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Container Culture: an Educational Program To Reduce the Overuse

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CONTAINER CULTURE: AN EDUCATIONAL PROGRAM TO REDUCE THE OVERUSE
OF INFANT EQUIPMENT THROUGH COMMUNITY BASED INTERVENTION

Presented in Partial Fulfillment of
the Requirements for the Degree of
Doctor of Occupational Therapy

Eastern Kentucky University
College of Health Sciences
Department of Occupational Science and Occupational Therapy

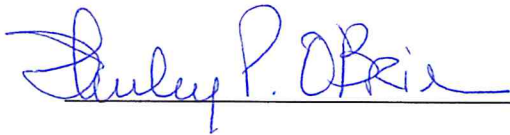
Ashleigh R. Toy, MS, OTR/L
2016

**EASTERN KENTUCKY UNIVERSITY
COLLEGE OF HEALTH SCIENCES
DEPARTMENT OF OCCUPATIONAL SCIENCE AND OCCUPATIONAL THERAPY**

This project, written by Ashleigh Toy under direction of Shirley O'Brien, Faculty Mentor, and approved by members of the project committee, has been presented and accepted in partial fulfillment of requirements for the degree of

DOCTOR OF OCCUPATIONAL THERAPY

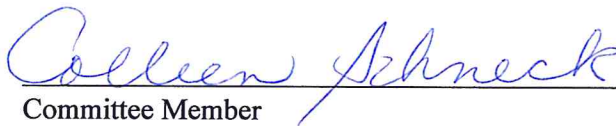
CAPSTONE COMMITTEE




Faculty Mentor



Date



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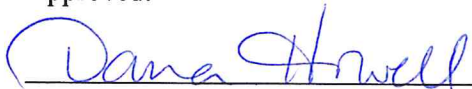
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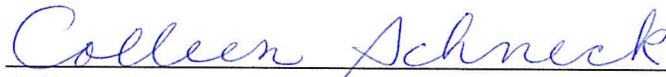
We hereby certify that this Capstone project, submitted by Ashleigh Toy, conforms to acceptable standards and is fully adequate in scope and quality to fulfill the project requirement for the Doctor of Occupational Therapy degree.

Approved:



Dana Howell, PhD, OTD, OTR/L
Program Coordinator, Doctor of Occupational Therapy

12/16/16
Date



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12/16/16
Date

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Executive Summary

Background: The increased pace of society, improved safety, mobility and the need for parent efficiency have created a vast market of infant products to meet these demands: car seats that clip in and out of everything from the car to the grocery cart, jumpers, walkers, exersaucers, swings, bouncers and bumbos. These infant equipment products are helpful and can be beneficial if used effectively, however, the problem synthesized from the literature and clinical observation is that these containers designed to support safety and mobility are being overused causing a decrease in tummy time and human interaction which is leading to delays in healthy infant motor development.

Purpose: The goal at the conclusion of this program was to 1) Improve at-risk parent education on age appropriate developmental motor skills and positive ways to use container supports, 2) Create a knowledge base of appropriate and safe developmental activities to promote motor skills acquisition in infants and toddlers, 3) Understand parent motivation and causes for consistent container use through use of outcome data and 4) Assess parent willingness to implement changes in home routines through post program surveys. Two hypotheses were also projected. Hypothesis 1 proposed that the data would show a statically sizable relationship between the amount of equipment in the home and the amount of hours spent in the equipment. Hypothesis 2 proposed that children of mothers who do not work outside the home spend more time in equipment than children of mothers who do work outside the home.

Theoretical Framework. The theoretical basis for this project was the Ecology of Human Performance Model.

Methods. This project developed an educational program to inform at- risk parents in the community of the potentially negative effects of consistent infant equipment use, its effect on

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development and offer solutions for promoting appropriate developmental play skills to use in place of pacifying through container play. Infant containers were defined as car seats, jumpers, walkers, exersaucers, swings bouncers and bumpo seats. The outcomes of the program were measured through pre/post program surveys, parent time study of container use completed in their home setting; monitoring types of equipment used, time of day used and amount of time used.

Results. The findings of this capstone study were projected to show a sizable amount of time, greater than 50% of the week, spent in infant equipment and a lessor amount of time spent on the floor in tummy time or other safe positions. The data revealed that infant equipment is utilized in the home less than anticipated prior to the study showing that at the highest reported values, 35% of the week was spent in equipment. It was hypothesized that more time spent in equipment would equal less time spent exploring the environment, less time spent in tummy time and less time spent engaging with adult or other children, and as a result developmental motor skill acquisition could be delayed as well as could contribute to decreased upper body coordination and strength adding to difficulty with handwriting and school based skills. This study is preliminary in its research leading to the hypothesized conclusions on motor skill deficits correlating with infant equipment use.

Conclusions: This descriptive study and project on infant equipment overuse and its potential impact on motor skill development has shown that there is a relationship in the amount of equipment in the home and the amount of hours infants spend in it. This study shows the preference for the use of infant swings and walkers in the home at an average of 15 hours per week spent in equipment. Most mothers involved in this study had less than a high school education and do not work outside the home, suggesting that potentially these mothers will

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utilize more infant equipment and provide less tummy time to their children although the data is insignificant in support at this time. Lastly, it is important to educate parents on the benefits of tummy time, implications for overuse of infant equipment and positive solutions for interaction with their children.

Acknowledgements

This project, presentation and completion of this program would not have been possible without the guidance and tireless dedication of my faculty mentor, Dr. Shirley O'Brien; committee member, Dr. Colleen Schneck; as well as my advisor Dr. Dana Howell. I am sincerely grateful for your dedication and perseverance to see me through in the completion of this project and OTD program. I cannot thank you enough.

Also, a sincere thank you to the pregnancy center for allowing me in your facility and for participating alongside me throughout the project. Also to the sweet and willing participants who have forever affected my life and perspective. I am grateful to you all.

Finally I cannot thank my family enough for picking up the slack so I could pursue this opportunity and for demonstrating unending love and support. I could not have completed it without you.

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DEPARTMENT OF OCCUPATIONAL SCIENCE AND OCCUPATIONAL THERAPY

CERTIFICATION OF AUTHORSHIP

Submitted to (Faculty Mentor's Name): Dr. Shirley O'Brien
Student's Name: Ashleigh Toy
Title of Submission: Container Culture: An Educational Program to Reduce the Overuse of Infant Equipment Through community Based Intervention

Certification of Authorship: I hereby certify that I am the author of this document and that any assistance I received in its preparation is fully acknowledged and disclosed in the document. I have also cited all sources from which I obtained data, ideas, or words that are copied directly or paraphrased in the document. Sources are properly credited according to accepted standards for professional publications. I also certify that this paper was prepared by me for this purpose.

Student's Signature: Ashleigh Toy
Date of Submission: 12/14/14

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SECTION 1: NATURE OF PROJECT AND PROBLEM IDENTIFICATION

Introduction

“During early childhood, the human brain grows to 90 percent of its adult size by age 3” (Purves, 1994). Based on this idea, it is vital that infants and toddlers receive adequate interaction, appropriate play and adequate nutrition to ensure optimum development. Tummy time, social engagement and developmental play are all essential foundational components for healthy and timely neurological and motor development in infants. “Exploratory play provides opportunities for babies to learn about the world around them, making it a critical component of healthy growth, learning, and development. One way that occupational therapy practitioners can help parents and caregivers enhance the occupational performance of infants and promote optimal development is by educating them on the importance of varying babies' play positions through- out daily routines. This includes prone positioning, or tummy time, which plays an important role in developing infant strength, movement, and sensory processing.” (Zachry & Slaughter, 2013). Infants learn and develop through engagement with their environment and through social interaction. Our sensory systems develop through interaction with the environment. For an infant this occurs through tummy time, being handled by adults and many various interactions within their environment.

Due to the prevalence of Sudden Infant Death Syndrome (SIDS), beginning in 1992, parents were encouraged to place infants on their backs to sleep which has seemed to contribute to the delay of infant motor skill acquisition (Pin, Eldridge, & Galea, 2007). In addition to the concern for SIDS, other areas including the increased pace of society, unlimited options for convenient infant equipment and more working parents have elevated the use of infant equipment as containers for infants in place of tummy time, human contact and floor play and exploration. Pin, et al (2007) postulate that motor development is based upon the infant's

environment and the positions they are placed in throughout the day. When healthy infants are not exposed to prone positions there is a marked delay in development (Pin, et al, 2007). This suggests that due to the lack of tummy time there is an increased prevalence of motor development delays in healthy infants. There is limited research on the effects of infant equipment use but it is postulated by Pin, et al (2007) that the use of infant equipment in place of prone play is detrimental to motor skills acquisition. However, Abbott and Bartlett (2001) found that infants who have high equipment use tend to score lower on infant motor development or that infants who have low equipment use tend to score higher on infant motor development suggesting a relationship between the use of equipment decreasing tummy time exposure and thus resulting in lower motor skill acquisition.

A double blind study discussed in the *Brazilian Journal of Physical Therapy* (2011) addresses the beliefs held by parents who do and do not use a walker with their infants and the effects it has on gait development. “The beliefs and feelings that permeate the decision to use a baby walker illustrate the different rationales adopted by parents about the role of this equipment in the child's development of gait and autonomy. The use of a baby walker did not influence the age of gait acquisition. The results broaden the understanding of choices that influence child-rearing practices prior to gait acquisition” (Chagas, et al, 2011). Abbott and Bartlett (2001) also support the idea that the evidence is inconclusive for use of infant walkers, although the evidence points to potential detrimental effects of using infant equipment, especially infant walkers suggesting the need for further research in this area (p. 866). In addition to the use of walkers in infancy other containers may come under scrutiny based on their potential to inhibit the overall healthy development in infants and toddlers.

In addition to the need for tummy time and floor play, for optimum development infants also need adequate social interaction and human contact. When infants are placed in a car seat that clips from the car, to the stroller, to the grocery cart; human interaction and sensory touch is limited. As infants are handled less, their interaction with humans and their environment are decreased. The need for mother-infant interaction, its effect on development and the predictability of the child's ability to interact reciprocally in children who are already classified as having a delay and are receiving physical, occupational or speech therapy was addressed over two decades ago. This study discussed the importance of physical interaction with a parent and its contribution to optimum overall development. (Palisano, Chiarelli, & Haley, 1993). Thus, the population was cautioned early on about limiting mobility and parent engagement through the use of infant equipment products.

