Making a Case for Simulation in Global Health Preparation: A Multi-Institutional, Multi-Disciplinary Collaboration to Expand SUGAR Beyond Pediatrics

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**BACKGROUND**
- Simulation Use for Global Away Rotations (SUGAR) is a widely used, open-source pre-departure simulation curriculum designed to provide residents participating in global health electives the opportunity experience and debrief common emotional challenges encountered in resource-limited settings
- The initial eight SUGAR cases were all designed for use in inpatient global pediatrics

**OBJECTIVE**
- Create and disseminate an open-source learning environment where global health educators could receive the necessary training to implement SUGAR at their institutions
- Support and encourage creation of SUGAR cases in disciplines beyond pediatrics and in different clinical settings

**METHODS**
- The original SUGAR creators provided guidance and forgetting support for creation of new cases by facilitators trained in the curriculum
- All authors agreed new cases would be made available for free on sugarprep.org

**OUTCOMES**
- 140 Facilitators, 85 Institutions
- 6 Countries

**TIMELINE TO CROWD-SOURCING**
- 2012: Idea to formally develop simulation curriculum for global health prep
- 2013: Eight cases created and piloted through Midwest Consortium of Global Child Health Educators
- 2014: First workshop at APPD Spring Meeting trains 20+ institutions to facilitate SUGAR
- 2015: Developed open source training website with video training and downloadable cases
- 2015: Conference circuit to disseminate curriculum and to train more facilitators
- 2014: First SUGAR Manuscript sharing results of pilot

**CONCLUSIONS**
- By creating and disseminating an open-source curriculum that fills a need of global health educators and offering support for creation of new cases, we have been able to expand the curriculum beyond pediatrics
- This crowd-sourcing approach for collaboration could serve as a model for other educators with a novel curriculum looking to disseminate and expand their idea

**BACKGROUND**
- 2015-16: Crowd-sourced team of collaborators created and piloted new cases beyond pediatrics
Introduction

Alpha-thalassemia is widely reported in the Arabian Peninsula as one of the main causes of asymptomatic microcytic hypochromic red blood cells with or without anemia in the pediatric population. Prior to this study neither accurate diagnosis of alpha-thalassemia nor its genetic mutations had been described in Qatar.

Objectives

Discover the molecular basis of Alpha Thalassemia among the Qatari population.

This is the first study that provides information about the genetic mutations of alpha-thalassemia in the Qatari population.

Methods

School aged Qatari children exhibiting laboratory findings suggestive of hypochromic microcytic anemia were pooled from Qatari public schools. Those with iron deficiency anemia and β-thalassemia traits were ruled out and the sample was narrowed down to a group of 127 children with the suspicion of α-thalassemia.

The samples were screened for the presence of the αα3.7 deletion and the α-Snt, αPolyA (αt-Saudi), and αPolyA2 non-deletional mutations. The detection of the αα3.7 deletion was based on a multiplex gap-PCR assay. The assay for αPolyA1 (αt-Saudi), was based on mismatched primer PCR-RFLP. The methods for the detection of αPolyA2 and α-Snt non-deletional mutations are based on selective amplification of the α2-globin gene and subsequent restriction enzyme digestion of the amplified product.

All samples were first screened for the presence of the αα3.7 deletion. The αα3.7 heterozygotes with mild hematological indices as well as the homozygotes were not further analyzed and the diagnosis was considered final. The remaining samples were further screened for the presence of α-Snt, αPolyA1 (αt-Saudi), and αPolyA2 non-deletional mutations.

Results

Among the sample of 127 patients (Table 1), a total of 39.7% of patients exhibited the 3.7 kb deletion. 30% of the patients were heterozygous for the mutation, whereas 9.7% of the patients were homozygous for the mutation.

Subsequent screening was performed, of which 2.6% tested positive for the αPolyA1 (αt-Saudi), 0.8% tested positive for the α-Snt, and none of the patients had the αPolyA2 mutation.

