally appropriate

activities for engaging with their infant during tummy time. The home environment serves as the context for these interventions. Kielhofner (2008) emphasizes the necessity of repetition in a supportive environment to maintain the equilibrium between these systems.

A foundational principle of MOHO suggests that improving performance requires a shift in perspective of one's skills (Kielhofner, 2008). Through education and implementing the suggested strategies in the toolkit, new roles and routines will be established to enhance performance skills and abilities. Integrating MOHO into the capstone project provides caregivers with support through education and creates opportunities for skill development. Importantly, as caregivers engage with their infants during tummy time, there is a reciprocal influence on their volition to participate in the activity. This project employs social engagement strategies to motivate infants during tummy time, recognizing its importance for their social-emotional development. This perspective acknowledges infants' inherent motivation, stimulated interactions with caregivers.

The development of a tummy time toolkit aligns with MOHO by recognizing caregivers' intrinsic motivations to support their infants' development through caregiving occupations. The toolkit promotes a natural and consistent commitment to tummy time activities in the home environment, enhancing the caregiver's capability to execute tummy time effectively while fostering the infants' motivation to participate actively in this crucial developmental activity. MOHO was chosen to guide this project as it places motivation to engage in occupation at its core.

Flow Theory of Occupational Engagement

The second framework guiding this project is Csikszentimihalyi's Flow Theory of Occupational Engagement. Flow is described as an optimal psychological state an individual experiences when fully engaged in an activity (Cole & Tufano, 2019). This state is characterized

by several key elements, such as clear and achievable goals, immediate feedback, optimal balance between skills and challenge, focused attention on the task at hand, and inherent reward within the activity (Cole & Tufano, 2019). The toolkit is designed to enhance the caregiver's engagement through intentional time and attention during tummy time, with the goal of inspiring and facilitating the infant's motivation. In the context of tummy time, the project emphasizes social-emotional strategies that not only benefit the caregiver but also contribute to creating a sense of flow for the infant. This approach seeks to foster an environment where the caregiver and infant are motivated and fully engaged in tummy time.

For the caregiver, the intentional and focused interaction with the infant during tummy time is structured to align with the principles of flow. By providing clear and achievable goals, such as incorporating specific social engagement or sensory-based strategies, the caregiver experiences a heightened sense of involvement. Immediate feedback, another key element of flow, is facilitated through observation and responding to the infant's cues, creating a dynamic and responsive interaction. The infant is an active participant in this shared co-occupation. The activities suggested during tummy time are designed to capture the infant's attention, stimulate their curiosity, and provide an inherent reward through positive interactions with their caregiver.

As the caregiver and infant engage in tummy time activities that align with the principles of flow, the project aims to create a positive feedback loop. The caregiver's enhanced engagement can further fuel the infant's motivation, creating a reinforcing cycle of positive interaction and developmental progress. The focus on caregiver and infant interaction within the Flow Theory fosters a shared sense of engagement and motivation.

Methodology

Project Design

The capstone project is categorized as program development in a clinical setting under the ACOTE supported focus areas. The caregiver education program combined qualitative and quantitative data to assess changes in caregiver satisfaction and implementation of tummy time before and after reviewing the created toolkit. Using a one-group pretest/posttest design allowed for the assessment of changes within the specific sample group. Caregivers completed a pre-toolkit survey before receiving the education, offering a baseline of their tummy time practices. Subsequently, four weeks after receiving the toolkit, caregivers were asked to complete a post-toolkit survey to gauge their views and habits following education. Additionally, caregivers were encouraged to share feedback on the usefulness of the provided toolkit through open-ended questions.

Agency

The capstone experience and project were completed at TickTalk Therapy in Henderson, Nevada. TickTalk Therapy is an outpatient pediatric clinic specializing in speech, feeding, and OT. The clinic's provision of infant-based therapy services, coupled with a strong emphasis on active caregiver involvement and education, presented an ideal setting that aligned well with this capstone project's goals, objectives, and outcomes.

Target Population and Recruitment

The targeted participants in this capstone project were caregivers of pre-crawling infants receiving services at TickTalk Therapy. By specifically targeting caregiver-infant dyads within a clinical setting, the capstone project aimed to provide education and support to those who stand to benefit most from the intervention. The specific focus on pre-crawling infants was essential to ensure the toolkit's developmental appropriateness and effectiveness, allowing for a more

controlled evaluation of the project's outcomes. Acknowledging the pivotal role caregivers play in their infants' development, the capstone project targeted those responsible for facilitating and participating in tummy time activities with their infants. Recruitment was conducted through purposive and convenience sampling methods, drawing from the clinic's pool of caregiver-infant dyads determined by the capstone mentor to be appropriate for participation in the project. Caregivers were recruited during their infant's OT session and consented to participate in a brief educational session. Inclusion criteria included the caregiver aged 18 and older and the primary caregiver of a pre-crawling infant.

Methods and Procedures

To ensure the final resource was evidence-driven, an ongoing literature review was conducted throughout the capstone project to support the development of the product. An informal needs assessment was completed through observations and discussions with the capstone mentor to identify gaps in services in the setting and the capstone site's specific needs. The author observed the capstone mentor and was present during all infant OT sessions to gain insights into infant development while creating the tummy time toolkit and preparing caregiver educational materials.

A comprehensive educational resource, *Bonding Through Tummy Time: A Caregiver's Guide*, was developed to enhance caregivers' awareness and knowledge of tummy time practices (refer to Appendix A). The toolkit encompassed topics including tummy time, the role of OT for infants, the benefits and skills tummy time promotes, an overview of social-emotional learning and sensory development, practical strategies to engage infants through social-engagement and sensory-based approaches during tummy time, and QR codes for website resources and references. The toolkit underwent a thorough review by the capstone mentor and other therapists within TickTalk Therapy, who provided feedback regarding the overall layout, content, and

language, leading to subsequent edits to ensure both alignment with the site mentor and caregiver needs. The finalized toolkit, provided in hardcopy, aimed at facilitating carryover in the home environment.

The toolkit was presented to identified caregivers during a one-time education session at the conclusion of their infant's OT session. Before receiving the toolkit, the caregivers completed a demographics and pre-toolkit survey to assess their tummy time routine in the home environment (refer to Appendix B). The survey comprised both closed and open-ended questions. The educational session did not involve direct interaction with the infant. The entire process took approximately 10 minutes.