The American Occupational Therapy Association's (AOTA) Practice Framework (2014) states that the domain of occupational therapy is "achieving health, well-being and participation in life through engagement in occupation" (p. S4). The occupation of an infant is developmental play and the occupational role of a parent is to engage with their infant and ensure the infant's occupational needs are being met. Occupational therapists can serve a valuable role in promoting education, awareness and intervention in prevention and correction of delayed developmental motor needs caused by overuse of infant equipment and lack of tummy time play. While on the whole, research is limited in the area of the implications of infant equipment use and its effects on motor development, the research is clear that the lack of tummy time and floor play negatively affects infant motor development in healthy infants.

Problem Statement

Improved safety, mobility and the need for parent efficiency have created a vast market of infant products to meet these demands: car seats that clip in and out of everything from the car to the grocery cart, jumpers, walkers, exersaucers, swings, bouncers and bumbos. These devices secure the infants. Snuggly devices were not considered in this Capstone Project, as they allow for dynamic position options against the parent's body. For the purposes of this study, these devices are referred to as infant containers. These infant equipment products are helpful and can be beneficial if used effectively, however, the problem synthesized from the literature and clinical observation is that these containers designed to support safety and mobility are being overused causing a decrease in tummy time and human interaction which could be leading to delays in healthy infant motor development.

Purpose

The purpose of this program was to design and implement an educational program for at risk families at a pregnancy center in Central Kentucky, informing them about the importance of tummy time and the implications of consistent container use. Through participation in educational sessions, caregivers were offered easy and effective solutions to promote optimal health and development through safe and timely acquisition of motor milestones, positive ways to play with infants and safe options to use as alternatives to container confinement. Through participation in the educational program, parent motivation for using containers, length of time used and reason for use, benefit/gain/loss of knowledge learned during program was evaluated.

Project Objectives

The goal at the conclusion of this program was to 1) Improve at-risk parent education on age appropriate developmental motor skills and positive ways to use container supports, 2)

Create a knowledge base of appropriate and safe developmental activities to promote motor skills acquisition in infants and toddlers, 3) Understand parent motivation and causes for consistent container use through use of outcome data and 4) Assess parent willingness to implement changes in home routines through post program surveys. Two hypotheses were also projected. Hypothesis 1 proposed that the data would show a relationship between the amount of equipment in the home and the amount of hours spent in the equipment. Hypothesis 2 proposed that children of mothers who do not work outside the home spend more time in equipment than children of mothers who do work outside the home.

Theoretical Framework

The Ecology of Human Performance (EHP) suggests that ecology, or the interaction between person and the environment, affects human behavior and performance, and that performance cannot be understood outside of context (Dunn, Brown & McGuigan, 1994). The EHP suggests that we can only interact within our occupational environment based on what an individual understands through their context. EHP suggests that each person has a selection of tasks they can perform and based on their life contexts they use their skills and abilities to choose which tasks to focus on (Dunn, et al, 1994). “Persons view different potential tasks through their contextual filter, the accumulation of their experiences, and their perceptions about the physical, social, and cultural features of their current performance setting” (Dunn et al, 1994, p. 599). For example, a mother’s contextual view would be through the lens of a myriad of responsibilities. She would choose tasks and consolidate tasks based on her skills and abilities. It is presumed that one can only engage in tasks they have been prepared for and ones they understand through their contextual framework. It is possible that at-risk parents have not been equipped in their contextual environment to provide positive occupational solutions to their children regarding

developmental play skills and social interaction, thus, resorting to the use of container supports as preferred infant equipment on a regular basis for play and safe containment. Through the lens of EHP this program provided education to parents and expanded their contextual framework by offering supports and a toolbox to increase understanding and awareness of positive choices for improved child development. (Dunn, et al, 1994).

Significance of the Study

The United States Department of Health and Human Services (HHS) initiative is to “achieve health equity, eliminate disparities and improve the health of all groups” (U.S. Department of Health & Human Services, 2008, p.1). Consistent with this overarching HHS goal is the Healthy People 2020 goal to improve maternal and infant health and as well as to promote early intervention services (U.S. Department of Health & Human Services, 2013). This initiative states, “Their (infants and toddlers) well-being determines the health of the next generation and can help predict future public health challenges for families, communities, and the health care system” (U.S. Department of Health & Human Services, 2013). This project aligns with the government initiatives to improve infant and family health by promoting healthy lifestyles, positive developmental play frameworks and improved social interaction between parent and child.

In our fast paced society it has become commonplace to allow infant equipment meant to improve mobility and increase safety to do the opposite, creating a culture of “container babies”; to care for our infants making things quicker and easier for parents. As a result, infant and toddler motor development is potentially slowed, milestones are skipped or achieved late and overall physical strength and stability in the toddler and school age child is less than average (Abbott & Bartlett, 2007). An infant’s development is in the hands of the adults in their lives and

thus it is vital that we provide adequate opportunities to educate and inform at-risk parents of appropriate developmental milestones, activities and appropriate ways to use technology and infant equipment in a preventative effort to promote optimal health and wellness.

Grassroots theory suggests that groups can create power by taking mutual action to achieve social change (Stachowiak, 2009). With a common goal to affect and promote family education in an effort to improve infant health and well-being, it is presumed that change can be promoted through this effort beginning in a small community in an established pregnancy center program. The Grassroots theory of change “believes groups can create power by taking mutual action to achieve social goals” also that “organizing efforts should reflect the wishes of people directly affected by the problem” (Stachowiak, 2009). With this goal in mind, this program will address education and goals of the people who are in direct relationship with the problem and could potentially have the highest impact on its change locally.

Summary

Due the pace and industry of society and the easy, functional infant equipment inventions, well intentioned parents have increased use of containers for transporting and occupying infants taking the place of floor play, human contact and regular handling. As a result infant development is suffering, notable in delayed or decreased motor skills development, social difficulties and physical strength. Occupational Therapy (OT) serves to promote healthy lifestyles, adequate social and motor development and appropriate play skills. O.T. will serve as an informant to inspire positive changes in this area.

SECTION 2: REVIEW OF THE LITERATURE

Introduction

Occupational therapy, physical therapy and other medical literature is vast with information regarding infant motor development and the factors that promote or delay acquisition of skills. Electronic databases (CINAHL, PsycINFO, Cochrane Library and ProQuest) were searched from the earliest date until fall 2016 to find relevant literature related to motor development, infant equipment use, prone play and sleep positioning.

Literature suggests that motor development was one of the first scientific studies in infancy (Thelen, 1995). As reported by Thelen, research studies over time began to delineate normal developmental milestones and their timelines and this was incorporated in texts, curriculum and medical practices (1995). These measures have been used to determine the need for intervention or to scale whether or not each child is developing adequately. Thelen and Smith note that “development occurs through the interaction between intrinsic dynamics and a task performed in context” (1994). This suggests that the context and environment in which a child is growing can affect their adequate development. In their study to assess the use of the Daily Activities of Infants Scale, Bartlett and colleagues discovered that it is necessary that parents expose their high-risk infants to opportunities for activity, exercise and movement during their early lives to ensure a better overall outcome and long-term health (Bartlett, Fanning, Miller, Becker, & Doralp, 2008). “From a dynamic systems perspective, motor development is influenced by a variety of subsystems available to the infant...parental expectations of motor development, type of motor experience available to the infant, infant temperament” (Monson, Deitz, & Kartin, 2003, p. 201). Overall, we know that infants need adequate motor and sensory play experiences, social interaction and novel opportunities for optimal development and engagement within their environments. Thus, allowing experiences in natural contexts is desired for optimal development.

Motor development is essential to effective occupational performance for children aiding in their ability to participate effectively in play, self-care, socialization and later academic skills (Case-Smith, Clark & Schlaback, 2013). An infant acquires effective motor skills through sensory exploration and beginning play through motor skills (Case-Smith, Clark, & Schlaback). Case-Smith and colleagues (2013) echo the thoughts of Thelen, that motor function is essential to healthy development as well as positive and effective engagement in ADLs, play and social interaction. Case-Smith and colleagues (2013) also suggest that when occupational therapy is provided to children with or at risk for disability results is most effective when focusing on child and family goals (p. 421). Although the literature on child and infant development is exhaustive, it appears conclusive that it is essential to include families in an educational experience when teaching effective developmental strategies for optimal effectiveness and to achieve sizable outcomes on development (Thelen, 1994; Case-Smith, et al, 2013).

Based on a synthesis of the literature, motor skills development appears to depend on a variety of factors in the infant's environment and that various changes in position should impact their development (Pin, Eldridge & Galea, 2007). There are countless factors that impact effective motor development in infancy resulting from gestational or birth related causes or disability. Aside from these causes are environmental factors affecting age appropriate developmental motor skill acquisition. Literature was reviewed to evaluate and synthesize environmental factors relating to use of infant equipment and its effects on motor skill acquisition. Several trends were consistent during information searches. A consistent theme that emerged regarding motor skill development in infancy is the impact of sleep positioners and sleep position, the impact of baby walkers, exersaucers and infant bouncers. Although these

pieces of equipment offer positional changes for infants and often safe places free from parent's arms, it is hypothesized that their overuse is contributing to motor delays in infancy.