<table>
<thead>
<tr>
<th>Genotype</th>
<th>N</th>
<th>Total (%)</th>
<th>Hb (g/L)</th>
<th>RBC (106/L)</th>
<th>MCV (%)</th>
<th>MCH (pg)</th>
<th>Hb A1 (%)</th>
<th>RDW (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>αα3.7/αβ</td>
<td>12</td>
<td>9.4%</td>
<td>11.8±1.1</td>
<td>10.0±1.30</td>
<td>5.6±0.6</td>
<td>46.6±4</td>
<td>66.5±2.8</td>
<td>10.9±0.8</td>
</tr>
<tr>
<td>ααβ/αβ</td>
<td>38</td>
<td>30.0%</td>
<td>12.2±1.1</td>
<td>9.4±1.46</td>
<td>5.0±0.6</td>
<td>36.5±4</td>
<td>74.8±3.9</td>
<td>11.4±1.6</td>
</tr>
<tr>
<td>αα/αα</td>
<td>1</td>
<td>0.8%</td>
<td>12.9</td>
<td>4.9</td>
<td>7.0</td>
<td>25.8</td>
<td>77.9±1.0</td>
<td>23.3±1.1</td>
</tr>
<tr>
<td>αβ/αβ</td>
<td>2</td>
<td>1.6%</td>
<td>12.0±1.6</td>
<td>11.6±1.24</td>
<td>5.1±0.1</td>
<td>50.5±2</td>
<td>77.7±1.0</td>
<td>23.3±2.4</td>
</tr>
<tr>
<td>α/α</td>
<td>1</td>
<td>0.8%</td>
<td>12.9</td>
<td>4.9</td>
<td>7.0</td>
<td>25.8</td>
<td>77.9±1.0</td>
<td>23.3±1.1</td>
</tr>
<tr>
<td>SS</td>
<td>15</td>
<td>12.8%</td>
<td>12.5±1.3</td>
<td>10.4±1.53</td>
<td>4.5±0.5</td>
<td>36.5±3</td>
<td>80.7±1.2</td>
<td>27.0±2.3</td>
</tr>
<tr>
<td>ND</td>
<td>58</td>
<td>45.6%</td>
<td>11.7±1.1</td>
<td>9±1.5</td>
<td>4.8±0.3</td>
<td>40.6±1</td>
<td>75.1±5.0</td>
<td>24.4±2.0</td>
</tr>
<tr>
<td>Total</td>
<td>127</td>
<td>100.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 39.4% had -α(3.7) deletion
- (heterozygotes 30.0%, homozygotes 9.4%)
- 2.6% were positive for the αPolyA1 deletion
- 0.8% positive for the α-Snt mutation

Conclusion

Our results suggest that a significant number of the Qatari pediatric population with microcytic hypochromic anemia are carriers of α-thal mutations where 3.7 was the most common gene detected in this population. However, 45.6% of the children failed to exhibit any of the above four mutations tested, this could potentially lead to further research.

References


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Background

Children are particularly susceptible to physical and psychological afflictions in the setting of disasters such as the earthquake that struck Nepal in April 2015. In Nepal, as in many developing countries around the world, there exists an extensive system of community health volunteers (referred to here as FCHVs) that provides preventive and curative services for predetermined aspects of maternal and child health. This cadre of FCHVs is well positioned to intervene for child health in crisis situations, but more research is needed to address how it can be optimally utilized.

Objectives

To determine the ways in which FCHVs assisted children in their communities during the earthquake relief response and elicit their ideas about how they could be better equipped to help decrease pediatric risk in future disaster situations.

Methods

In March 2016, FCHVs and community mothers from areas affected by the earthquake were recruited by purposive sampling for interviews and focus group discussions (FGDs), respectively. Key informants were identified and interviewed based on reputational case selection. All participants verbally consented to be part of the study. The audio-recorded data were obtained with the assistance of a translator (Nepali-English), transcribed in English, and coded by 2 independent researchers.

Results

Across 7 different regions, 14 interviews with FCHVs, 2 FGDs with community women, and 3 key informant interviews were conducted. Major themes were:

1) Functions that FCHVs performed to help children following the earthquake, including verbal dissemination of messages regarding safe water and proper sanitation, facilitation of transport of the wounded to health facilities, treatment of simple illnesses such as diarrhea and upper respiratory tract infections, provision of reassurance for psychological stress, and distribution of food supplements to prevent malnutrition.

“By working as an FCHV, I have been involved in taking care of many children, and I am seen as one of the mothers. I feel I have love and affection to every one of the children as if they are my own.”

2) Suggestions for uniform and universal training to help FCHVs be better prepared for future disasters, with specific requests for learning basic first aid and survival techniques with limited resources (e.g., construction of temporary shelters, staying warm, rationing food, etc.) as well as how to create resilience.

“Those kinds of training should be provided that can make the people psychologically strong so that they can be able to fight, be mentally strong before the earthquake.”