Four weeks after the tummy time education session, caregivers were given the post-toolkit survey to complete and return (refer to Appendix C). Four weeks was determined to be ample time for caregivers to review the educational resource and implement the suggested activities during their tummy time routine. The post-toolkit survey consisted of closed and open-ended questions. Additional questions were included to acquire feedback on the caregivers' perspective and experience utilizing the toolkit and the suggested strategies.

Instruments and Evaluation

Survey

A pre- and post- survey served as the primary instruments for analyzing and evaluating the project's outcome measures. The surveys were purposefully created for this capstone project and employed a combination of Likert-scale and open-ended questions to provide a comprehensive understanding of the educational resource’s impact. Questions were formed using observations during the occupational therapists’ infant sessions. The post-toolkit survey included nine questions from the pre-toolkit survey to ensure continuity for comparative analysis. Supplemental questions were added to gain feedback on the effectiveness of the program.

Demographic information was collected on both the caregiver and the infant. It included details such as the caregiver's relationship to the infant, caregiver age, infant age, duration the infant has been receiving therapy services, and the number and ages of other children under the caregiver's care. This approach to data collection allowed for a more nuanced analysis, considering various factors that could influence the project's outcomes.

Data Collection and Analysis

To provide a comprehensive view of the project's intended outcome measures, qualitative and quantitative data were collected using the results of the individually distributed feedback surveys. Caregivers were given physical copies of the demographic, pre-toolkit, and post-toolkit survey. All data collected was converted into an electronic format and participants were given pseudonyms to maintain confidentiality. Data was stored in Google Drive utilizing a 2-step password authentication and is regulated and protected by the University of Nevada, Las Vegas (UNLV). Any missing data was excluded from the analysis.

Quantitative

The pre- and post-toolkit survey was administered to caregivers at baseline and four weeks after receiving the toolkit. Responses were then entered into Microsoft Excel for statistical data analysis. Descriptive statistics, including mean and standard deviation (SD), were computed for each of the nine questions that remained consistent across the pre- and post-survey. The data was coded for the questions utilizing a Likert scale (i.e., 1 = strongly disagree and 5 = strongly agree; yes/no questions were coded as 1 and 2, respectively). A one-sample Wilcoxon signed-rank test was used to identify changes between caregivers' pre-and-post survey responses. This allowed for examination and comparison of the two group means to determine whether the caregiver's self-reported tummy time practices with their infants changed. Because the sample size was limited and unequally distributed, collected data was classified as ordinal, and difficulty

in meeting the distributional requirements of parametric testing as there were no normally distributed data in the variable, the Wilcoxon signed rank test, a non-parametric method, was the most suitable choice for this project.

Qualitative

Qualitative data from the open-ended questions in both the pre- and post-survey were thoroughly examined in their entirety. Each response was reviewed using a constant comparative method to identify recurring phrases or patterns. A systematic coding process was employed to categorize themes, facilitating a nuanced understanding of the caregivers' perspectives and experiences. This qualitative analysis aimed to uncover insights and complement the quantitative findings, providing a comprehensive picture of the project's impact from the caregivers' point of view.

Ethical and Legal Considerations

This capstone project prioritized ethical and legal considerations to uphold the integrity of its execution. An application was submitted and granted by the UNLV Institutional Review Board (IRB) with exemption status (#UNLV-2023-552), as this capstone project posed no more than minimal risk to the caregivers receiving tummy time education. Caregivers participating in the project provided written and verbal informed consent and were briefed on the purpose and procedures of the program. Participation in the capstone project was entirely voluntary, allowing caregivers the autonomy to choose whether to participate.

The Health Insurance Portability and Accountability Act (HIPAA) guidelines were strictly maintained throughout the project, ensuring the confidentiality and secure handling of all private information. To mitigate potential psychological risk, caregivers were advised to view the tummy time toolkit as a supplementary resource to their current tummy time home programming routine. This approach aimed to empower caregivers to make informed choices regarding integrating the toolkit into their tummy time practices. Lastly, a disclaimer was added to the toolkit, encouraging caregivers to contact their infant's pediatrician with any concerns regarding their child. This capstone project adhered to ethical and legal safeguards, prioritizing caregiver and infant well-being and the responsible handling of sensitive information throughout its implementation.

Results

The post-toolkit survey was distributed to three caregivers four to six weeks after the toolkit was provided. Three caregivers responded, resulting in a 100% response rate. Due to the small sample size, the Wilcoxon signed rank test could not be conducted. Therefore, descriptive statistics was used to analyze the quantitative data. Data is presented in the following sections.

Demographics

Caregiver education and the *Bonding Through Tummy Time: A Caregiver's Guide* toolkit was presented to three caregivers identified as appropriate for participation in this project. Table 1 shows a breakdown of the participant demographics. Two mothers and one father participated, with an average age of 37 years old. The infants' ages ranged from 19 weeks to 40 weeks. The length of time the infant has been receiving OT services averaged four weeks, ranging from zero to eight weeks of therapy. All three caregivers reported using multiple methods of tummy time with their infant.

Table 1

Demographic characteristics of caregivers and their infant

Demographic Characteristic	n (%)	M, Range
Caregiver relationship		
Mother	2 (67%)	
Father	1 (33%)	
Caregiver age (years)		37, 35 - 39
35	1 (33%)	
37	1 (33%)	
39	1 (33%)	
Number of Children		3.33, 2 - 4
2	1 (33%)	
4	2 (67%)	
Infant Age (weeks)		26.67, 19-40
19	1 (33%)	
21	1 (33%)	
40	1 (33%)	
Length infant has been receiving services (weeks)		4, 0 - 8
0	1 (33%)	
4	1 (33%)	
8	1 (33%)	
Have you tried different ways of using tummy time?		
Yes	3 (100%)	