The cultural promotion of the American Academy of Pediatrics' Back to Sleep Campaign as a preventative measure for Sudden Infant Death Syndrome (SIDS), beginning in the early 1990s, is an important factor that began to change the perspective of parents, affecting their views of the safety of their infants in sleep and play situations. This campaign suggested that by placing infants on their backs to sleep, the incidence of SIDS could be diminished (Trachtenberg, Haas, Kinney, Stanley & Krous, 2012). Trachtenberg and colleagues (2012) produced research that suggests that indicators for SIDS did not change as a result of this campaign, denoting other risk factors associated with the incidence of SIDS. However parents were affected by the Back to Sleep Campaign, affecting their infants play with 26% of 100 surveyed parents stating they never placed their infants prone for play as a result of knowledge from the campaign (Pin, Eldridge & Galea, 2007). In relation to the Back to Sleep Campaign is the increase of the incidence of deformational plagiocephalies believed to be associated with this program (Littlefield, 2003). Littlefield (2003) also discusses the relation of overuse of infant equipment such as car seats, swings and infant carriers as adding to the incidence of deformational plagiocephaly, finding that 28.6% of infants presenting with plagiocephalies spent 1.5-4 hours in equipment and 14.8% spent more than 4 hours per day in these devices. Although normal use of these devices shows no sizable cause for concern, it is concerning when use exceeds 1.5 hours per day (Littlefield, 2003).

Positional changes and prone play are essential for optimal development regarding the development of stability and strength (Pin, Eldridge & Galea, 2007). This research suggests that the prone position is essential for adequate motor skill development. It could be hypothesized

that the Back to Sleep Campaign resulted in motor skill deficits due to the lack of time spent in prone to develop motor skill, strength and sensory motor experiences. A greater understanding of SIDS can be associated with avoidance of prone positioning (Mildrid, Beard, Dallwitz & Unwin, 1995). Similarly Majnemer and Barr (2005) also concluded that infants who slept in supine achieved motor milestones less than that of their peers who slept in prone who showed advanced gross motor skills. Preliminarily, data suggests that infants sleeping in supine could present with early motor milestone delays in the areas of rolling, creeping, crawling and standing as well as fine motor delays as measured by the Denver Developmental Screening Test (Majnemer & Barr, 2005). Pin and colleagues (2007) found that there is transient delays in attainment of developmental milestones in healthy infants who have had limited exposure to prone positioning. Time spent in the prone position is sizable for development of motor skills and trunk stability and infants who sleep in supine are also likely to spend more time in supine during play (Douret, 1993; Majnemer & Barr, 2005). Monson and colleagues found that many studies that show motor delays infants who sleep in prone failed to consider the amount of time spent in prone during play (Monson, Deitz & Kartin, 2003). This study found that infants who slept supine but spent awake time in prone scored sizably higher in gross motor skills (Monson, Deitz & Kartin, 2003). A synthesis of these studies suggest that it would beneficial to emphasize to caregivers the importance of prone play and would potentially be beneficial to offer a specific time recommendation for ease of practice and to increase the likelihood of follow- through (Majnemer & Barr, 2005).

Synthesizing from the literature, it is clear that prone positioning is vital to optimal development in infants. The research shows that both sleeping and playing in supine leads to delays in motor skills acquisition but sleeping in supine with time spent in prone for play can

have a positive effect on motor skill development in infants. However, more research is needed in this area to suggest specific timelines for length of time spent in prone and its relationship to optimal motor development. It is hypothesized that the incidence of infant equipment use deters from time spent in prone during playtime which is the sizable factor in motor delays in infancy. The vast number of options in infant equipment and the need for safety and convenience for parents has led to a hypothesized overuse of infant equipment such as car seats, baby walkers, exersaucers, swings and baby seats. This overuse of equipment has decreased the amount of time infants are spending in prone play as well as decreased time in contact with their environment and caregivers which is presumed to be the underlying factors for motor delays as a result of equipment overuse. There is limited information regarding the use of other equipment such as car seats, swings and infant seats which have risen in popularity over infant walkers (Pin, Eldridge & Galea, 2007,). However, there is foundational research on the use of baby walkers and their implications on motor skill acquisition.

The systems perspective of motor development suggests that the environment influences the motor performance of infants (Monson, Deitz & Kartin, 2003). It is to be assumed that experiences, equipment, sleeping position and caregiver interaction are all aspects of the infant's environment that are vital to optimal motor development. In addition to the impacts of the environment is the importance of effective caregiving on motor skill development. "It is increasingly understood that caregiving practices can influence the rate and sequence of motor skill acquisitions" (Majnemer & Barr, 2005, p. 374). All of these systems together promote positive, whole development throughout infancy and childhood. Effective caregiver education is vital for a comprehensive understanding of developmental expectations, milestones, implementations, appropriate play skills and use of equipment.

Frequently cited and foundational research in the area of infant equipment is Abbott and Bartlett's (2000) study on in home equipment use. This study reviewed the use of jolly jumpers, baby walkers, infant seating devices, swings and exersaucers through a 43 caregiver-infant dyad with typically developing infants at 8 months of age. Abbott and Bartlett (2000) suggests that infants with higher uses of equipment do present with lower motor scores when assessing motor development; also suggesting the converse. It is also suggested that it is difficult to discern whether the high equipment use is resultant in lower motor scores or if the families using equipment more frequently are doing so as a result of slower motor development in their infant. It is suggested that parent education would be a vital factor in promoting positive motor development through emphasizing low to moderate equipment use and to promote more prone play with their infants (Abbott & Bartlett, 2000).

The use of baby walkers and its implication on gait acquisition and motor development is the most highly researched topic in relation to infant equipment use and its effects on motor skill development. The use of baby walkers in child care is reported as early at the 17th century (Kavanagh & Banco, 1982). In a report from 1992 it was suggested that between 70% and 90% of parents utilize baby walkers, although more recent findings show a decline in this number (Burrows & Griffith, 2002). Burrows and Griffith (2002) also suggest that 38% of parents who are informed of the risks both with safety and developmental skills still utilize baby walkers anyway. Through a consensus of multiple studies, Burrows and Griffith (2002) concluded that the overall pattern suggests trends that baby walkers delay the onset of walking. Similar to the findings by Burrows and Griffith (2002), a short report in the *BMJ* also suggested that baby walkers delayed acquisition of crawling, standing alone and walking alone (Taylor, 2002). Fine motor skill development is also impacted as a result of the high use of a baby walker, evident in

persistent grasp reflex, clumsy hand movements and an overall delay of fine motor development (Simpkiss & Raikes, 1972). The research is limited regarding the use of infant equipment and its effects on motor skill acquisition. Most findings are related to infant walkers and its effects on gait development. More research in the area of infant equipment use and its effects on motor skills acquisition would be beneficial in understanding implications on infancy and its relation to the field of occupational therapy.

Overall, when drawing inferences from the literature, it is apparent that infant equipment overuse by well-meaning parents is cause for concern. Through multiple time studies, literature reviews and surveys, the literature suggests that limitations in motor skill acquisition and the overuse of infant equipment is statistically sizable. It seems plausible that the reason for this is due to decreased time spent in contact with the infant's environment and with limited time spent playing in the prone position. It would appear that prone play is vital to overall motor development and is the underlying cause for developmental delays in motor skills acquisition in infancy. Although all systems work together to promote well-rounded achievement of developmental milestones, prone positioning and the use of baby walkers seem forefront in the literature relating to causal analysis of delayed motor skills.

SECTION 3: METHODS

Project Design

This project developed an educational program to inform at-risk parents in the community of the potentially negative effects of consistent infant equipment use, its effect on development and offer solutions for promoting appropriate developmental play skills to use in place of pacifying through container play. Infant containers were defined as car seats, jumpers,

walkers, exersaucers, swings bouncers and bumpo seats. The outcomes of the program were measured through pre/post program surveys, parent time study of container use completed in their home setting; monitoring types of equipment used, time of day used and amount of time used.

The Capstone Project received approval by the Eastern Kentucky University Institutional Review Board prior to initiation of data collection. The research ensured that all the participants are well informed of their role in the study, benefits and risks prior to participating in the Capstone Project study. As a volunteer at the pregnancy center, researcher ensured adherence to policies and procedures as well as not interfering with other's job obligations.

Setting

This project was offered at a pregnancy center in Central Kentucky. The pregnancy center is a non-profit agency that opened their doors in 1989. The center's vision has been to be the first resource for women facing untimely pregnancies and parenting challenges in the Central Kentucky area. The facility mission is to equip women and men to make life affirming choices regarding pregnancy, parenting, and sexual integrity. The center places a high value on unborn human life and is concerned with the physical, spiritual, and emotional needs of those they serve. The center provides pregnancy testing and ultra sounds as needed, pregnancy support, parenting support, parenting classes and Bible studies. They also offer a food bank, clothing bank and boutique with items for purchase through a point system earned through class attendance and by making positive parenting choices. The center was provided with copies of confidentiality statements and ethical considerations. The center submitted a letter of support prior to project implementation. Letter is attached in Appendix A.

The Capstone Project occurred at a pregnancy center in Central Kentucky and included families that were moving through educational parenting courses offered at the center which began in May 2016. The program consisted of three phases. The first phase provided baseline data about participant knowledge about development and their present container use in the home. Within this phase a time study was completed prior to the start of educational programming in an effort to obtain accurate data reporting. Phase two consisted of educational programming provided by the researcher with a focus on infant development, tummy time strategies and infant equipment use. This education program was followed up by two hands on “Mommy and Me” classes to implement strategies learned and offer a time for open questions and concerns. This programming was 4 sessions in length, with the stipulation that at least 2 sessions were attended to participate in the study. Phase three consisted of a survey to evaluate knowledge gained and/or changes in parent perceptions about container use. Parents were given the opportunity to rate the change in their knowledge base as well as whether or not they perceived they would make changes in their home regarding container use.

This agency serves low socio-economic level individuals in Central Kentucky. Individuals are referred to the agency by local programs such as Health Access Nurturing Development Services (HANDS) or physicians. The center also serves individuals throughout the community on a walk-in basis. Families do not need to qualify based on income or socio-economic status to be served. However, the majority of the clients served within the agency fall within that criterion. As a result, in an effort to ensure optimal participation parents participating in the Capstone Program were awarded points for use in the clothing bank and boutique by New Beginnings, as per agency policy.

Identification of Participants

A non-randomized purposive sample was used to obtain participants in this study. All families participating in the education program were included in the project unless requested to be removed after being informed of risks and benefits as well as outcomes of the study and program. Families were referred to the center by outside physician offices and agencies as they are identified as at risk, or are walk in clients looking for assistance with their pregnancy and families. Inclusion criteria included the following: Adults over the age of 18 years of age who participated in at least 2 of the 4 offered educational sessions. All participants in the program were female.