3) Interactions between relief organizations and FCHVs, in which FCHVs emphasized that they have good rapport with their communities and can collect data at the household level for agencies to effectively allocate aid to those in need.

“Outside organizations, they should coordinate better with the FCHV so that they can get the knowledge from the FCHV about the whole community – what might be the needed things – so that they can find out or prioritize the needs and provide assistance to the community.”

Conclusions

The international humanitarian community does not have the ability to respond immediately and comprehensively to all man-made and natural crises across the world, making it essential for local resources to be able to protect children in the aftermath of a disaster. In Nepal, FCHVs were instrumental in mitigating the detrimental effects on children’s health that occurred during the post-earthquake period, even without any specific emergency management training. Their experiences and recommendations can be used to help design adaptable disaster preparedness and response programs for FCHVs in Nepal (and community health volunteers in other contexts) as well as inform humanitarian organizations and governments on how to best incorporate them into relief efforts.
Nepal has a steadily declining yet unacceptably high Infant and Under-5 Child Mortality rates (34/1,000; 42/1,000, respectively). Pediatric population (under 14 years) constitutes 42.2% of the total population in Nepal. Such high morbidity and mortality from critical illness in children has led to the development and expansion of PICUs in Nepal.

Objective: This study aims to describe the structure and organization, patient profiles, costs, education, training, and research in Pediatric Critical Care services in Nepal.

**Background & Objective**

**Results**

- **Structure and Organization:**
  - 18 PICUs identified: Total 93 beds (1 bed/1,25,000 popn)
  - 67% of PICUs (n=12) established in the last 5 years
  - Average number of PICU beds: 5 (range from 2 – 10)
  - Most PICUs were of Mixed (Semi-Open) Model.

- **Patients/ Services:**
  - 80% patients were between 1-5 years.
  - 60% admissions due to respiratory distress/failure
  - 60% PICUs reported monthly census of >20.

- **Costs:**
  - Most patients (88%) belonged to low SE status.
  - Cost of PICU bed (self-pay): USD 25 ± 12 / day
  - Cost of Mechanical Ventilator: USD 33 ± 11 / day
  - Median 10% of families opted out of PICU care for financial reasons.

- **Education, Training, Research:**
  - Pediatric residency Programs in 60% of PICUs.
  - No EMR in any of the PICUs.
  - Regular PICU audits in only 56% of all PICUs.

**Conclusion**

Pediatric critical care services in Nepal is still in its infancy. This opens up opportunities for expansion, organization, training and improved delivery of pediatric critical care services.
Increased risk of perinatal mortality in facilities, even among low-risk or un-referred pregnancies, suggests key goal in reducing neonatal mortality is to increase access to facilities and skilled birth attendants for deliveries. - Kenyan efforts focused on providing free maternity care in facilities and discouraging use of TBAs.

**Research Purpose:** Identify trends in facility use and determine the association between delivery location and perinatal mortality in western Kenya.

**Strengths**
- Delivery location associated with key maternal, delivery, and neonatal characteristics.
- PMR higher in hospitals versus health centers and home.
- Significant increase in facility deliveries between 2009 and 2013 was associated with a decline in perinatal mortality.

**Limitations**
- No associated change in perinatal mortality.
- Percentage of facilities deliveries increased significantly over the time period.

**Sample Characteristics**

<table>
<thead>
<tr>
<th>Birth Attendant</th>
<th>Total Deliveries</th>
<th>Hospital (9%)</th>
<th>Health Center (17%)</th>
<th>Home (79%)</th>
<th>Other (3%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physician</td>
<td>619</td>
<td>31 (0.5)</td>
<td>136 (2.2)</td>
<td>162 (2.6)</td>
<td>2 (0.02)</td>
</tr>
<tr>
<td>Nurse/ Midwife</td>
<td>3683</td>
<td>965 (0.3)</td>
<td>429 (0.3)</td>
<td>111 (0.3)</td>
<td>2 (0.02)</td>
</tr>
<tr>
<td>Traditional BA</td>
<td>22 (0.5)</td>
<td>136 (2.2)</td>
<td>429 (0.3)</td>
<td>111 (0.3)</td>
<td>2 (0.02)</td>
</tr>
<tr>
<td>Family/Self</td>
<td>141</td>
<td>2 (0.02)</td>
<td>141 (0.3)</td>
<td>141 (0.3)</td>
<td>2 (0.02)</td>
</tr>
</tbody>
</table>

**Perinatal Deaths**
- Hospital: 295 (2.72)
- Health Center: 291 (2.68)
- Home: 476 (43.9)
- Other: 23 (2.1)

**Perinatal Mortality Rate**
- Hospital: 68.2
- Health Center: 29.6
- Home: 21.9
- Other: 49.8

*Deliveries classified as other likely occurred en route to another delivery location or outside a facility.