Note. $n = 3$

Pre- and Post-Toolkit Education

The pre-and post-toolkit survey asked caregivers to report on their current tummy time routines with their infants. Descriptive statistics are provided in Table 2. At baseline, one caregiver reported placing their infant into tummy time 1 to 3 times per day and two caregivers

reported 4 to 6 times per day. All three caregivers reported increasing tummy time to 7 to 9 times per day following the toolkit education. Similarly, when asked for the average tummy time the infant completes daily, answers at baseline ranged from 12 - 120 minutes (M= 54, SD =57.86) and increased to 70 - 300 minutes (M =143.33, SD = 135.77) at follow-up. Each tummy time session increased to at least 6 - 10 minutes, with two caregivers reporting each session averaged 6 - 10 minutes and one caregiver reporting 16 minutes or more. Overall infant tolerance to tummy time increased to a range of 6 - 10 (M = 8.33, SD = 2.08), from 3 - 10 (M=6, SD=3.60). When asked about the biggest challenge to having their infant complete tummy time regularly, time/schedule and infant cries/is uncomfortable were the most frequently cited reasons. When asked how well-equipped they feel with strategies to play with and engage their infant in tummy time, all caregivers reported strongly agree with no change at baseline to post-education. When asked, "I understand how tummy time affects my infant's development," one caregiver reported agree, and two caregivers said strongly agree (M=4.33, SD= 0.58). Overall, the average scores improved when measuring tummy time frequency, duration, and infant tolerance from the pre-toolkit to the post-toolkit survey.

Table 2

Pre- and Post-Caregiver Education Descriptive Statistics

Question	Pre-Toolkit			Post-Toolkit		
	n (%)	M (SD)	Range	n (%)	M (SD)	Range
How many times per day are you doing tummy time with your infant? [a]		1.67 (0.58)	1-3 - 4-6		3.33 (0.58)	7-9
1 - 3x	1 (33%)			-		
4 - 6x	2 (67%)			-		
7 - 9x	-			3 (100%)		
How much time does your infant complete daily (in minutes) (on average)?		54 (57.86)	12 - 120		143.33 (135.77)	70 - 300
12 minutes	1 (33%)			-		
60 minutes	1 (33%)			-		
70 minutes	-			2 (66%)		
120 minutes	1 (33%)			-		
300 minutes	-			1 (33%)		
How long is your infant's average tummy time session? [b]		3.33 (1.53)	3-5 - 16+		3.67 (1.15)	6-10 - 16+
3 - 5 minutes	2 (67%)			-		
6 - 10 minutes	-			2 (66%)		
16 minutes or more	1 (33%)			1 (33%)		
How would you rate your infant's response or comfort level during tummy time? (on a scale of 1 - 10)		6 (3.60)	3 - 10		8.33 (2.08)	6 - 10
3	1 (33%)			-		

6	1 (33%)			1 (33%)		
9	-			1 (33%)		
10	1 (33%)			1 (33%)		
What is the biggest challenge to having your infant complete tummy time regularly? [c]		2.66 (1.15)	1-4		1.33 (0.58)	1 - 2
My infant cries/is uncomfortable	2 (67%)			1 (33%)		
Time or schedule	-			2 (67%)		
Not applicable	1 (33%)			-		
I feel well-equipped with strategies to play and engage with my infant in tummy time.		5 (0)	5		5 (0)	5
Strongly agree	3 (100%)			3 (100%)		
I understand how tummy time affects my infant's development.		4.33 (0.58)	4-5		4.33 (0.58)	4 - 5
Agree	1 (33%)			1 (33%)		
Strongly agree	2 (67%)			2 (67%)		

Note. Answer choices are shown for chosen answers only. M = Mean. SD = Standard Deviation. Mean scores are based on a 5-point Likert scale (1 = strongly disagree, 2 =disagree, 3 = neutral, 4= agree, 5 = strongly agree).

[a] Mean scores are based on a 6-point Likert scale (1 = 1-3, 2 = 4-6, 3 = 7-10, 4 = 10-12, 5 = 13-15, 6 = 0).

[b] Mean scores are based on a 5-point Likert scale (1 = 0-2 minutes, 2 = 3-5 minutes, 3 = 6-10 minutes, 4 = 11-15 minutes, 5 = 16+ minutes).

[c] Mean scores are based on a 5-point Likert scale (1 = time or schedule, 2 = infant cries/is uncomfortable during tummy time, 3=understanding ways to implement tummy time, 4 = not applicable, 5 = other

Qualitative Analysis

In addition to Likert scale questions, open-ended questions were placed on the pre-and post-toolkit survey to gain insight into caregivers' tummy time routines with their infants. Inductive and deductive data analysis of the pre-and post-toolkit survey responses were conducted by searching for keywords and topics to identify themes. Refer to Appendix D for individual item responses. This analysis revealed the following common themes:

All caregivers reported engaging with their infants during and outside of tummy time. The most frequently reported forms of engagement were singing, talking, cuddling, smiling with the infant. All caregivers mentioned playing while incorporating toys during and outside of tummy time. When asked "how often did you actively engage in tummy time activities with your infant?" one caregiver reported "all day, every day." Other answers ranged from "3-4x" and "most of the time."

Increased tummy time. When asked for the total daily amount of tummy time, answers ranged from "12 minutes" "60 minutes" and "70 minutes" before intervention. Two caregivers reported increasing tummy time to "70 minutes" and one caregiver reported "300 minutes" at the end of the six weeks.

Increased tolerance to tummy time. All caregivers reported an increase in infant tolerance to tummy time. One caregiver reported "cry" when asked how their baby plays in tummy time. The post-survey asked about caregiver perception of their infant's response or engagement during tummy time after implementing the suggested social-emotional development strategies. One caregiver reported "she will do longer periods before crying." Another caregiver stated "tolerates longer periods. Now plays with toys and smiles during tummy time." The last caregiver replied, "She will do longer periods before crying."

Post-Toolkit Survey

Caregivers were asked to assess the tummy time toolkit. See Table 3 for descriptive statistics. All three caregivers indicated increasing the amount of tummy time following education. All caregivers reported slightly increased or significantly increased changes in quality and quantity of interactions with their infant over the four-to-six-week intervention span. The caregivers reported that the toolkit enhanced their knowledge of tummy time. On a scale of 1 - 10, caregivers rated the helpfulness of the toolkit a 9 to 10, with an average of 9.33.

For additional feedback measures, open-ended questions about the effectiveness of the toolkit were added to the post-survey. When asked about the overall experience with incorporating the suggested social emotional strategies into their tummy time routine, one caregiver stated, “sometimes they were successful, other times she [the subject] wasn’t interested.” Another caregiver stated “incorporating myself and family made such a big impact for the better. Toys helped too.” The response of the third caregiver was “Great! Positive.” When asked if there was any information or content in the toolkit that they felt could be improved or expanded on, only one caregiver responded, stating “Nope.”