Participants were ensured of their privacy and ensured all information was kept confidential. They were informed of the risks and benefits and given the opportunity to opt out of the program. Eleven participants that were high risk, low income mothers as identified by the agency were included in the program. These mothers had an average age of 29.27 ranging from 21-45 years of age who had infants ranging from 2-48 months of age. When surveyed it was determined that on average the mothers completed 10.5 grades of education, ranging from the completion of 3rd grade to having completed some college education. It was also determined that 64% of participants do not work outside the home.

Informed consent was obtained from each of the participants upon referral to the educational program. Once informed consent was obtained participants were provided with an overview of expectations and program agenda. They were given the expectation that they would be present for at least 2 of the 4 sessions to be a part of the study and to be offered boutique points.

Ethical Considerations

In preparation for this Capstone the AOTA Code of Ethics (2010) was obtained and reviewed for adherence to ethical guidelines throughout the project. Program participation was voluntary. Participants were given a full disclosure of the program and willing and informed consent was obtained. Participants were informed that they could withdraw from the program at any point. This study was decided to have minimal risk to participants, no more than one would encounter in their everyday experiences. According to Creswell (2014) “Researchers need to protect their research participants; develop a trust with them; promote the integrity of research; guard against misconduct; and cope with new, challenging problems” (p.92). Participants had an open communication dialogue throughout the program with the researcher and were encouraged to voice any concerns regarding the program. Approval was obtained on May 3, 2016 from the institutional review board (IRB) from Eastern Kentucky University (EKU), with an expedited review (Appendix H).

Data Collection Methods & Analysis

Descriptive statistics were used to analyze the data obtained in this Capstone Project. Participants were given a pre-course survey (see Appendix D) and a post-course survey (see Appendix E). Each individual response was coded into categories based on participant response. Lastly, responses were translated into chart format and mean scores. T-tests and correlational non-parametric statistics were calculated using Microsoft Excel 2010. An Excel spreadsheet was used for statistical analysis of infant equipment use and developmental milestone status from both pre and post implementation of educational courses. In addition a data tool was utilized and reviewed to assess in home use of infant equipment reviewed over the course of a 7 day time study (see Appendix G). Data analysis was explored through basic comparisons and commonalities to understand trends in the data (Creswell, 2014). The survey design allowed for a

quantitative or numeric description of trends, perceptions, or opinions of a population by studying a sample of that population (Creswell, 2014, p.155). A constant comparative method was used to summarize qualitative data and record trends.

Procedures

This study was a partnership with a local non-profit agency in a small town. Participants were referred to the center by local physicians' offices and other local agencies such as HANDS as they are identified as at risk, or are walk in clients looking for assistance with their pregnancy and families.

Informed consent and accepting participants were recruited two weeks prior to the start of educational courses during spring 2016. At this time, Phase 1 of the program was initiated. They were given time studies to complete for a time span of 7 days to analyze types of equipment used and amount of time the equipment is used in the home. Prior to the start of the first educational session they completed a pre-course survey to assess knowledge and current use and understanding of infant equipment and infant development. This information provided a base level of knowledge and motivation for equipment use and provided demographic information. Phase two consisted of the educational sessions. The mothers participated in a weekly educational course (see Appendix B) for 2 consecutive Wednesday sessions. They were required to attend the first session at least to be included in the data set and encouraged to attend both. The educational sessions conveyed information about developmental milestones, red flags for developmental delays and risks/benefits of infant equipment use, as noted in Appendix B. This information was broken into two sessions and used a structured lecture format, followed by hands-on activities and group discussions in two more consecutive sessions, labeled as "Mommy

and Me” courses. All eleven mothers participated in both sessions as well as the “Mommy and Me” sessions following the educational sessions. After the successive sessions participants were given a post survey (phase 3 of the program) to assess value and application of information obtained during courses and how likely they are to apply concepts in their homes.

Outcome Measures

The educational program was presented to a group of low income, high risk mothers as identified by the pregnancy center. The goal at the conclusion of this program was to meet four previously determined objectives: 1) Improve at-risk parent education on age appropriate developmental motor skills and positive ways to use container supports, 2) Create a knowledge base of appropriate and safe developmental activities to promote motor skills acquisition in infants and toddlers, 3) Understand parent motivation and causes for consistent container use through use of pre and post surveys and 4) Assess parent willingness to implement changes in home routines through post surveys. The outcome of these objectives was determined through descriptive analysis of participant responses through data tables assigning numerical values to responses and synthesizing information based on pre and post course surveys. Two hypotheses were proposed. Hypothesis 1 proposed that the data would show a statically sizable relationship between the amount of equipment in the home and the amount of hours spent in the equipment. Hypothesis 2 proposed that children of mothers who do not work outside the home spend more time in equipment than children of mothers who do work outside the home. Hypotheses were evaluated through t-tests and Pearson correlation coefficient using Microsoft Excel 2010.

Validity

Participants were able to engage in this program in a natural setting for them as part of a program each individual is regularly a part of which minimized threats to external validity. Validity was also enhanced by offering both pre and post surveys for assessment of program outcomes and objective measure. The capstone program was publicized by the pregnancy center in an effort to offer the program to a wide range of participants.

SECTION 4: RESULTS AND DISCUSSION

Results

Results are organized by data obtained in the surveys given to participants. The time study and pre-course survey data offered understanding of group demographics, use of infant equipment prior to educational program and offered baseline data for participant knowledge of infant development. The post-course survey offered an understanding of perceived changes to be made by participants, level of understanding of new concepts and perceived satisfaction with the program.

Hypothesis 1:

The study first hypothesized that the data would show a statically significant relationship between the amount of equipment in the home and the amount of hours spent in the equipment. The mean of equipment used in the home setting was 3.18. The amount of awake hours spent in equipment over seven days was an average of 15.05 hours. A Pearson correlation coefficient test was conducted to investigate whether the amount of hours spent per week in infant equipment was correlated to the number of pieces of infant equipment present in the home. No relationship was found ($r=0.664$). This suggests that the hypothesis is rejected. Upon visual inspection of the

data, it was noted that the greater the amount of equipment in the home, the more hours a child spends in it, however the sample was too small to support the conclusion.

The pre-course survey also showed that participants use various pieces of equipment in their homes with 5 of 11 participants using a clip in car seat and 4 of 11 participants using both walkers and swings (Figure 1). Thirty six percent of participants reported the average number of hours per day their infant spends in these pieces of equipment as less than 1 hour with 9% of participants reporting more than 5 hours per day (Figure 2).

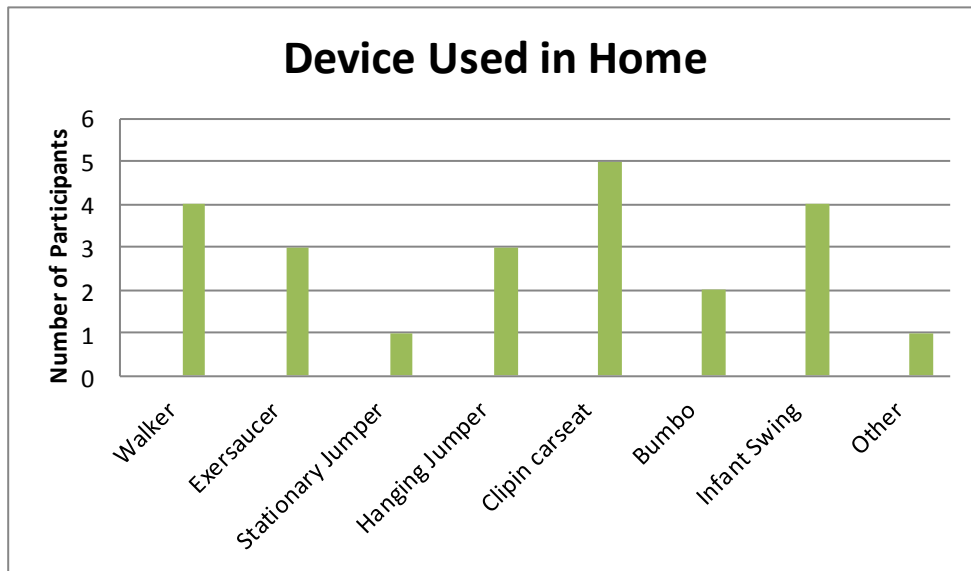


Figure 1. Types of Devices Used in Home

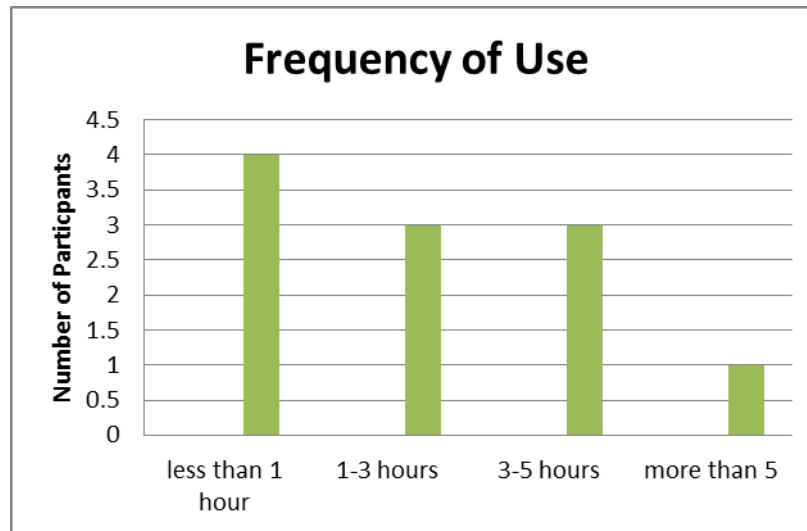


Figure 2. Amount of Hours Each Day Spent in All Types of Equipment Combined

Hypothesis 2

The study also hypothesized that children of mothers who do not work outside the home spend more time in equipment than children of mothers who do work outside the home. This hypothesis suggests the basis that when a parent is home with more hours during the day to occupy the child, the need for equipment becomes greater. However, it should be noted that when a parent works outside the home, it is likely someone else or daycare is caring for the child where infant equipment is also used. This study did not take other settings into the data pool. When comparing samples through a two tailed t-test, the data proved to be insignificant with a probability of $p=0.12$ (Table 2). This suggests that the amount of equipment utilized between working moms and stay at home moms is not statistically significant.