**Background**
- Despite global reductions in neonatal mortality, 2.7 million infants died in the first month of life in 2015.
- Some countries, including Kenya, saw in increase in neonatal deaths between 1990 and 2015.
- Key goal in reducing neonatal mortality is to increase access to facilities and skilled birth attendants for deliveries.
- Kenya efforts focused on providing free maternity care in facilities and discouraging use of TBAs.

**Materials and Methods**
- Used data from Kenya site of NICHD Global Network for Women’s and Children’s Health Research.
- Prospective, population-based observational study of pregnancy and neonatal outcomes.

**Summary**
- Significant increase in facility deliveries between 2009 and 2013 was not associated with a decline in perinatal mortality.
- Increased risk of perinatal mortality in facilities, even adjusting for maternal complications and neonatal risk factors.

**Strengths**
- Largest prospective cohort study to describe association between birth location and perinatal mortality in a LMIC.
- Trends in facility use and perinatal mortality consistent with Kenya Demographic Health Survey results.
- Ability to account for referral bias and potential for increased pregnancy risk factors in facility deliveries.

**Limitations**
- No difference between health center deliveries and home deliveries.
- Similar results in secondary analyses.

**Temporal Trends**
- Percentage of facilities deliveries increased significantly over the time period.
- No associated change in perinatal mortality.
- Significant fluctuation in perinatal mortality by quarter.

**Conclusions**
- Infants born at home had no greater risk of mortality than infants born in health facilities.
- Increased risk of perinatal mortality in facilities, even among low-risk or un-referred pregnancies, suggests poor quality of care at facilities.
- Delays in seeking referral and providing appropriate care for complicated pregnancies likely contributes to increased mortality at facilities.
- Next steps include identifying means to promote timely referrals and quality of care in facilities.
HELPING BABIES BREATHE 2ND EDITION: A STANDARDIZED APPROACH FOR REVISION OF A GLOBAL EDUCATIONAL PROGRAM

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Background

Helping Babies Breathe (HBB) is a skills-based curriculum in neonatal resuscitation shown to improve early neonatal mortality and stillbirth rates in low-resource settings. This low-cost and portable educational program uses pictorial training materials with simplified text. HBB development was guided by ILCOR 2010 guidelines and field testing in India, Kenya and Pakistan. The algorithm for care focuses on drying, assessment, stimulation, clearing the airway and ventilation with bag and mask as needed within the first minute after birth (The Golden Minute).

Since HBB’s launch in 2010 through a Global Development Alliance (GDA), more than 300,000 providers have been trained in 77 countries globally with translation of materials into 26 languages.

Despite these significant advances, performance gaps in the implementation of neonatal resuscitation worldwide still need to be addressed. Potential solutions, such as ongoing quality improvement (QI), are being incorporated into the Helping Babies Breathe 2nd Edition.

Purpose of the Study

To develop and use a standardized approach to make effective revisions to HBB 2nd Edition (HBB-2) to improve performance gaps and instructional impact.

Methods

Inputs for changes to HBB-2 included scientific changes from the 2015 ILCOR guidelines; a summary of program reports, assessments, published literature, project evaluations from the Survive and Thrive GDA; and an Utstein-style implementation meeting of key stakeholders working towards improved survival of mothers and babies.

Program officers and HBB facilitators/providers were surveyed to determine how the learning materials are used and ways to improve them. Selected program officers and frontline users carried out 2 rounds of Delphi review of revised materials.

Results

Inputs and suggested changes to HBB-2 included the following:

Updated ILCOR 2015 recommendations: Scientific changes include de-emphasis of oropharyngeal suctioning and enhanced emphasis on effective and timely bag-mask ventilation.

The HBB GDA and Utstein implementation meeting: Suggested changes include increased sensitization to QI including ongoing identification of gaps in care and critical monitoring targets in facilities.

Survey of frontline users: 102 responses were received to a 59-question survey.