Table 3

Post-toolkit Survey Descriptive Statistics

Question	**n (%)**	**M (SD)**	**Range**
Since receiving the toolkit and education, have you increased the amount of tummy time you are doing at home?		1 (0)	1
Yes	3 (100%)		
How would you describe any changes in the quality and quantity of your interactions during tummy time with your infant over the past four weeks?		4.67 (0.58)	4 - 5
Slightly increased	1 (33%)		
Significantly increased	2 (67%)		
The toolkit and education I received enhanced my knowledge of tummy time.		4.33 (0.58)	4 - 5
Agree	2 (67%)		
Strongly agree	1 (33%)		
How would you rate the overall helpfulness of the provided toolkit? (on a scale of 1 - 10).			9 - 10
9	2 (67%)		
10	1 (33%)		

Note. Mean scores are based on a 5-point Likert Scale (1 = strongly disagree, 2 =disagree, 3 = neutral, 4= agree, 5 = strongly agree) and Yes/No (1 = yes, 2 = no).

Discussion

This program development project sought to determine if caregiver education on tummy time would increase compliance with their current home programming recommendations. Both quantitative and qualitative data gathered from the pre- and post-survey results revealed all three caregivers reported improvements in the quality and quantity of daily tummy time spent with their infant. Specifically, all caregivers reported an increase in total cumulative tummy time performed daily in the home environment and individual tummy time session. Results suggest the caregivers were receptive to and found benefit in the educational session and resources provided. The caregivers gained an understanding of the importance of tummy time, the role of OT in infant-based services, and strategies to use in the home environment during tummy time to foster social-emotional development with their infant. Moreover, the caregiver's reported engaging with their infant in diverse ways in and out of tummy time before and after the education.

This project was guided by the MOHO and Flow theoretical frameworks. The premise of including social-emotional learning strategies into the tummy time toolkit was to use the co-occupation of play as a driving motivational factor for daily tummy time. Results of this project aligns with MOHO as it shows the vital role of the caregivers' motivation and routines paired with the infant's motivation in successfully engaging in tummy time. Moreover, results relate to the Flow Theory of Engagement as it emphasizes creating a balance between the challenge of tummy time and the infant's skill level. The toolkit provided caregivers education which empowered them to adjust tummy time play to fit their infant's needs, facilitating an optimal state of flow.

The findings of this project align with the AOTA and AOTF research agenda by stressing the importance of caregiver education in enhancing infant, family-centered care, and child

developmental outcomes. This project adds to the body of knowledge that emphasizes the role of tummy time practices in infant development, particularly how caregiver education is effective in increasing the quality and quantity of tummy time, thereby promoting social-emotional development in infants.

The increase in quality and quantity of daily tummy time reported by caregivers after receiving the toolkit signifies the capstone project's positive impact. This increase not only indicates improved compliance with home programming recommendations but also suggests enhanced caregiver-infant interaction through developmental play activities, which is crucial for an infant's social-emotional development. This project demonstrates the potential of a targeted tummy time resource for caregivers.

Limitations

The project faced several limitations that impacted its scope and generalizability. The low infant census at TickTalk Therapy during the capstone experience timeline and the presence of infants above the toolkit's developmental appropriateness led to a small sample size of three participants. Additional limitations with the sample included non-randomized selection procedures, as caregiver-infant dyads were purposively selected for the project. The focus on a specific population of infants for this project may limit the applicability of the tummy time toolkit; however, all infants may benefit from the suggested strategies to promote social-emotional learning with caregivers. The non-generalizable nature of the project is noteworthy, as the outcomes solely reflect the experiences of a small sample of caregivers from one outpatient pediatric clinic in a specific geographical location and, therefore, cannot be generalizable to all caregivers.

Additionally, it is important to consider the data results as reported by the caregivers. Initially, the post-toolkit survey was intended to be given at the end of the infant's OT session

four weeks after education. However, the survey was given four to six weeks post-education due to therapist and caregiver scheduling conflicts. All data gathered was self-reported and exhibited a positive skew, possibly influenced by caregivers responding by what they thought was the "correct" answer. The Hawthorne effect, where project participants may alter their behavior due to awareness of participating in a project, was also a consideration. Social desirability bias could influence caregivers to respond in a manner they believe aligns with societal expectations, which was an additional consideration. The subjective nature of feedback surveys, which inquire about satisfaction and perspective but may not capture the toolkit's effectiveness, was a further limitation. These factors limit the external validity of this study.

Conclusion

In conclusion, this project aimed to address the need to enhance tummy time practices among infants, specifically through an OT lens, by focusing on caregiver education and integrating social-emotional development strategies through an evidence-based tummy time resource. The toolkit emphasized the significance of fostering social-emotional bonds between caregivers and their infants through the co-occupation of play. This resource was created to bridge a gap in tummy time caregiver education practices. Furthermore, this project addressed the problem of infant intolerance to tummy time by increasing the quality and quantity of tummy time practices. The outcome of this program development project was to increase caregiver compliance to tummy time home programming recommendations using social-emotional development strategies. After the implementation of the program, results obtained through pre- and post- surveys reflected an increase in tummy time practices in the home environment and increased infant tolerance to tummy time.

This project holds significance for the OT field, as OTs help guide and facilitate the partnering of caregiver and infant in co-occupations through therapeutic interventions, leading to improved occupational performance for both caregiver and baby. The therapeutic intervention of tummy time in infants will increase health and well-being and help prevent postural and developmental delays later in childhood.

Implications

Research

There are opportunities for further research efforts in this area of practice. While results of this program are promising, the implications only pertain to the capstone site are not generalizable to other sites or populations. Future projects should include a larger sample size to validate and expand upon the findings and to broaden this project to different settings and

populations to increase the generalizability. In doing so, it would allow for a comprehensive analysis of statistical differences. Further research may explore the impact of tummy time on other areas of infant development, such as an infant's social-emotional milestones.

Practice

This final product is an occupation-based, evidence-based resource for caregivers to implement during tummy time to support infant social-emotional and sensory development. The results of this project have shown that caregiver education is an effective intervention. The findings suggest that the caregiver-infant dyads will engage in the co-occupation of play more frequently throughout the day, fostering meaningful connections and social-emotional development.