Table 1. Comparison of Mothers Work Status and Equipment Use

Hyp. 2: Hours in Equipment per Week		
	Average	Standard Deviation
Participants who work outside home	12.09	14.84
Participants who are home	20.25	6.24
	p=12	

Course Objectives

Objective 1 was to improve at-risk parent education on age appropriate developmental motor skills and positive ways to use container supports. Based on post-course survey results it is clear this objective was met with 91% of participants stating they strongly agree or agree that they better understand child development (Figure 3). Post course survey results also indicate that 91% of participants either strongly agree or agree they better understand how to safely use infant equipment (Figure 4).

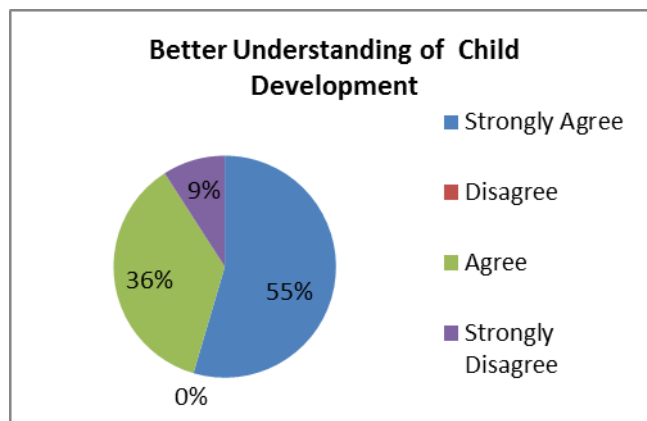


Figure 3. Participant Rating of Learned Child Development Knowledge

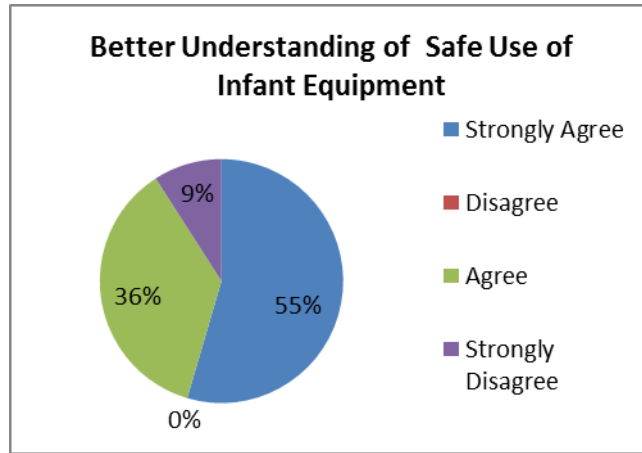


Figure 4. Participant Rating of Learned Equipment Safety

Objective 2 of the project was to create a knowledge base of appropriate and safe developmental activities to promote motor skills acquisition in infants and toddlers. On the pretest parents were asked to describe the sleeping position of their infant. Figure 5 presents this data.

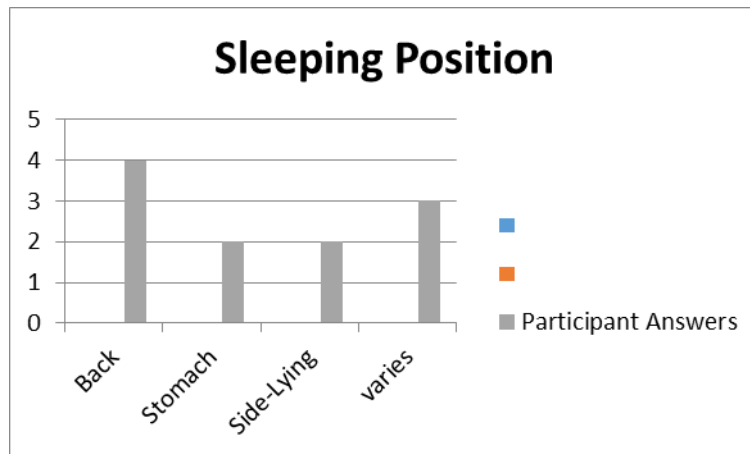


Figure 5: Preferred Sleeping Position for Infant

When asked about placing their infant in a prone position for tummy time experiences, most parents (45%) reported their infants were on their tummy for 10 minutes or under. About a third

(27%) reported placing their infant in tummy time for an hour or more. Thus, parents were mixed in responses between little or much tummy time for their infants. This data is presented in Figure 6.

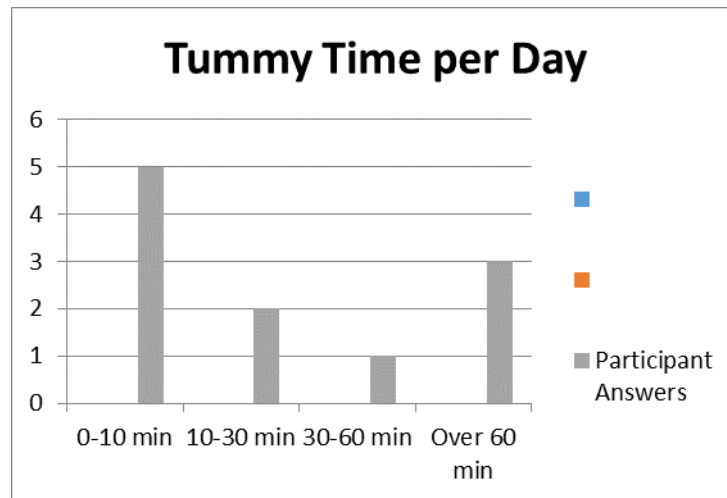


Figure 6: Tummy Time per Day

According to post course survey feedback 91% of participants either strongly agreed or agreed that they know new developmentally appropriate ways to play with their child (Figure 7). In reviewing post-course survey data, over 80% of participants stated they agree or strongly agree that they can identify developmental ways to play with their child, positive ways to interact with their child and that the information learned was valuable to them, indicating the object was achieved.

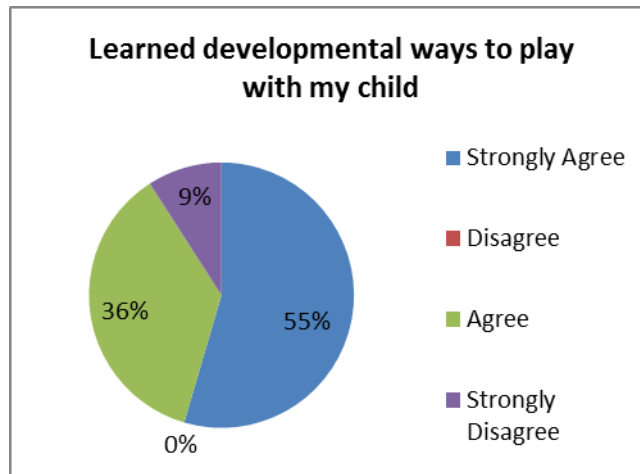


Figure 7. Participant Rating of Understanding of Developmental Play

Objective 3 set out to understand parent motivation and causes for consistent container use through use of pre and post surveys. This was achieved based on the results of these surveys. According to pre-course survey data 5 of 11 (45%) mothers are likely to use infant equipment because their child enjoys it with another 3 of 11 (27%) using equipment because they feel it is the safest option. Only 1 (9%) parent stated they use infant equipment because it is easiest and 2 (18%) mothers stated they use it because they do not know what else to do with their child. See Figure 8 for summary of results related to this objective.

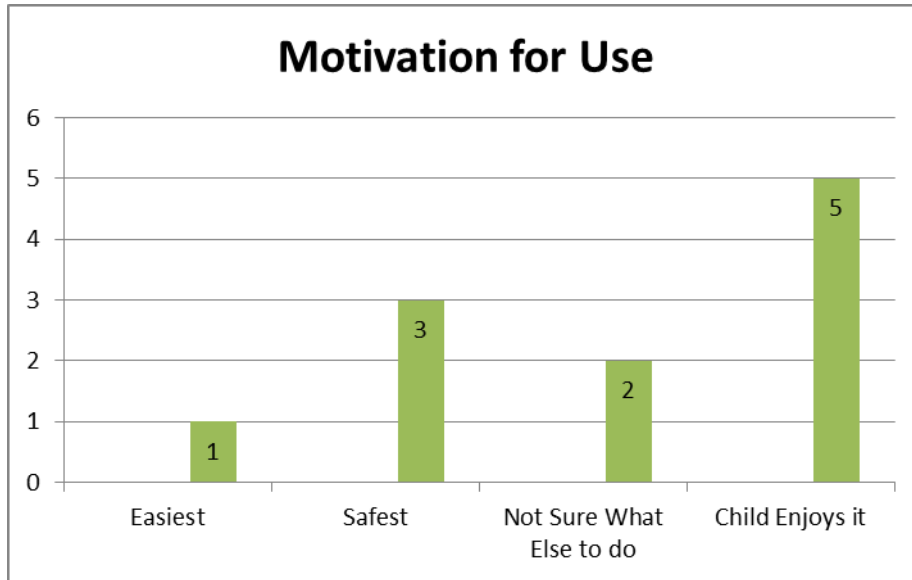


Figure 8. Participant Responses Regarding Motivation for Using Equipment

Regarding Objective 4 to assess parent willingness to implement changes in home routines through post surveys, it is clear this objective is met. Based on post-course survey data 91% of participants stated they would implement learned principles in their home (Figure 9).

