

Pediatric Positioning and Handling at Las Obras

Statement of Need

As a nation, Guatemala is one of most populated in Central America comprised of primarily poor, rural, young and indigenous peoples¹. The 2010 population estimate of Guatemala was 14.377 million with the rural population accounting for half of the Guatemalan people at 7.148 million². The World Development Indicators and Global Development Finance estimate 51% of Guatemalan citizens currently live in poverty and of those impoverished, 75% live in rural areas². Of the national population, children ages birth to 14 years comprise 41.9% of the total population². The World Health Organization reports the public health expenditure of Guatemala is among the lowest in the Americas at 1% of the GDP and that 20% of its population lacks regular access to health services¹. Infant mortality rates of 39 per 100,000 live births and the under five-years-of-age mortality of 48 per 100,000 place Guatemala third and fourth worst, respectively, in the Americas¹. Guatemala is a nation with limited financial resources, low health and wellness among young children, and less than adequate access to healthcare.

Antigua, Guatemala is one example of a thriving Guatemalan community that has better than average financial resources and access to healthcare that, at times, is called upon to support the surrounding rural communities with limited resources and healthcare access. The most recent population estimate of Antigua, Guatemala was 32,218 people counted in the November 2002 census conducted by the Instituto Nacional de Estadística³. Antigua, Guatemala, particularly the Las Obras Hospital, a rural clinic, and a school for children with disabilities, have been sites for service trips by students and faculty from the University of North Carolina PT Outreach in prior years. Las Obras Sociales del Hermano Pedro (Las Obras) is a multiservice facility in Antigua, Guatemala that provides healthcare to over 300 children and adults who are mentally or physically challenged or chronically ill. The nursery and children's ward serves young infants and children ranging in age from birth to 18 years-old. Some children may remain a patient at the hospital for days to years. It has been estimated that approximately 20 children are provided therapy and care at Las Obras on an average day. Pediatric therapy sessions are typically conducted with one to two therapists interacting with the children in a group setting for a duration of two hours. Many of these children experience nourishment issues, medical disability,

are of lower than average size and maturity, are awaiting surgical procedures, and have subsequent developmental delay and decreased functional movement skills. These young high-risk children (birth to 5 years of age) are in need of developmental physical therapy interventions to promote symmetry, muscle balance and gross motor movement, using postural support and facilitation techniques. A developmental physical therapy intervention that is delivered early in the child's life has the advantages of brain plasticity, growth, development and neuronal activity⁴. Additionally, early physical therapy interventions may prevent further developmental delay and may enable better achievement of gross motor skills and development^{5, 6, 7, 8, 9}.

On a recent UNC PT Outreach service trip in May of 2011, a visiting skilled pediatric physical therapist observed the interaction between Las Obras therapists and young patients with emerging motor skills¹⁰. It became apparent to this therapist that there was a gap between generally accepted modern pediatric physical therapy practice of positioning and handling techniques based on American standards and recent literature^{10,5,6,7,8,9} and the interventions being used with the children at Las Obras. Previously it was noted that a review of up-to-date education on the topic of facilitating motor development through positioning and handling techniques is needed among the therapy and nursing staff at Las Obras hospital¹⁰. The physical therapy and nursing staff of Las Obras have expressed interest in continuing education regarding their treatment of pediatric patients, specifically for positioning and handling¹⁰.

It is hypothesized that the pediatric patients of Las Obras will be more likely to achieve motor milestones attainment following skilled positioning and handling developmental physical therapy from the staff of Las Obras. Motor milestone attainment is an important part of a young child's development and maturation. Gaining new forms of mobility such as creeping, crawling and walking are critically important to the child as it enables the child independence, lessens dependent contact with the caregiver, and allows the child to develop self-regulatory mechanisms, and personality traits such as autonomy, assertiveness, affection, and socialness^{11,12}. With independent mobility also comes exploration and physical activity all of which are important components leading to motor, perceptual and cognitive abilities^{11,12}. Achievement of motor milestones including crawling and walking are also important to socio-emotional development due to the association between new motor behavior and increased interactivity, cooperativeness, and affection between the child and caregiver as opposed to those children who

develop this skill later in childhood¹². For these reasons, it is imperative that therapy staff and nurses are educated on techniques that will facilitate improvements in a child's gross motor development while a patient at Las Obras Sociales del Hermano Pedro. By providing children with early physical therapy intervention, during a time when there is plasticity and major losses in motor development have not yet occurred, it is plausible that the child will experience less life-long disability and be more functional in their daily lives in society^{5, 6, 7, 8, 9, 10}.