Recommendations and Future OT

The findings of this project emphasize the role OT plays in early childhood development and family-centered care. OTs can utilize these findings to implement similar interventions that focus on caregiver education, promoting more effective tummy time practices. Future research should address carry over throughout the infant's pre-crawling stage. Additionally, OTs can provide education to a multi-disciplinary team, such as infant feeding therapists, to access a wider population who could benefit from the intervention.

Appendix A: Tummy Time Toolkit

Bonding Through Tummy Time

A CAREGIVER'S GUIDE

CREATED BY MARSHA RATTLER, OTD/S

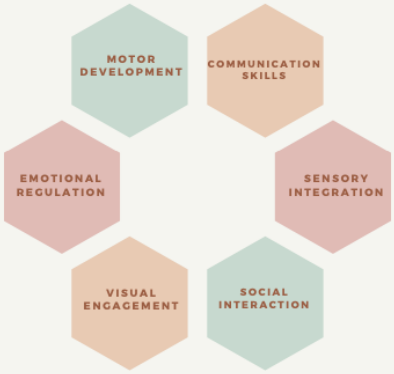
Occupational Therapy & Tummy Time

WHAT IS TUMMY TIME?

- Tummy time is a purposeful activity where an infant is positioned on their belly while awake and under supervision, encouraging meaningful interaction between caregiver and baby
- It's an important activity that promotes your baby's development of various skills

OCCUPATIONAL THERAPY

Occupational therapy (OT) for infants focuses on enhancing daily activities, promoting milestones, and addressing any developmental concerns



TUMMY TIME PROMOTES SKILLS SUCH AS....

MOTOR DEVELOPMENT

- Develops core muscles, neck strength, and upper body control
- Gain motor skills in preparation for future milestones such as sitting, crawling, and walking
- Encourages active exploration of surroundings and environments

COMMUNICATION SKILLS

- Develops early communication skills through observation of facial expressions, gestures, and vocalization of caregivers
- Talking and interacting helps build language development and social communication

SENSORY PROCESSING

- Promotes the development of body awareness, balance, and coordination, while laying the groundwork for motor milestones through sensory input

SOCIAL INTERACTION

- Face-to-face interaction between you and your infant promotes bonding and emotional connection
- Caregivers actively play in tummy time, creating a positive social environment by fostering shared enjoyment and positive reinforcement

VISUAL ENGAGEMENT

- Allows infants to lift and turn their heads, promoting visual tracking and visual exploration
- Fosters connections with caregivers and surroundings

EMOTIONAL REGULATION

- Infants learn to self-regulate emotions when exploring in a safe and supportive space
- Your responses during tummy time build a secure attachment, fostering a sense of trust and emotional well-being

NERVOUS SYSTEM

- Develops neural pathways through tactile, proprioceptive, and vestibular inputs, laying the foundation for motor skills and sensory-motor integration (the body's ability to integrate sensory information with motor commands)

Social-Emotional Learning & Sensory Development

SOCIAL-EMOTIONAL LEARNING

- Social-Emotional Learning (SEL) for infants focuses on helping them understand and manage their emotions, build relationships, and foster social interaction
- Caregivers play a crucial role in shaping their infants social and emotional well-being through responsive and nurturing actions
- Tummy time provides a unique opportunity for shared experiences between caregivers and their infants, to create a secure and emotional bond

WE CAN PROMOTE SEL THROUGH...

PLAYFUL LEARNING cause and effect games, mirror play, music and movement, sensory play
UNDERSTANDING EMOTIONS respond to your infants cues, narrate their emotions
ENCOURAGING INDEPENDENCE offer simple choices, mirror play to encourage self-discovery
SELF-REGULATION comforting your infant when upset, provide consistent routines
EXPLORING THE WORLD colorful & textured items for tactile and visual exploration, offer different views
SAFE ENVIRONMENT consistent routines, comforting touch, responsiveness to your infants cues
CELEBRATING MILESTONES offer praise, cheer, clap when your infant tries new things
BUILDING CONNECTIONS positive interactions, eye contact, smiles
COMMUNICATION SKILLS respond to your infants babbling, making eye contact, using simple words

USING SOCIAL-EMOTIONAL LEARNING IN TUMMY TIME NOT ONLY SUPPORTS YOUR INFANTS' PHYSICAL DEVELOPMENT BUT ALSO **NURTURES** THEIR **SOCIAL AND EMOTIONAL WELL-BEING**, LAYING A STRONG FOUNDATION FOR **HEALTHY DEVELOPMENT**

SENSORY DEVELOPMENT

- Sensory processing is the process of how we interpret and organize information from our senses, enabling us to interact with our environment
- Sensory development for infants is a dynamic process that involves them exploring and experiencing the world, while actively responding to stimuli in their environment
- Tummy time contributes to an infant's sensory development by exposing them to various touch, movement, and balance sensations. These experiences support the development of sensory-motor skills, which are essential for overall development

USING TUMMY TIME TO CONTRIBUTE TO SENSORY DEVELOPMENT...

SIGHT placing colorful or light up toys within your infants view, using mirrors
SOUND sound producing toys such as rattles & crinkly toys, music, singing & talking to your infant
TASTE infant friendly teething toys
SMELL lightly scented, infant friendly items
TOUCH exposure to play mats, toys, and fabrics of different textures, diaper-only tummy time
PROPRIOCEPTION encourage pushing against the floor or other surfaces, gentle massage & stretches
VESTIBULAR gentle rocking back and forth or side to side, light bounces, rocking, use variety of positions

TUMMY TIME HELPS INFANTS **EXPLORE** THROUGH DIFFERENT **SENSES**, FOSTERING **SENSORY DEVELOPMENT** AND PROMOTING A **WELL-REGULATED SENSORY SYSTEM**

Ways to Engage With Your Baby

CAREGIVER'S ROLE IN YOUR INFANTS DEVELOPMENT

ENGAGE: SPEND QUALITY TIME TOGETHER
PLAY: TURN TUMMY TIME INTO A FUN, INTERACTIVE EXPERIENCE
OBSERVE: WATCH YOUR INFANT EXPLORE AND LEARN

0 - 3 months

SOCIAL ENGAGEMENT

- Get on your baby's level for face-to-face interaction
- Talk to your baby. Smile! Use expressive tone and facial expressions to communicate
- Use yourself or and colorful/high contrast toys to capture baby's joint attention and get them interested in looking up
- Put your baby on your chest for skin-to-skin tummy time