• The respondents were physicians (65%), professionals based in North America (77%) and global HBB facilitators (93%).
• When asked about the most important change to make sure all babies receive help to breathe, respondents answered better confidence and skills in those trained, rather than training greater numbers of providers (66% vs. 33%).
• When asked about the three most important ways to ensure that providers could perform their skills, respondents identified sufficient time for practice during the workshop, a system for ongoing practice after the workshop, and enough mannequins per participant (91%, 87%, and 54% respectively).
• To better support HBB facilitators, respondents ranked facilitating the first course with experienced trainers, improved ways to assess that learners have the required skills, and more instruction/practice on how to facilitate the course the most highly (68%, 64%, 51% respectively).

Results (continued)

Delphi Review: Suggested changes include strengthening facilitator advice on what to do before, during and after the workshop. Such advice includes seeking in-country partnerships with Ministries of Health, professional societies and in-country educational institutions. Further guidance on introducing QI, implementing systems of low dose/high frequency practice, and performing case reviews, death audits, and debriefing is discussed.

Clearer linkages between Helping Babies Survive and Helping Mothers Survive were also suggested.

Field trials: Veteran and new HBB facilitators in India gave positive feedback about the new materials and were engaged with the concepts of quality improvement and continued learning. HBB-naive providers in Sierra Leone Focus participated in an HBB training of facilitators over 2 days followed by 2 day training of providers by 4 of the newly trained facilitators. Quantitative and qualitative data were obtained from both field trials that will be used in final editing.

Conclusions

Revision of educational programs benefits from wide user input. HBB-2 will emphasize additional practice during workshops, systems for low dose/high-frequency practice in the facility, mentoring and development of facilitators, and ongoing QI at the facility level.
Improving Neonatal Care through the Global Health Service Partnership (GHSP)

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**Introduction**

Neonatal mortality has emerged as a key area of intervention in the post-Millennium Development Goal era. Trainings on neonatal resuscitation and care have existed for many years but do not always incorporate supervision of trainees in clinical settings over time. The Global Health Service Partnership (GHSP), emboldens US volunteers to facilitate within training institutions in Sub-Saharan Africa with high rates of neonatal mortality and supports volunteers to teach and supervise neonatal care over multiple years. Specific initiatives in Malawi, Tanzania, and Uganda have shown sustainable impacts on neonatal mortality.

**GHSP Model**

Global Health Service Partnership (GHSP) = Seed Global Health + Peace Corps + US President’s Emergency Plan for AIDS Relief

GHSP aims to address healthcare shortages in resource-limited settings by embedding volunteer faculty in medical and nursing schools to teach for a full academic year. The host academic institutions and the Ministries of Health and Education of each country identified potential sites based on gaps in existing faculty and healthcare needs of the population. GHSP made an initial five year commitment to each country. In the first three years of the program, from 2013-2015, GHSP placed 97 volunteers in 32 different sites in 16 countries in Sub-Saharan Africa.

**Uganda - Training Interns in M&M and Newborn Resuscitation**

At St. Mary’s Lacor Hospital in Uganda, GHSP volunteers noted high rates of neonatal mortality on the pediatric ward, estimated at about 30% of admissions. In 2013, GHSP volunteers and local faculty from Gulu University implemented pediatrie mortality assessments where every death on the pediatric ward was discussed. In many cases of pediatric mortality, no resuscitation was attempted, in part due to a lack of comfort with resuscitation techniques. GHSP volunteers obtained grant funding to purchase simulation mannequins and have supervised three years of resuscitation training from 2013-2015. They have trained 94 medical and nursing students, interns, ward nurses, and other hospital staff. In addition, new protocols were developed and quality improvement projects have led to improved post-resuscitation care.

**Tanzania - Training Medical Students in NRP Leads to Widespread Interest in Newborn Resuscitation**

In 2014, GHSP volunteers and faculty at Hubert Kairuki Memorial University (HKMU) helped integrate neonatal resuscitation protocols into core teaching for medical students. In addition, GHSP volunteers helped secure Neonatal training kits for the institution to run newborn resuscitation simulations. Interested medical students and BSN nursing students were invited to attend a series of neonatal resuscitation trainings run by GHSP volunteers. Thirty students were trained in NRP and their motivation and interest led to an expansion of NRP training opportunities. They organized an institutional wide CME to train 200 additional students and faculty at HKMU. Subsequently, these students have organized trainings at other medical schools and hospitals in the region and have trained a total of 600 students and faculty.