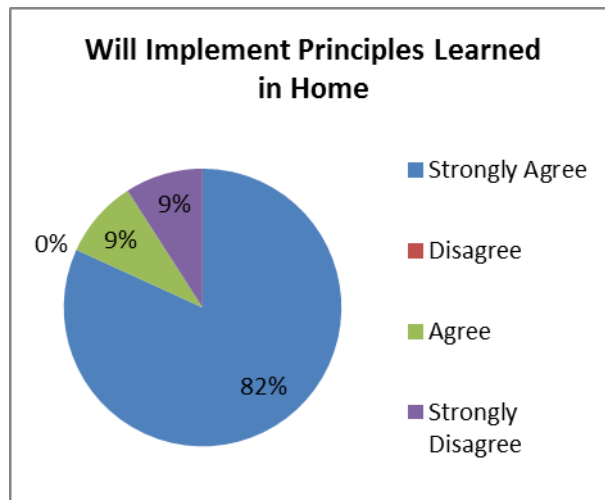


Figure 9. Participant Responses Regarding Willingness to Implement New Strategies in Home

Discussion

Motor development is a dynamic and ever-changing system that is dependent on our neurological processes and our environment. Effective and efficient motor development is dependent on many factors including those within the infant and those that are external from within the infant's environment (Pin, et al, 2007, p. 858). As an abundance of infant equipment become readily available to the average parent, it is essential, as occupational therapists and other medical service providers, that professionals emphasize and educate families on the importance of tummy time and developmental play in an effort to ensure adequate motor skill acquisition. Based upon the theoretical base of EHP (Dunn, et al, 1994), understanding the interaction with the occupational environment, in this case the variety of infant equipment used, parent education is a key component in fostering development.

“From a dynamic systems perspective, motor development is influenced by a variety of subsystems available to the infant...parental expectations of motor development, type of motor experience available to the infant, infant temperament” (Monson, Deitz & Kartin, 2003, p. 201). This study offered a brief investigation into the perspectives, practices and characteristics relating to infant equipment use within an at risk population of mothers participating in a parenting program at a pregnancy center in Central Kentucky.

Participants completed a pre-course survey addressing their base level of knowledge and motivation for equipment use as well as surveying their infant ages and milestone acquisition to date. From a pretest survey, parents were mixed in their understanding of the value of tummy time (prone positioning). The importance of sleeping position also was lacking as it relates to development. After reviewing post-course survey data, it is clear that the objective to provide

information to promote developmental milestone awareness as well as appropriate equipment use is overwhelmingly positive with over 80% agreeing or strongly agreeing that they will use less infant equipment in their home and that they understand the importance of tummy time as well as safe equipment use. According to Pin and colleagues (2007) engaging in prone play has an apparent effect on infant motor development, indicating the need for ongoing parent education in this area.

This project aspired to create a knowledge base of appropriate and safe developmental activities to promote motor skills acquisition in infants and toddlers. In an effort to achieve this goal, content was incorporated into the education program which discussed positive ways to engage an infant to best promote motor skill development. This content was reviewed with the participants through lecture format and then reinforced through several “mommy and me” playtime sessions. These sessions allowed the participants to interact with their infant or toddler with the assistance of the therapist/researcher through role modelling and coaching. Through this environment we were able to answer questions, demonstrate developmentally appropriate toys and ways to interact effectively with an infant or toddler.

There is limited research on the use of infant equipment in the home and its long term effects, opening up this area for further study. According to Abbott and Bartlett (2001) who found that infants who have high equipment use tend to score lower on infant motor development or that infants who have low equipment use tend to score higher on infant motor development. It is vital for parents to understand the relationship between appropriate developmental play and intervention and its effect on motor development. Based on the results of both surveys this program provided a grassroots basis for this within the community, reinforcing the work of

Stachowiak (2009). Social change can and will occur when a common goal exists. This Capstone Project provided an avenue for change to occur at a local level.

Data synthesizing hours per day in equipment was self-reported through a 7 day time study. Participants were given the time study the week prior to course introduction in an effort to obtain objective data. However, after analyzing the reported data, it is presumed that participants were able to discern the goal of the program and reported based on what they thought was correct versus actual amounts of time their infants spent in equipment. The purpose of the research was not blinded, in accord with the IRB consent. As a result it was difficult to discern if subjects were honest in responses. It is suggested to interpret data with caution as a result due to this likelihood. It is presumed that actual tallies would be much higher within this population in relationship with hours spent per week in equipment.

Data was also collected through pre-course surveys and parent demographics. These two means of collection offered a small perspective into the motivation behind equipment use, effects on development, if any and the relationship of parent education on equipment use. The pre-course survey found that an infant swing was the piece of equipment most frequently used with 3 mothers reporting frequent use, followed by the infant walker with 2 mothers reporting frequent use. Most mothers indicated that they use equipment for less than one hour per day. This finding was perplexing, as children are moved from place to place in car seats. The reported data appears questionable based on the amount of hours a child potentially spends in a car seat or stroller. Thus this data is cautioned due to assumed skewed self-reporting based on presumed expectations.

The pre course survey also revealed that when asked the parent motivation for placing infants in equipment, 5 of 11 mothers placed their infants in equipment because their child liked it. It is necessary to ask how each individual mother was able to discern how they knew their child liked being in the piece of equipment. Did the child show specific expressions or actions that exhibited pleasure (e.g. smiling or laughing) or were the mothers potentially projecting their perceived perspectives onto the child.

A goal of the education program was to establish a firm understanding of tummy time and safe ways to implement it regularly in the home. Mothers were asked in the pre-course survey to define the frequency in which their child engages in tummy time. The results showed that 5 of 11 mothers reported their child spends less than 10 minutes per day on their stomach. Three of 11 mothers reported their child spends over 60 minutes on their stomachs each day. An infant acquires effective motor skills through sensory exploration and beginning play through motor skills often acquired through prone play (Case-Smith, Clark, & Schlaback, 2013). Thus, this Capstone Project, through the theoretical underpinning of EHP (Dunn et al, 1994) and Grassroots Theory (Stachowiak, 2009) helped to meet the parents at their level and needs.

The findings of this capstone study were projected to show a sizable amount of time, greater than 50% of the week, spent in infant equipment and a lessor amount of time spent on the floor in tummy time or other safe positions. The data revealed that infant equipment is utilized in the home less than anticipated prior to the study showing that at the highest reported values, 35% of the week was spent in equipment. It was hypothesized that more time spent in equipment would equal less time spent exploring the environment, less time spent in tummy time and less time spent engaging with adult or other children, and as a result developmental motor skill acquisition could be delayed as well as could contribute to decreased upper body coordination

and strength adding to difficulty with handwriting and school based skills. This study is preliminary in its research leading to the hypothesized conclusions on motor skill deficits correlating with infant equipment use.

Implications for Future Practice

The project successfully created an avenue for occupational therapy practitioners to be a part of community based intervention through crisis pregnancy centers. This study demonstrates that occupational therapy practitioners are able to provide valuable services on a preventative level. It is clear that education is necessary to promote safe tummy time practices as well as to advocate for safe and developmentally appropriate play within community based centers such as this specific pregnancy center. As a result of this Capstone Program, the center was left with a labeling system for the infant equipment given away and sold in their boutique that identifies appropriate time limits for infants to remain in specific pieces of equipment as well as other safe and developmentally appropriate ways to contain their child. This could be an area of healthcare advocacy and policy to implement these standards on each piece of infant equipment to promote more developmentally appropriate timeframes and choices for safe play. It is the goal of the project to continue to bridge the gap with the community and occupational therapy practitioners as well as other therapeutic providers. Therapists can fill a vital role with community based intervention and healthcare prevention in the community.

The long term hypothesis to potentially be completed to support this study is that the overuse of infant equipment limits tummy time exposure, free play and exploration and crawling which does not allow for effective upper body coordination and strength to develop, later affecting handwriting and school based skills. The research on infant equipment use and its

effect on motor skill acquisition and its later effects on school skills is very limited. Future research in this area would offer a greater understanding of ways to implement strategies within the community if research reveals a statistically sizable relationship in this area.

Strengths and Limitations

This project set forth with a goal to create a grassroots effort to increase education and awareness of appropriate infant development, the benefits of tummy time and the impact of overuse of infant equipment. The educational course outcomes are a relative strength for the Capstone Project study. Participants reported positive gains and satisfaction from the program content, specifically with the “Mommy and Me” play time component. This project was able to open a door within the community for occupational therapy to serve and be a part of impactful change within the community, reinforcing the goals of Healthy People 2020.

The sample size for this study of 11 participants is a relative weakness, limiting the scope of responses and data pool. It would be beneficial to broaden the scope of this study as well to include participants from a wide variety of cultural and socioeconomic statuses to expand the sample size as well as evaluate for sizable differences among populations. However, by nature of the setting, a homogenous group is an expectation. It is also increasingly important to take into consideration the data results as reported by the participants. Data was self-reported and appears to be skewed to the positive, potentially resultant from participants answering based upon what they perceived to be the “correct” response. It is presumed that this data pool does not capture a full picture of each individual’s actual equipment use and tummy time practices.

Future Research

The goal of this Capstone Project was to provide an entry level platform for continued study in this area. Research on the topic of infant motor skill acquisition and infant equipment use is limited. Further research is needed to fully conceptualize the impact that reduced tummy time and excessive amounts of time spent in equipment has long term. Research in the area of handwriting deficits due to limited or no crawling or limited or no tummy time is projected as further research to support the implications of this study. It is also projected that research on consistent use of technology such as tablets, computers, smart phones, etc. and its relationship with motor skills acquisition would be a valuable and pertinent follow up with the 4-16 year old generation as well.

Summary

This descriptive study and Capstone Project on infant equipment use and its potential impact on motor skill development has shown that there is a relationship in the amount of equipment in the home and the amount of hours infants spend in it. This study shows the preference for the use of infant swings and walkers in the home at an average of 15 hours per week spent in equipment. Most mothers involved in this study have an education less than high school and do not work outside the home, suggesting that potentially these mothers will utilize more infant equipment and provide less tummy time to their children although the data is insignificant in support at this time.

As a result, the impact of reduced tummy time, which per mother report is less than 10 minutes per day on average; infants are spending more time in equipment and less on the floor. It was suspected that this results in potential motor development at a slower rate or at a lesser quality which could affect school skill performance and motor acquisition. This is worth of

further investigation in a more rigorous study to fully understand the scope of impact. Lastly, it is important to educate parents on the benefits of tummy time, implications for overuse of infant equipment and positive solutions for interaction with their children.