SENSORY

- Skin-to-skin contact
- Play with baby in different positions
- Introduce different textures
- Gentle rocking motions (back and forth, side to side, light bounces)
- Use a mirror for visual engagement
- Move items around baby to promote head rotation and visual tracking
- Provide gentle stretches

4 - 6 months

SOCIAL ENGAGEMENT

- Talk to your baby. Respond to their coos and babbles to encourage them to keep 'talking'
- Use silly voices and make expressive faces
- Play peek-a-boo and sing songs
- Involve siblings and/or other family members
- Be excited about what your baby is doing to increase motivation

SENSORY

- Offer toys with different textures, colors, sizes, and sounds for your baby to explore
- Use different surfaces to stimulate sensory experiences (i.e. carpet, mat, grass)
- Interactive toys (i.e. spinning or rolling toys, rattles,)
- Encourage weightbearing on hands or arms

7 - 9 months

SOCIAL ENGAGEMENT

- Cheer your baby on as they reach new milestones
- Keep chatting with your baby for verbal interaction
- Read your baby's favorite books and play simple interactive games (i.e. peek-a-boo, pat-a-cake, 'wheres the toy?')
- Continue to use preferred toys together to boost motivation
- Create positive experiences and connections

SENSORY

- Provide sensory toys for continued exploration. Teething toys are helpful!
- Place toys out of reach/overhead so baby has motivation to reach, roll, pivot, or crawl
- Introduce toys that involve pushing and pulling or cause and effect interactions

RESOURCES

TURN TUMMY TIME INTO A **MOTIVATING** AND **HAPPY** EXPERIENCE FOR CAREGIVERS AND BABY BY USING THESE POSITIVE **SOCIAL ENGAGEMENT** AND **SENSORY** STRATEGIES IN YOUR ROUTINE

REFERENCES

4

Appendix B: Demographic and Pre-toolkit Survey

Demographics and Pre-Tummy Time Toolkit Survey

Parent Initials: _____ Infant Initials: _____ Infant Age (in weeks): _____

Relationship to infant: _____ What is your age? _____

How many children do you have? _____

a. What are your children's ages? _____

How long has your infant been receiving therapy services? _____

How many times per day are you doing tummy time with your infant (on average)?

a. 1 – 3x per day
b. 4 – 6x per day
c. 7 – 9x per day
d. 10 – 12x per day
e. 13 – 15x per day
f. My infant does not do tummy time

How long is each tummy time session (on average)?

a. 0 – 2 minutes
b. 3 – 5 minutes
c. 6 – 10 minutes
d. 11 – 15 minutes
e. 16 minutes or more

How much tummy time does your infant complete daily (on average)? _____

Have you tried different ways of using tummy time? ☐YES ☐NO

How would you rate your infant's response or comfort level in tummy time? (1 = poor, 10 = positive)
(circle one): 1 2 3 4 5 6 7 8 9 10

What is the biggest challenge to having your infant complete tummy time regularly?

a. Time or scheduling
b. My infant cries and/or is uncomfortable during tummy time
c. Understanding ways to implement tummy time
d. Not applicable
e. Other (please describe) _____

What is your infant's favorite thing to do?

a. Engage with caregivers and/or family members
b. Play with toys while on their tummy
c. Play in container items (i.e. bouncy chair, car seat, swings, stroller, etc)
d. My infant does not have preferred play
e. Other (please describe) _____

I understand how tummy time affects my infant's development.

a. Strongly disagree
b. Disagree
c. Neutral
d. Agree
e. Strongly agree

I feel well equipped with strategies to play and engage with my infant in tummy time.

a. Strongly disagree
b. Disagree
c. Neutral
d. Agree
e. Strongly agree

How does your baby play in tummy time?

_____
_____
_____

What are some ways you play with and engage your baby (during tummy time)?

_____
_____
_____

What are some ways you play with and engage your baby (outside of tummy time)?

_____
_____
_____

By signing below, I agree to completing this survey with the understanding that the information provided will be used in a UNLV OTD program capstone project.

_____ _____

Signature Date

Appendix C: Post-toolkit Survey

Tummy Time Toolkit Post-Survey

Parent Initials: _____ Infant Initials: _____

Have you increased the amount of tummy time you are doing at home? ☐YES ☐NO

How many times per day are you doing tummy time with your infant?

a. 1 – 3x per day
b. 4 – 6x per day
c. 7 – 9x per day
d. 10 – 12x per day
e. 13 – 15x per day
f. My infant does not do tummy time

How long is your infant's average tummy time session?

a. 0 – 2 minutes
b. 3 – 5 minutes
c. 6 – 10 minutes
d. 11 – 15 minutes
e. 16 minutes or more

How much tummy time does your infant complete daily (on average)? _____

How would you rate your infant's response or comfort level in tummy time? (1 = poor, 10 = positive)
(circle one): 1 2 3 4 5 6 7 8 9 10

What is the biggest challenge to having your infant complete tummy time regularly?

a. Time or scheduling
b. My infant cries and/or is uncomfortable during tummy time
c. Understanding different ways to implement tummy time
d. Not applicable
e. Other (please describe): _____

I feel well equipped with strategies to play and engage with my infant in tummy time.

a. Strongly disagree
b. Disagree
c. Neutral
d. Agree
e. Strongly agree

I understand how tummy time affects my infant's development.

a. Strongly disagree
b. Disagree
c. Neutral
d. Agree
e. Strongly agree

How would you describe any changes in the quality and quantity of your interactions during tummy time with your infant over the past four weeks?

a. Significantly decreased
b. Slightly decreased
c. No change
d. Slightly increased
e. Significantly increased

The toolkit and education I received enhanced my knowledge of tummy time.

a. Strongly disagree
b. Disagree
c. Neutral
d. Agree
e. Strongly agree

Have you observed any changes in your infant's response or engagement during tummy time since implementing the suggested strategies? Please describe:

_____
_____

How often did you actively engage in tummy time activities with your infant? _____

What are some ways you play with and engage your baby (during tummy time)?

_____
_____

What are some ways you play with and engage your baby (outside of tummy time)?

_____
_____

What was your overall experience with incorporating the suggested strategies into your tummy time routine? Please describe:

_____
_____

Were there any challenges you faced in implementing the suggested strategies into your tummy time routine?

_____
_____

Is there any information or content in the toolkit that you feel could be improved or expanded upon?