**Malawi - M&M Inspires Education and Reduces Mortality**

GHSP volunteers worked with trainees and faculty from the College of Medicine Malawi (CoM) and Kamuzu College of Nursing (KCN) at Kamuzu Central Hospital (KCH), where the neonatal unit admits about 200 sick newborns annually. The average neonatal mortality rate was 20%, with prematurity and asphyxia accounting for 75% of these deaths. Beginning in 2014, 10 pediatric and OB interns jointly presented data on perinatal mortality and mortality monthly, highlighting the need to emphasize staff training on protocols such as neonatal resuscitation, CPAP, Kangaroo care, and antibiotic management. Based on this data, physician and nurse educators targeted classroom and clinical education to improve the care of neonates and reduce neonatal mortality, which is as well as improve the care given by these medical and nursing trainees after graduation. This has led to a downward trend in neonatal mortality despite an upward trend in monthly admissions.

**Conclusions**

Because GHSP has a long-term presence at partner sites, volunteers are able to help positively impact newborn care by critically evaluating causes of mortality and implementing quality improvement initiatives over time. An estimated 756 healthcare providers were trained thus far during the first 3 years of this program at these 3 sites, and many of these trainees now educate new students and providers. GHSP’s focus on training educators allows for a multiplier effect and we hope to continue to see improvements in neonatal care over the coming years.
Healing together: A participatory art project that improved quality of care in a Haitian Pediatric ward

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Introduction

Background: Art therapy has long been used to reduce stress, increase self-expression and promote healing in resource-rich countries. Participatory art adds the benefit of promoting community bonding. In low-resource settings, participatory art programs may improve quality of care for pediatric patients effectively.

Objective: 1) To pilot a participatory art project aimed at reducing stress, enhancing patient self-expression, and promoting community bonding in a Haitian pediatric ward; 2) To evaluate the impact of such a quality improvement project among all participants.

Materials and methods

Method: A drawing competition recruited 62 children 3-14 years old in St Marc, Haiti. Oral assents were obtained from adult guardians for participation. Sixty-eight designs were submitted on paper, photographed and displayed on an I-Pad. Forty patients, families and providers at the St Marc hospital pediatric ward voted for their favorite 8 designs. Two local artists painted the Pediatric hallway walls at the local public hospital using these designs. One hundred participants and visitors attended the Mural Inauguration Day. Twenty-one of them were surveyed regarding the impact of this project. The surveys included five quantitative questions in Likered scales and 7 open-ended qualitative questions.

Results

Quantitative: All 21 interviewees completed the survey. 43% directly participated in submitting or selecting drawings. 81% felt that the project lowered their stress level. 100% thought it facilitated self-expression in children. 86% witnessed an active participation from children, parents and staff. 100% thought the project bonded people in the community. Qualitative surveys revealed the need for communal activities using play and singing. Specific targets such as hygiene, lighting, access to water and television were highlighted for future quality improvement.

5. Do you think projects like this can help people feel more connected as a community?
   - 100%

4. Do you feel like children, parents and staff have been participating in this project?
   - 80%

3. Do you think projects like this can help children you express themselves/yourselves?
   - 100%

2. Does having children's designs on the hospital walls help you feel less stressed when you are here?
   - 100% Yes, a lot
   - 0%

1. Did you/your child make a drawing or did you choose the winning drawings?
   - 63%

Qualitative surveys revealed several recurrent themes. Beauty and positive distraction seem to be associated with the murals that helped reduce stress levels. Families made comments such as “When people see beautiful things they feel better” (Mother of patient, 48 years-old) and “It can make kids forget about pain. It distracts them.” (sister of patient, 18 years-old.) One hospital staff (nurse and mother of 2, 35 years-old) added that “It changes the environment and adds life. It makes him happy or feel better” (parent of a patient, 27 years-old); “Every kid who dies. I see kids die and the bed gets used for another patient. I think you should disinfect it” (sibling of a patient, 14 years-old). For building a less-stressful environment and more connected community, recurrent suggestions include “free medicine”, “a space to play”, “a TV”, “more lights”, “water”, and “a better system that responds to complaints”.

Conclusions

This pilot participatory art project effectively reduced stress levels, facilitated self-expression of children and connected community members at a resource-poor Pediatric ward in Haiti. It highlighted communal activities and environmental factors for future quality improvement. It serves as a proof of concept and can be adapted to resource-limited settings globally.