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Appendix A: Facility Letter of Consent

Institutional Review Board
Eastern Kentucky University
521 Lancaster Avenue
Richmond, Kentucky 40475

Subject: Letter of Authorization to Conduct Research at _____ Pregnancy Center

Dear Institutional Review Board:

This letter will serve as authorization for Eastern Kentucky University (EKU) researcher, Ashleigh Toy, to conduct the research project entitled, Container Culture: An Education Program to Reduce the Over-Use of Infant Equipment through Community Based Intervention, at _____ Pregnancy Center in _____, Kentucky.

Center acknowledges that it has reviewed the protocol presented by the researcher, as well as the associated risks to the Facility and participants. The Facility accepts the protocol and the associated risks to the Facility, and authorizes the research project to proceed. The research project may be implemented at the Facility upon approval from the EKU Institutional Review Board.

If we have any concerns or require additional information, we will contact the researcher and/or Eastern Kentucky University Department of Occupational Therapy.

Sincerely,

Facility's Authorized Signatory

Date

Printed Name

Title of Authorized Signatory

Appendix B: Educational Course Outline & Power Points

(Completed in a weekly succession on Wednesdays as part of a comprehensive educational program provided by New Beginnings)

Session One:

- * Overview & Introduction (5 minutes)
- * Infant Development (20 minutes)
- * Impact of Equipment & Environmental Influences on Development (10 minutes)
- * Developmental Play & Positive Intervention Supports (20 minutes)
- * Wrap-Up & Questions (10 minutes)

Session Two:


- * Overview & Intro (10 minutes)
- * Play, Nutrition & Social Interaction & Its Importance (20 minutes)
- * Intervention Strategies/ Positive & Safe Ways to Interact with Your Child (20 Minutes)
- * Wrap-Up & Questions (10 minutes)

Session One

12/7/2016

Child Development
Ashleigh Toy, MS, OTR/L, OTDS


Welcome!



- Introduction
- What are we going to talk about?
- Why does it matter?
- Ages of our babies


Development

- Developmental milestones
 - Brain triples in size in first 2 years
 - Social
 - Language
 - Gross & Fine Motor (proximal to distal development)
- You can affect your child's development in many positive ways
 - Development is influenced heavily by experience.
 - Pros/Cons
 - Relationships help the brain grow
 - Video



Development

- ALL children develop at different rates
 - Don't compare
 - Most important to meet milestones rather than the rate at which they do
 - 0-3 higher growth than any other time (700 synapses a minute!)

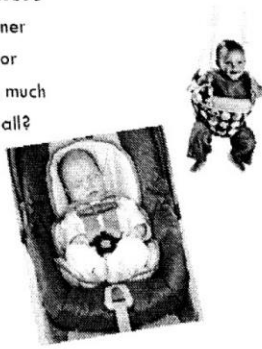


Development

- You can affect your child's development in many positive ways
 - Development is influenced heavily by experience.
 - Pros/Cons
 - Relationships help the brain grow
 - Video

Infant Containers


- What is a container
- What are they for
- How much is too much
- Are they OK at all?



12/1/2016

Equipment

- Why can they be problematic
- Development
- School age kids
- Everything starts in infancy


A black and white photograph of a baby sitting in a bouncer. The bouncer has a circular base and a mesh-like enclosure. The baby is looking towards the camera.

Equipment

- Optimum learning & motor development
- There are SAFE options
- Why does it matter anyway?!
- The Light Switch Effect
- Not impossible to undo but much more open in first years

What can I change?

- Next week
- Safe options
- Effective toys you can make at home out of things you already have
- Easy and fun ways to play with your baby!
- If you change the beginning of the story, you change the whole story!!

A black and white photograph of a baby with curly hair, smiling broadly. The baby is wearing a light-colored top and has their hands near their mouth.


Session TWO

12/7/2016

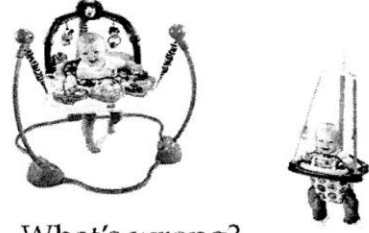
Container Culture
{ Ashleigh Toy, MS, OTDS, OTR/L




Whats wrong?



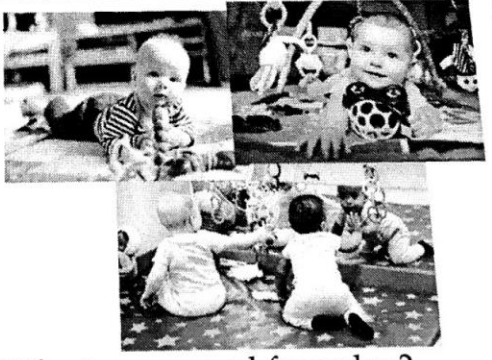
Babies love faces!



What's wrong?



Babies love to move!




Why tummy and free play?


12/7/2016

⌘ Tummy Time- at least 30 minutes awake per day BUT as often as possible

⌘ Equipment- 10-15 minutes at a time with 30+ minutes breaks on floor or in parent care in between



Important Info



Favorite Toys

Appendix C: Participant Informed Consent

Consent to Participate in a Research Study

Why am I being asked to participate in this research?

You are being invited to take part in a research study entitled: *Container Culture: An Education Program to Reduce the Over-Use of Infant Equipment through Community Based Intervention*. You are being invited to participate in this research study because you are a participant in New Beginnings Pregnancy Center and have or will be having an infant in your care. Your participation in this study is completely voluntary and you are able to withdrawal at any time.

Who is doing the study?

The person in charge of this study is Ashleigh R. Toy at Eastern Kentucky University. Ms. Toy is being guided in this research by Dr. Shirley O'Brien [Advisor]. There may be other people on the research team assisting at different times during the study.

What is the purpose of the study?

The purpose of this program is to design and implement an educational program for at risk families at New Beginnings Pregnancy Center to inform them about the importance of tummy time, the implications of consistent container use and to offer safe, easy and effective solutions to promote optimal health and development through safe and timely acquisition of motor milestones, positive ways to play with your infant and safe options to use in place of containers. Secondly, to evaluate the program using pre and post studies to determine parent motivation for using containers, length of time used and reason for use, benefit/gain/loss of knowledge learned during program.

Where is the study going to take place and how long will it last?

The research procedures will be conducted at _____ Pregnancy Center in _____ Kentucky in the form of 2 education forums designed to offer helpful parenting information to promote healthy motor development and play skills. You will be given a time study to fill out over the course of 1 week prior to the educational courses start date and a survey prior to the sessions as well as at the end of the sessions consisting of approximately 10 questions to assess knowledge gained.

What will I be asked to do?

During the sessions you will attend to prepared information, each of 2 sessions lasting approximately 60 minutes. Prior to the sessions you will be asked to complete a time study obtaining information regarding infant equipment use at home and will be asked to complete a short survey of 10 questions both at the beginning of the sessions and at the conclusion. A sample session is as follows.

Session One:

- * Overview & Introduction (5 minutes)
- * Infant Development (20 minutes)
- * Impact of Equipment & Environmental Influences on Development (10 minutes)

- * Developmental Play & Positive Intervention Supports (20 minutes)
- * Wrap-Up & Questions (10 minutes)

Are there reasons why I should not take part in this study?

No. The experience is believed to be positive. Although the courses are aimed toward parents with infants or expectant mothers, it is perceived that the educational information would be beneficial to anyone.

What are the possible risks and discomforts?

To the best of my knowledge there is not more risk of harm than you would experience in daily life.

Although unlikely and we have made every effort to minimize this, you may find some questions we ask you (or some procedures we ask you to do) to be upsetting or stressful. If so, we can tell you about some people who may be able to help you with these feelings.

Will I benefit from taking part in this study?

There is no guarantee that you will get any benefit from taking part in this study. However, it is perceived that the information obtained will be of benefit educationally and emotionally to your family. We cannot and do not guarantee that you will receive any benefits from this study.

Do I have to take part in this study?

If you decide to take part in the study, it should be because you really want to volunteer. You will not lose any benefits or rights you would normally have if you choose not to volunteer. You can stop at any time during the study and still keep the benefits and rights you had before volunteering. If you do not want to be in the study, there are no other choices except to not take part in the study.

What will it cost me to participate?

There are no costs associated with taking part in this study.

You will not receive any payment or reward for taking part in this study.

Who will see the information I give?

Your information will be combined with information from other people taking part in the study. When we write up the study to share it with other researchers, we will write about this combined information. You will not be identified in these written materials in any way. The researcher will ensure all data is anonymous as it is collected as well as in its reporting.

Can my taking part in the study end early?

If you decide to take part in the study, you still have the right to decide at any time that you no longer want to participate. You will not be treated differently if you decide to stop taking part in the study.

What happens if I get hurt or sick during the study?

If you believe you are hurt or if you get sick because of something that is done during the study, you should call Ashleigh Toy at (859) 771-3232 immediately. It is important for you to

understand that Eastern Kentucky University will not pay for the cost of any care or treatment that might be necessary because you get hurt or sick while taking part in this study as participation is voluntary and risks and benefits are stated prior to participation. That cost will be your responsibility. Also, Eastern Kentucky University will not pay for any wages you may lose if you are harmed by this study.

Usually, medical costs that result from research-related harm cannot be included as regular medical costs. Therefore, the costs related to your child's care and treatment because of something that is done during the study will be your responsibility. You should ask your insurer if you have any questions about your insurer's willingness to pay under these circumstances.

What if I have questions?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the investigator, Ashleigh Toy at (859) 771-3232. If you have any questions about your rights as a research volunteer, contact the staff in the Division of Sponsored Programs at Eastern Kentucky University at 859-622-3636. We will give you a copy of this consent form to take with you.

You will be told if any new information is learned which may affect your condition or influence your willingness to continue taking part in this study.

I have thoroughly read this document, understand its contents, have been given an opportunity to have my questions answered, and agree to participate in this research project.