The goal of this health and wellness program is to provide education to physical therapists and nursing staff regarding positioning and handling techniques for the care of young children birth to five years of age at Las Obras. It is our hope that with our educational program the therapy and nursing staff will learn a few techniques to foster developmental progress and motor skill acquisition in the children they serve. For the purposes of this project it is imperative to focus on a small number of therapeutic techniques that can be easily taught and implemented by therapy and nursing staff in a time efficient manner so as not to overburden the limited staff at Las Obras.

Background

Development of gross motor skills such as walking are considerably varied among groups of children. It has been described in the literature that American and European infants have a mean walking age of 12 to 13 months¹³. In the target population of Guatemalan children, walking is typically achieved 2 to 3 months later than their American peers¹³. Researchers Kagan and Klein underwent a research study of the cultural differences in early child development particularly in rural indigenous mestizo Guatemalan children¹⁴. The researchers found "unstimulating" parenting predominated during the first year and contributed to slow development compared to Caucasian norms¹⁴. Delays in neuromotor development can also be a result of prolonged hospitalizations, particularly in small size and small length children and undernourished children which is common amongst Guatemalan infants^{15,16}.

Elements of the Health Belief Model and the Transtheoretical Model will be integrated into this health and wellness educational program. Components of the Health Belief Model include perceived susceptibility (high risk of developmental delay in the population being served by the nurses and therapists at Las Obras), perceived severity (risk of disability and decreased quality of

life in the children if therapists and staff do not adopt therapy techniques), perceived benefits (improved gross motor skills in their patients), perceived barriers (difficulty communicating techniques to the staff due to language barrier, bias towards prior preferred techniques, time required to spend providing therapy), cues to action (if possible, demonstration of a new technique resulting in improved gross motor outcome), and self-efficacy (instill confidence in nurses and therapists and provide materials for their future reference)¹⁷. The Health Belief Model has been reported to be a “major organizing framework for explaining and predicting acceptance of health and medical care recommendations.¹⁷” The transtheoretical model will be helpful in interpreting the stages of change the nurses and physical therapy staff of Las Obras are experiencing. These stages of change include precontemplation, contemplation, preparation, action, maintenance, and termination¹⁸. The Transtheoretical Model has been shown in the literature to demonstrate “dramatic improvements in recruitment, retention, and progress using stage-matched interventions.¹⁸” It is our hope that by utilizing these two models to guide the program development and delivery that we will accomplish a meaningful and successful implementation of the educational objectives.

Assessment

“Pediatric Positioning and Handling at Las Obras” is a health and wellness educational program for the therapy and nursing staff of Las Obras Sociales del Hermano Pedro Hospital of Antigua, Guatemala. The goal of this program is to provide education to the physical therapists and nursing staff regarding positioning and handling techniques for the care of young children birth to five years of age at a hospital in Guatemala. In response to an expressed interest from the therapy staff of Las Obras and the identified lack of up-to-date education by a visiting skilled pediatric physical therapist, an educational intervention is being developed to provide this instruction on pediatric positioning and handling.

In the days prior to the educational intervention, an informal observation of the positioning and handling techniques will be assessed. It is expected that none or limited knowledge of the techniques presented in the intervention will be present prior to the educational intervention as suggested by informal observation by a visiting skilled pediatric therapist in May of 2011¹⁰. A description of observed intervention methods lead by the physical therapy staff prior to the educational intervention will be recorded for comparison to the intervention methods utilized

after the educational intervention. A brief self-assessment of the participating physical therapy and nursing staff will also take place before and after the intervention to gather information regarding the efficacy of this health and wellness program and its ability to meet the needs of the community.

Program Goals/Aims

The primary goal of “Pediatric Positioning and Handling at Los Obras” is to provide education to the therapy and nursing staff of Las Obras hospital regarding developmentally appropriate positioning and handling to facilitate gross motor skills in the pediatric patients they treat.

Specific Aims:

- To increase awareness and knowledge of the benefits of regular developmental physical therapy for hospitalized children at risk for developmental delay
- To advance the physical therapists’ and nurses’ understanding of gross motor development in children birth to five years of age
- To develop and demonstrate understanding of therapeutic handling strategies to improve sensorimotor performance and functional abilities in the pediatric patients of Las Obras
- To develop and demonstrate understanding of positioning techniques for children to facilitate gains in development and independent activity

Methods:

Proposed Intervention:

“Pediatric Positioning and Handling at Las Obras” will have three phases: initial observation, education and program implementation, and assessment of outcomes. Due to time restrictions in Antigua, Guatemala, the intervention phases will take place in a condensed frame of five days. The initial observation phase will take place on day one, education and program implementation on days two-four, and assessment of outcomes on day five.