Acknowledgments

We want to thank Lopolitan St Nicolas staff, patients and families for their participation, creativity and their inspiring spirit of community. Quality Improvement would not be possible without everyone’s playing a part.

References


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Sidney Kimmel Medical College at Thomas Jefferson University and Nemours/A.I. DuPont Hospital for Children

**BACKGROUND**

Introduction

Refugee immigrants tend to arrive to the US with healthier cardiovascular risk profiles than the general population, but trend towards obesity the longer they live here (Wieland, 2012).

Children within the first three years of resettlement to the US are at particularly high risk for obesity (Heney, 2013; Roshania, 2008).

This effect can be attributed to lifestyle changes including decreased exercise and increased consumption of high-calorie foods (Heney, 2013; Rhodes, as well as culture-specific risk factors.

Refugee Healthcare Overview

A refugee is defined as ‘Someone who, owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, is outside the country of his nationality, and is unable to or, owing to such fear, is unwilling to avail himself of the protection of that country.’ (UN, 1951).

A local resettlement agency is responsible for ensuring that refugees are able to access health care within the first 30 days of arrival.

Clinic Overview

The refugee continuity clinic at Nemours was instituted in June 2010 as a Pediatric Resident advocacy project and currently part of the Global Health Track for Pediatric Residency Program. The nutrition education program was integrated into the clinic in July 2015, based on a similar program that was established by Dr. Morgan Leaf at the Refugee Wellness Center at Albert Einstein Medical Center in Philadelphia, PA.

**PROGRAM**

Program Goals

Here we propose a nutrition education program as a preventative measure against obesity for refugee pediatric patients.

By adapting the “5-2-1-Almost None” concept (Colesman, 2012) to refugee groups’ specific needs, this program provides a structured yet conversational approach to nutritional counseling.

Each meeting requires approximately ten minutes and can be performed by a volunteer at any level of medical education or certification.

The 5-2-1-Almost None concept refers to a daily habit of eating five servings of vegetables, watching a screen (television or other electronic device) for 2 hours or less, getting 1 hour of physical activity, and eating almost no sugary foods or calorie-rich/ nutrient-poor snacks.

**METHODS**

This program has been piloted at Nemours Pediatrics Refugee Continuity Clinic at Thomas Jefferson Hospital since July 2015.

40 families whose children had an average age of 8.9 years old (SD=5.4) were given a pre-test assessing their existing adherence to the “5-2-1-Almost None” guidelines. A volunteer then conducted an educational conversation with the families regarding the recommended guidelines. A post-test was administered as a follow up to assess their nutrition goals. A Wilcoxon signed rank test was performed.

Physicians (n=6) at this clinic were asked to rank their agreement to five statements on a 5-point Likert scale (1: Strongly disagree, 3: Neutral, 5: Strongly agree).

**RESULTS**

Physicians

Results suggest that physicians find the program to be valuable (M=4.83, SD=0.41), a service that would not be provided otherwise (M=4.83, SD=0.41), and time-saving (M=4.33, SD=0.82). They did not find it to be an inconvenience (M=1.67, SD=0.67).

Patients

26 patients were identified to be underweight, 5 were identified to be overweight and 9 were identified to be at an ideal weight.

Patients who were overweight reported eating an average of 3.4 (SD=5.5) food groups each day, whereas patients who were underweight reported eating 4.5 (SD=1.1) and patients who were at an ideal weight reported eating 4.7 (SD=1.0).

Upon post-test, patients reported that their goal number of food groups eaten per day was an average of 4.85 (SD=0.49), their goal for screen time averaged 0.03 hours* (SD=0.16), their goal exercise time averaged 1.49 (SD=1.62), and their goal sugar intake averaged 0.74 snacks per day (SD=0.43). There was no significant difference between groups. This indicates good understanding of the 5-2-1-Almost None concept within all groups.

*Additional considerations include lack of availability of screens, religious fasting, dietary restrictions on ingredients commonly found in over-the-counter children’s vitamins.

**CONCLUSIONS**

Results suggest the success of the program in terms of patient BMI and other biological indicators. Future studies may aim to determine the effects of this program on patient BMI and other biological indicators. However, the present study was unable to assess this due to time limitations and difficulties associated with patients leaving the refugee continuity clinic after their first year in the U.S.

**ACKNOWLEDGEMENTS**

We would like to thank Dr. Morgan Leaf of the Refugee Wellness Center of the Einstein Healthcare Network, Dr. Bob Sterling of Thomas Jefferson University, and all patients and physicians who contributed to this study and program.