Signature of person agreeing to take part in the study

Date

Printed name of person taking part in the study

Name of person providing information to subject

Appendix D: Pre-Course Survey

(If you have more than one child, please report on the child that is closest to 1 year of age)

1. What age is/are your child/children?

_____ years, _____ months
 _____ years, _____ months
 _____ years, _____ months

Comments:

2. Please check the motor skills below that your child is currently exhibiting or has already exhibited. Check all that apply. (leave open ones they have not yet exhibited)

- Rolling over independently
- Pushing up on elbows when on belly
- Sitting up without support
- Army crawling on belly
- Crawling on all fours
- Cruising around furniture
- Walking with hands held
- Walking independently

- My child is not currently exhibiting any of the listed motor skills at this time
- Other:

Comments:

3. Which of the following devices have you used or do you use in your home? Check all that apply.

- Walker
- Exersaucer
- Stationary Jumper
- Hanging Jumper
- Clip In Car seat
- Bumbo Seat
- Infant Swing
- Other:

Comments:

4. On average, how many hours per day do you feel like you use all of these pieces of equipment combined? Please check one.

less than 1 hour 1-3 hours 3-5 hours more than 5 hours

Comments:

5. Which device do you use the most often? Check only one answer.

- Walker
- Exersaucer
- Stationary Jumper
- Hanging Jumper
- Clip In Car seat
- Bumbo Seat
- Infant Swing
- Other:

Comments:

6. Most of the time, are you doing another task away from your child during the time your child is in a piece of infant equipment? Please check one.

Yes No

Comments:

7. What is your motivation for using the equipment with your infant? Please check one.

It's easiest It's safest I am not sure what else to do My child enjoys it

Comments:

8. How much time does your child spend on their tummy each day? Please check one.

0-10 minutes 10-30 minutes 30-60 minutes Over 60 minutes

Comments:

9. In which position do you typically place your child to sleep? Please check one.

Back Stomach Side-lying It varies

Comments:

10. I feel well equipped with strategies to play with and position my child. Please check one.

Strongly agree Disagree Agree Strongly Disagree

Comments:

Appendix E: Post-Course Survey

1. I have a better understanding of my child’s development. Please check one.

- Strongly agree Disagree Agree Strongly Disagree

Comments:

2. I feel I have the support I need in my role as a parent. Please check one.

- Strongly agree Disagree Agree Strongly Disagree

Comments:

3. I feel that I better understand how to effectively use infant equipment. Please check one.

- Strongly agree Disagree Agree Strongly Disagree

Comments:

4. I feel the information I learned was valuable to my family. Please check one.

- Strongly agree Disagree Agree Strongly Disagree

Comments:

5. I can identify positive ways to interact safely and effectively with my child. Please check one.

- Strongly agree Disagree Agree Strongly Disagree

Comments:

I am able to find new developmentally appropriate ways to play with my child. Please check one.

- Strongly agree Disagree Agree Strongly Disagree

Comments:

6. I plan to use less infant equipment in my home. Please check one.

- Strongly agree Disagree Agree Strongly Disagree

Comments:

7. I understand the importance of tummy time. Please check one.

- Strongly agree Disagree Agree Strongly Disagree

Comments:

8. I understand how tummy time affects my child's development. Please check one.

- Strongly agree Disagree Agree Strongly Disagree

Comments:

9. I will implement the principles learned in my home. Please check one.

- Strongly agree Disagree Agree Strongly Disagree

Comments:

Appendix F: Parent Demographics Intake Form

Contact Information

Parent initials: _____

Demographics

Parent's Age: _____

Last grade attending school: _____

Do you work outside the home: **Yes/No**

What type of employment: **Full time/Part time/ as needed**

Who lives in the home with the child (Circle all that apply): **Both Parents/Mom only/Dad only/Siblings/Other:** _____

Childs Initials: _____

Age of child: _____

Does your child have any sizable medical conditions or developmental delays: **Yes/No**
If yes please specify diagnosis: _____

Do you have any concerns regarding your child's development: **Yes/No**

Does the child attend daycare: **Yes/No**

Appendix H: IRB Approval

Graduate Education and Research
Division of Sponsored Programs
Institutional Review Board

EASTERN KENTUCKY UNIVERSITY
Serving Kentuckians Since 1906

Jones 414, Coates CPO 20
521 Lancaster Avenue
Richmond, Kentucky 40475-3102
(859) 622-3636; Fax (859) 622-6610
<http://www.sponsoredprograms.eku.edu>

NOTICE OF IRB APPROVAL**Protocol Number: 16-212**

Institutional Review Board IRB00002836, DHHS FWA00003332

Review Type: Full ExpeditedApproval Type: New Extension of Time Revision Continuing ReviewPrincipal Investigator: **Ashleigh R. Toy**Faculty Advisor: **Dr. Shirley O'Brien**Project Title: **Container Culture: An Education Program to Reduce the Over-Use of Infant Equipment through Community**Approval Date: **May 3, 2016**Expiration Date: **8/30/16**Approved by: **Dr. Tara Shepperson, IRB Member**

This document confirms that the Institutional Review Board (IRB) has approved the above referenced research project as outlined in the application submitted for IRB review with an immediate effective date.

Principal Investigator Responsibilities: It is the responsibility of the principal investigator to ensure that all investigators and staff associated with this study meet the training requirements for conducting research involving human subjects, follow the approved protocol, use only the approved forms, keep appropriate research records, and comply with applicable University policies and state and federal regulations.

Consent Forms: All subjects must receive a copy of the consent form as approved with the EKU IRB approval stamp. Copies of the signed consent forms must be kept on file unless a waiver has been granted by the IRB.

Adverse Events: Any adverse or unexpected events that occur in conjunction with this study must be reported to the IRB within ten calendar days of the occurrence.

Research Records: Accurate and detailed research records must be maintained for a minimum of three years following the completion of the research and are subject to audit.

Changes to Approved Research Protocol: If changes to the approved research protocol become necessary, a description of those changes must be submitted for IRB review and approval prior to implementation. Some changes may be approved by expedited review while others may require full IRB review. Changes include, but are not limited to, those involving study personnel, consent forms, subjects, and procedures.

Annual IRB Continuing Review: This approval is valid through the expiration date noted above and is subject to continuing IRB review on an annual basis for as long as the study is active. It is the responsibility of the principal investigator to submit the annual continuing review request and receive approval prior to the anniversary date of the approval. Continuing reviews may be used to continue a project for up to three years from the original approval date, after which time a new application must be filed for IRB review and approval.

Final Report: Within 30 days from the expiration of the project, a final report must be filed with the IRB. A copy of the research results or an abstract from a resulting publication or presentation must be attached. If copies of significant new findings are provided to the research subjects, a copy must be also be provided to the IRB with the final report.

Other Provisions of Approval, if applicable: None

Please contact Sponsored Programs at 859-622-3636 or send email to tiffany.hamblin@eku.edu or lisa.royalty@eku.edu with questions about this approval or reporting requirements.



Eastern Kentucky University is an Equal Opportunity/Affirmative Action Employer and Educational Institution

Running Head: CONTAINER CULTURE: AN EDUCATION PROGRAM

Consent to Participate in a Research Study

Why am I being asked to participate in this research?

You are being invited to take part in a research study entitled: *Container Culture: An Education Program to Reduce the Over-Use of Infant Equipment through Community Based Intervention*. You are being invited to participate in this research study because you are a participant in New Beginnings Pregnancy Center and have or will be having an infant in your care. Your participation in this study is completely voluntary and you are able to withdrawal at any time.

Who is doing the study?

The person in charge of this study is Ashleigh R. Toy at Eastern Kentucky University. Ms. Toy is being guided in this research by Dr. Shirley O'Brien [Advisor]. There may be other people on the research team assisting at different times during the study.

What is the purpose of the study?

The purpose of this program is to design and implement an educational program for at risk families at New Beginnings Pregnancy Center to inform them about the importance of tummy time, the implications of consistent container use and to offer safe, easy and effective solutions to promote optimal health and development through safe and timely acquisition of motor milestones, positive ways to play with your infant and safe options to use in place of containers. Secondly, to evaluate the program using pre and post studies to determine parent motivation for using containers, length of time used and reason for use, benefit/gain/loss of knowledge learned during program.

Where is the study going to take place and how long will it last?

The research procedures will be conducted at New Beginnings Pregnancy Center in Winchester, Kentucky in the form of 2 education forums designed to offer helpful parenting information to promote healthy motor development and play skills. You will be given a time study to fill out over the course of 1 week prior to the educational courses start date and a survey prior to the sessions as well as at the end of the sessions consisting of approximately 10 questions to assess knowledge gained.

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- * Impact of Equipment & Environmental Influences on Development (20 minutes)
- * Wrap-Up & Questions (10 minutes)

Running Head: CONTAINER CULTURE: AN EDUCATION PROGRAM

Are there reasons why I should not take part in this study?

No. The experience is believed to be positive. Although the courses are aimed toward parents with infants or expectant mothers, it is perceived that the educational information would be beneficial to anyone.

What are the possible risks and discomforts?

To the best of my knowledge there is not more risk of harm than you would experience in daily life. Although unlikely and we have made every effort to minimize this, you may find some questions we ask you (or some procedures we ask you to do) to be upsetting or stressful. If so, we can tell you about some people who may be able to help you with these feelings.

Will I benefit from taking part in this study?

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Usually, medical costs that result from research-related harm cannot be included as regular medical costs. Therefore, the costs related to your child's care and treatment because of something that is done during

Running Head: CONTAINER CULTURE: AN EDUCATION PROGRAM

the study will be your responsibility. You should ask your insurer if you have any questions about your insurer's willingness to pay under these circumstances.

What if I have questions?

Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the investigator, Ashleigh Toy at (859) 771-3232. If you have any questions about your rights as a research volunteer, contact the staff in the Division of Sponsored Programs at Eastern Kentucky University at 859-622-3636. We will give you a copy of this consent form to take with you.

You will be told if any new information is learned which may affect your condition or influence your willingness to continue taking part in this study.

I have thoroughly read this document, understand its contents, have been given an opportunity to have my questions answered, and agree to participate in this research project.

Signature of person agreeing to take part in the study Date

Printed name of person taking part in the study

Name of person providing information to subject