Site Parameters:

The site of this wellness program will take place at Las Obras Sociales del Hermano Pedro, a multiservice facility in the city of Antigua, Guatemala that provides healthcare to over 300 children and adults who are mentally or physically challenged or chronically ill. The educational

intervention will take place in the physical therapy room of Las Obras with space for the poster presentation and hands-on demonstration based learning experience.

Intervention Phase I: Initial Observation

The initial observation phase will provide baseline data for the participating physical therapy and nursing staff. A comprehensive observation of current patient interactions will be documented on each participating pediatric therapist and nurse available. Specifically notation will be made concerning time spent providing therapy to each child, types of therapy and techniques performed with the patients, and understanding of gross motor development and facilitation of developmental motor skills. Participating pediatric therapists and nurses may be asked to complete a brief verbal self-assessment to rate their level of understanding and use of pediatric positioning and handling to facilitate gross motor development.

Rationale for Selected Initial Observation Assessment:

Self-assessment prior to and following learning is a topic that has been well researched and is a method purported to provide quality feedback¹⁹. Self-assessment prior to the intervention will provide baseline subjective data for the participants. The application of the same set of self-assessment questions will allow comparison to be drawn between pre-intervention and post-intervention familiarity with the topics of the intervention among the Las Obras therapy and nursing staff. Comprehensive observation of the therapy and nursing staff in the four aforementioned areas (amount of time for therapy, types of therapy and techniques, understanding of gross motor development, and facilitation of motor skills) prior to the educational intervention will provide objective baseline information to be compared to observation data compiled in the assessment of outcome phase.

Intervention Phase II: Education and Program Implementation

Participating physical therapy and nursing staff as well as visiting physical therapists and student physical therapists will gather in the physical therapy treatment room at Las Obras for the educational inservice. The first portion of the educational inservice will be a review of topics of gross motor development and instruction on therapeutic handling and positioning skills that facilitate development of motor skills through a presentation of poster materials developed for the nursery of Las Obras. The two primary focus areas for the educational inservice are: Feeding

the Infant or Child and Teaching the Child to Walk. An introduction to two other therapeutic handling and positioning skills topics which include environmental modifications to facilitate development in the nursery and positioning of the infant or child in the nursery will be incorporated with the group as time permits. The second half of the educational inservice will include hands-on demonstration and practice of the feeding and teaching to walk skills. The physical therapy and nursing staff will be provided with printed and laminated visual depictions of the skills taught with descriptions for future reference via the prepared posters. Time will be allotted to take and answer questions during both portions of the educational program to facilitate participants' learning.

The outcome of "Pediatric Positioning and Handling at Las Obras" educational intervention will be assessed by demonstrated competency during the hands-on learning segment. The educational intervention will also be assessed by the staff's ability to select a technique from the printed handout to be used with a patient. Positive reinforcement will be provided throughout the remainder of the intervention phases to support those staff members utilizing learned positioning and handling techniques to reinforce skills learned.

Intervention Phase III: Assessment of Outcomes

In the days following the educational intervention, utilization of learned positioning and handling techniques will be monitored to assess the integration of newly learned concepts into daily treatment provision. Monitoring will address the same factors as previously noted in initial assessment including time spent providing therapy to each child, types of therapy and techniques performed with the patients, and understanding of gross motor development and facilitation of developmental motor skills. At the conclusion of the educational inservice and implementation into practice, participating physical therapy and nursing staff will be asked to briefly self-assess their learning as a result of the intervention. The self-assessment will be identical to the one administered at the initial assessment and will ask the participant to rate their level of understanding of pediatric positioning and handling to facilitate gross motor development. The participants will also provide feedback regarding the educational in-service's applicability and usefulness to their practice, clarity and understanding of the learning experience, and suggestions for future UNC PT Outreach Service Teams.

Rationale for Selected Outcome Assessments:

Self-assessment following learning is a topic that has been well researched and is a method purported to provide quality feedback¹⁹. Self-assessment following the educational intervention will provide subjective data to be compared to pre-intervention responses. Using this information, a conclusion may be drawn as to the effectiveness of this educational intervention for physical therapy and nursing staff of Las Obras treating children with or at risk for developmental delay. A comprehensive observation and monitoring of the staff in the four aforementioned areas (amount of time for therapy, types of therapy and techniques, understanding of gross motor development, and facilitation of motor skills) will be conducted in the same manner as it was for the pre-intervention assessment. The pre and post-intervention observation information will be compared to better understand learning and integration of the intervention into the staff's treatment of the pediatric patients.