_____
_____

How would you rate the overall helpfulness of the provided toolkit? (1 = poor, 10 = positive)
(circle one): 1 2 3 4 5 6 7 8 9 10

By signing below, I agree to completing this survey with the understanding that the information provided will be used in a UNLV OTD program capstone project.

_____ _____

Signature Date

Appendix D

Individual Item Responses from Pre- and Post-Toolkit Survey

Question	Pre-Toolkit	Post-Toolkit
How does your baby play in tummy time?	"Cry" "She's great! Reaching on her mat, toys, faces, mirrors" "Engages with toys and rolls around playmat"	(Pre-Toolkit question only)
What are some ways you play with and engage your baby during tummy time?	"Peek-a-boo, moving toys" "Tracking, singing, talking" "Get on floor with baby, help support baby in various positions"	"Get down on the floor with her and smile or play with toys" "Singing, toys, giggling" "Play peek-a-boo, hand toys for him to reach for. just talking to him a lot"
What are some ways you play with and engage your baby outside of tummy time?	**"**Talking to him, using toys that make noise, have him around us during activities" "Music class, nursing, singing, books" "Snuggles, walks, eating solids, playing horsey"	"Lots of cuddling and sitting, sing songs and play with toys" "Music class" "Bouncing on lap, offer toys, reading, singing"
How much tummy time does your infant complete daily (on average)	"12 minutes" "60 minutes" "70 minutes"	"70" "70" "300 minutes"

Individual Item Responses from Post-Toolkit Survey

Question	Quotation
How often did you actively engage in tummy time activities with your infant?	"All day, every day" "3-4x" "Most of the time"
Have you observed any changes in your infant's response or engagement during tummy time since implementing the suggested strategies?	"She will do longer periods before crying" "Yes, she finds it easier to push up on arms" "Tolerates longer periods. Now plays with toys and smiles during tummy time"
What was your overall experience with incorporating the suggested strategies into your tummy time routine	"Sometimes they were successful, other times she wasn't interested" "Great! Positive" "Incorporating myself and family made such a big impact for the better. Toys helped too"

Were there any challenges you faced in implementing the suggested strategies into your tummy time routine?	“Lack of time available due to busy schedule with other kids” “Nope”
Is there any information or content in the toolkit that you feel could be improved or expanded upon?	“Nope”

References

American Academy of Pediatrics. (2020). *How to keep your baby sleeping safe: AAP policy explained*. https://www.healthychildren.org/English/ages-stages/baby/sleep/Pages/a-parents-guide-to-safe-sleep.aspx

American Academy of Pediatrics [AAP]. (2023). *Back to sleep, tummy to play.* https://www.healthychildren.org/English/ages-stages/baby/sleep/Pages/back-to-sleep-tummy-to-play.aspx

American Occupational Therapy Association. (2017). Vision 2025. *American Journal of Occupational Therapy, 71*(1). https://doi.org/10.5014/ajot.2017.713002

American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). *American Journal of Occupational Therapy, 74*(Suppl. 2), 7412410010. https://doi. org/10.5014/ajot.2020.74S2001

American Occupational Therapy Foundation. (n.d.). Research priorities to advance full participation in meaningful activities. https://www.aotf.org/About-AOTF/Research-Priorities

Bagdi, A., & Vaca, J. (2005). Supporting early childhood social-emotional wellbeing: The building blocks for early learning and school success. *Early Childhood Education Journal, 33*, 145–50.

Case-Smith, J. (2013). Systematic review of interventions to promote social-emotional development in young children with or at risk for disability. *The American Journal of Occupational Therapy, 67*(4).

Case-Smith, J., Clark, G. J. F., & Schlabach, T. L. (2013). Systematic review of interventions used in occupational therapy to promote motor performance for children ages birth-5 years. *The American Journal of Occupational Therapy, 67*(4), 413-24.

Center for Early Childhood Mental Health Consultation. (n.d.). *Defining infant mental health, risks and concerns.* https://www.ecmhc.org/IMH/defining-imh.html

Centers for Disease Control and Prevention. (2023). *Data and statistics for SIDS and SUID*. Centers for Disease Control and Prevention. https://www.cdc.gov/sids/data.htm

Dudek-Shriber, L., & Zelazny, S. (2007). The effects of prone positioning on the quality and acquisition of developmental milestones in four-month-old infants. *Pediatric Physical Therapy, 19*(1), 48–55. https://doi.org/10.1097/01.pep.0000234963.72945.b1

Felzer-Kim, I., Erickson, K., Adkins, C., & Hauck, J. (2020). Wakeful prone "tummy time" during infancy: How can we help parents? *Physical & Occupational Therapy in Pediatrics. (40)*6. 652-669. https://doi.org/10.1080/01942638.2020.1742847

Ginsburg, K. R. (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Pediatrics*, *119*(1), 182–191.

Graham J. M., Jr (2006). Tummy time is important. *Clinical Pediatrics, 45*(2), 119–121. https://doi.org/10.1177/000992280604500202

Hewitt, L., Kerr, E., Stanley, R., & Okely, A. (2020). Tummy time and infant health outcomes: A systematic review. *Pediatrics, 145*(6). https://doi.org/10.1542/peds.2019-2168

Jennings, J., Sarbaugh, B., & Payne, N. (2005). Conveying the message about optimal infant positions. *Physical and Occupational Therapy in Pediatrics, (25)*3. https://doi.org/10.1080/J006v25n03_02

Kadey, H. J., & Roane, H. S. (2012). Effects of access to a stimulating object on infant behavior during tummy time. *Journal of Applied Behavior Analysis, 45*(2), 395–399. https://doi.org/10.1901/jaba.2012.45-395

Kielhofner, G. (2008). *Model of human occupation: Theory and application.* Philadelphia: Lippincott Williams & Wilkins.

Koren, A., Reece, S. M., Kahn-D'angelo, L., & Medeiros, D. (2010). Parental information and behaviors and provider practices related to tummy time and back to sleep. *Journal of Pediatric Health Care, 24*(4), 222–230. https://doi.org/10.1016/j.pedhc.2009.05.002

Kuo, Y. L., Liao, H. F., Chen, P. C., Hsieh, W. S., & Hwang, A. W. (2008). The influence of wakeful prone positioning on motor development during the early life. *Journal of Developmental & Behavioral Pediatrics*, *29*(5), 367-376.