Anticipated Outcomes:

Anticipated outcomes of the “Pediatric Positioning and Handling at Las Obras” wellness program include that by the conclusion of the weeklong intervention:

1. 80% of the participants will demonstrate an increase in awareness and knowledge of the benefits of regular developmental physical therapy for hospitalized children at risk for developmental delay as determined by the self-assessment
2. 80% of the participants will develop an advanced understanding of gross motor development in children birth to five years of age as measured by comparison of pre- and post-intervention assessment
3. 80% of the participants will develop and demonstrate an improved understanding of therapeutic handling strategies and positioning techniques for children to facilitate gains in development and independent activity evident by comparison of pre- and post-intervention observation and monitoring.

Program Evaluation

A comprehensive evaluation of the “Pediatric Positioning and Handling at Las Obras” wellness program will be done to assess the impact of this program, identify the limitations and barriers of the intervention, determine achievement of project aims, and provide future recommendations.

In the evaluation process, the progress towards the overall wellness program's goal and specific aims will be assessed. The first two specific aims of the wellness program are to "increase awareness and knowledge of the benefits of regular developmental physical therapy for hospitalized children at risk for developmental delay" and "advance the physical therapists' and nurses' understanding of gross motor development in children birth to five years of age."

Outcome evaluation can be conducted by comparing the pre-intervention and post-intervention assessments to measure the knowledge of the therapy and nursing staff members. Specific aim three and four are to "develop and demonstrate understanding of therapeutic handling strategies to improve sensorimotor performance and functional abilities in the pediatric patients" and "develop and demonstrate understanding of positioning techniques for children to facilitate gains in development and independent activity." Outcome evaluation to determine progress made toward these specific aims can be monitored through comparison of pre- and post-intervention observations of the therapy and nursing staff in addition to pre- and post-intervention assessments. These assessment techniques will provide the necessary information about change that takes place during the wellness program. The information will then be used to determine the impact of the program and achievement of the wellness project's aims. A post-intervention feedback survey will be distributed to participating nursing and therapy staff of Las Obras to qualitatively assess the effectiveness of the poster presentation, demonstration based presentation and hands on learning sessions.

Potential Barriers

There are a few potential barriers to the health and wellness program "Pediatric Positioning and Handling at Las Obras." This program requires participation of the therapy and nursing staff of Las Obras in a short window of only one week for initiation to implementation. The success of this program depends upon the cooperation and willingness to learn and then implement concepts learned by the nursing and therapy staff. Another potential barrier lies in the possible communication barrier that may be present between the local staff of Las Obras and the primary presenter of the program, and the students and faculty that comprise the UNC PT Outreach team visiting on the medical service trip. Avenues to mitigate the communication barrier will be sought including members from the UNC PT Outreach team serving as interpreters and communication through universal signs. Once initial observations of the first Intervention Phase have begun it will be possible to collaborate with UNC PT Outreach team members and the staff

of Las Obras to find ways to minimize potential barriers through the remainder of the health and wellness intervention program. In the event there are questions or concerns that arise after the weeklong UNC PT Outreach service trip questions and concerns must then be addressed by email or telephone communication at a distance.

Relevance and Synthesis

The health and wellness program “Pediatric Positioning and Handling at Las Obras,” addresses the needs of Antigua, Guatemala children at risk for developmental delay and disability at the community level. This health and wellness program provides the opportunity for the nursing and therapy staff of Las Obras to increase their understanding of gross motor development and improve their techniques of therapeutic handling and positioning to facilitate gains in motor skill development and acquisition. This health and wellness program will also help the primary presenter understand the relationships between nursing and therapy staff and the pediatric patient population as well as the primary presenter with the UNC PT Outreach team and their relationship with the Las Obras therapy and nursing staff. Based upon a spring 2011 community assessment¹⁰, there is need for updated education and review of specific techniques. “Pediatric Positioning and Handling at Las Obras” presents evidence-based pediatric therapeutic techniques that have been reported in the literature to improve gross motor skill development^{5,6,7,8,9}. These evidence based techniques presented and taught to the Las Obras therapy and nursing staff will be available to them for implementation in their treatment of pediatric patients. The “Pediatric Positioning and Handling at Las Obras” health and wellness program will contribute to the body of knowledge of educational interventions that can be implemented for international pediatric healthcare providers and programs for other underserved areas. Following the determination of the program evaluation results, areas for further development can be addressed to support improvement for future efforts with this community and future health and wellness programs.

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