Mackrain, M., LeBuffe, P., & Powell, G. (2007). Devereux early childhood assessment for infants and toddlers. Lewisville, NC: Kaplan Early Learning Company.

Majnemer, A. & Barr, R.G. (2005). Influence of supine sleep positioning on early motor milestone acquisition. *Developmental Medicine and Child Neurology, 47*(6), 370-376.

Mendres-Smith, A., Borrero, J., Castillo, M., Davis, B., Becraft, J., & Hussey-Gardner, B. (2020). Tummy time without the tears: The impact of parent positioning and play. *Journal of Applied Behavior Analysis, 53*(4), 2090–2107. https://doi.org/10.1002/jaba.715

Morea, A., & Jessel, J. (2020). Comparing the effects of varied and constant preferred items on improving tummy time for typically developing infants. *Journal of Applied Behavior Analysis, 53*(3), 1367–1382. https://doi.org/10.1002/jaba.684

Mcqueen, D., Lakes, K., Rich, J., Vaughan, J., Hayes, G., Cooper, D., & Olshansky, E. (2013). Feasibility of a Caregiver-Assisted Exercise Program for Preterm Infants. *The Journal of Perinatal & Neonatal Nursing, 27*(2), 184–192. https://doi.org/10.1097/JPN.0b013e31828b244a

Myers, C. T., Yuen, H. K., & Walker, K. F. (2006). The Use of Infant Seating Devices in Childcare Centers. *American Journal of Occupational Therapy, 60*(5), 489–493. https://doi.org/10.5014/ajot.60.5.489

Novak, I., Cusick, A., & Lowe, K. (2007). Brief Report—A pilot study on the impact of occupational therapy home programming for young children with cerebral palsy. American Journal of Occupational Therapy, pp. 61, 463–468.

Ortega, R., & Fienup, D. M. (2015). Effects of a preferred stimulus and caregiver attention on infant behavior during tummy time. *Behavior Analysis in Practice, 8*(1), 66–69. https://doi.org/10.1007/s40617-014-0032-1

Palmer, C., Rindler, D., Leverone, B. (2019). Moving into tummy time, together: Touch and transitions aid parent confidence and infant development. *Infant Mental Health Journal*, *40*(2). 277-288. https://doi.org/10.1002/imhj.21771

Pin, T., Eldridge, B. & Galea, M. (2007). A review of the effects of sleep position, play position, and equipment use on motor development in infants. *Developmental Medicine and Child Neurology, 49*(11), 858–67.

Pumerantz, C. (2013). Establishing tummy time routines to enhance your baby's development [Electronic Version]. *American Occupational Therapy Association.* https://www.aota.org/- /media/Corporate/Files/AboutOT/consumers/Youth/Tummy-Time-tip-sheet.pdf

Ricard, A. & Metz, A. (2014). Caregivers' knowledge, attitudes, and implementation of awake infant prone positioning. *Journal of Occupational Therapy, Schools, & Early Intervention, 7*(1), 16–28. https://doi.org/10.1080/19411243.2014.898464

Salls, J. S., Silverman, L. N., & Gatty, C. M. (2002). The Relationship of Infant Sleep and Play Positioning to Motor Milestone Achievement. *American Journal of Occupational Therapy, 56*(5), 577–580. https://doi.org/10.5014/ajot.56.5.577

Silva, B., Sampaio, S., Moura, J., de Medeiros, C., de Lima-Alvarez, C., Simão, C., Azevedo, I., & Pereira, S. A. (2023). "I am afraid of positioning my baby in prone": Beliefs and knowledge about Tummy time practice. *International Journal of Pediatrics*, *2023*, 1–7. https://doi.org/10.1155/2023/4153523

Tang, M-H., Lin, C., Lin, W-H., Chen, C-H., Tsai, S-W., Chang, Y-Y. (2011). The effect of adding a home program to weekly institutional-based therapy for children with undefined developmental delay: A pilot randomized clinical trial. *Journal of Chinese Medical Association, 74,* 259-266.

Taylor, R. (2017). Kielhofner's Model of Human Occupation: Theory and application (5th ed.). Philadelphia: Wolters Kluwer.

World Health Organization [WHO]. (2022). Physical activity. *World Health Organization*. https://www.who.int/news-room/fact-sheets/detail/physical-activity

Yogman, M. W. (1981). Games fathers and mothers play with their infants. *Infant Mental Health Journal, 2*(4), 241-248. https://doi.org/10.1542/peds.2018-2058

Zachry, A., & Kitzmann, K. (2011). Caregiver awareness of prone play recommendations. *American Journal of Occupational Therapy, 65*(1), 101–105. https://doi.org/10.5014/ajot.2011.09100

Zachry, A., & Slaughter, S. (2013). Educating caregivers about tummy time. *OT Practice, 18*(21), 18–22.

Zhang, Z. Predy, M., Hesketh, K., Pritchard, L., Carson, V. (2023). Characteristics of tummy time and dose-response relationships with development in infants. E*uropean Journal of Pediatrics, 182*(1). 113–121. https://doi.org/10.1007/s00431-022-04647-w

Curriculum Vitae

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- **Clubhouse for Kids** Las Vegas, Nevada | Outpatient Pediatrics **May 2023 – August 2023**
- **Mountain View Hospital** Las Vegas, Nevada | Acute Care **May 2022 – August 2022**

FIELDWORK LEVEL I

- **Nevada Blind Children's Foundation** Las Vegas, Nevada | Community **October 2023**
- **Cornerstone Christian Academy** Las Vegas, Nevada | Pediatric **April 2023**
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VOLUNTEER WORK

- The Garden Foundation | Las Vegas, Nevada
- Silverado Memory Care Facility | Las Vegas, Nevada
- Catholic Charities of Southern Nevada | Las Vegas, Nevada
- Cards for Kids | Virtual

CERTIFICATIONS

- American Heart Association | AED/BLS for Healthcare Providers **2021 - Current**
- CarFit Certification **2022**
- Certified KORU Mindfulness **2022**

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- National Association of Neonatal Therapists (NANT) | student member **2022 – Current**
- American Occupational Therapy Association (AOTA) | student member **2021 - Current**
- Nevada Occupational Therapy Association (NOTA) | student member **2021 - Current**
- Student Occupational Therapy Association (SOTA) | student member **2021 - Current**