**REFERENCES**


BACKGROUND

The majority of physicians in Ecuador are concentrated in Quito and Quayaqil, the two largest cities in the country. There is a paucity of physicians in rural areas. Hospital Hesburgh in Santo Domingo, Ecuador is the home of a family medicine residency program which aims to provide quality education and training in rural medicine. Hospital Hesburgh, in addition to their own family medicine residents, also participates in the training and education of Ministry of Health family medicine residents. Residents rotating through the family medicine curriculum have varying exposure to neonatal care, and the majority do not rotate through a neonatal ICU. However, they are still often responsible for the care of ill neonates in rural settings. For this reason, a course addressing the care of premature and ill neonates was selected for the focus of an educational outreach program in Ecuador.

OBJECTIVES

Provide training (in Spanish) in post-resuscitation neonatal care to Ecuadorian family medicine residents. Specific goals included:

- Adaptation of S.T.A.B.L.E., a well-known and widely distributed course in neonatal post-resuscitation and pre-transport care, for use in a low resource setting.
- Address specific, common neonatal care topics: evaluation of hypoglycemia, hypothermia, respiratory distress, shock, and infection.
- Target family medicine residents likely to work in rural settings with limited resources.
- Improve proficiency of specific skill sets (bag mask ventilation, intubation, and umbilical catheter placement) through the use of simulation.

METHODS

CURRICULUM

- 5 core topics were taught per S.T.A.B.L.E. curriculum:
  - Hypoglycemia
  - Temperature / Hypothermia
  - Respiratory distress
  - Blood pressure / Shock
  - Laboratory analysis / Infection

- S.T.A.B.L.E. includes a unit on emotional support, which was removed out of respect for cultural differences between Ecuadorian and American institutions.

- Simulation topics included placement of emergency umbilical catheters, bag/mask ventilation, and intubation.

- 4-6 case-based simulations were performed with each group, with cases based on the lecture and reading material.

S.T.A.B.L.E. Spanish curriculum was donated by the University of Wisconsin School of Medicine and Public Health, Madison WI, Department of Pediatrics.

IMPROVE PROFICIENCY OF SPECIFIC SKILL SETS

- Bag mask ventilation, intubation, and umbilical catheter placement through the use of simulation.

RESULTS

- Test results before and after completion of S.T.A.B.L.E. training

<table>
<thead>
<tr>
<th>Learner Demographics</th>
<th>Score out of 27</th>
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<tbody>
<tr>
<td>Number of participants</td>
<td>91</td>
</tr>
<tr>
<td>Average group size</td>
<td>10 (4-17)</td>
</tr>
<tr>
<td>Average age</td>
<td>35.5 (28-51)</td>
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<tr>
<td>Sex</td>
<td>41 % Male, 59 % Female</td>
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<tr>
<td>Percentage from rural areas (defined as any community other than Quito or Quayaqil)</td>
<td>90%</td>
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</table>

- A total of 9 full courses were conducted in 4 cities throughout rural Ecuador. Course duration was 8 hours over 1-2 days.
- Participant feedback was overall positive, with residents reporting that the information was useful and applicable to their clinical settings.
- Subjectively, participation and simulations were noted to be more successful with smaller group size.
- Post-test average for all groups improved after completion of the course.

DISCUSSION

- S.T.A.B.L.E. curriculum can be successfully adapted to low-resource settings.
- Course participants reported that the material was high-yield and valuable.
- Coordination with local agencies and Ministry of Health officials was invaluable in organizing 1-2 day courses in multiple locations.

COURSE LOCATIONS

1. Pedro Vicente de Maldonado: 1
2. Santo Domingo: 34
3. Manta: 22
4. Puerto Viejo: 30
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<tr>
<th>Location</th>
<th>Pre Test Average</th>
<th>Post Test Average</th>
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<tr>
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<tr>
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<td>Average Age</td>
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<td>Sex</td>
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<td>Average Year in Training</td>
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<tr>
<td>Percentage from rural areas (defined as any community other than Quito or Guayaquil)</td>
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Fostering public awareness for rheumatic heart disease in Zambia: progress and lessons learned

J. Musuku1, J. Chipili Lungu1, E. Machila1, S. Schwaninger2, A. Abrams2, B. Tadmor2, J.M. Spector2
1University Teaching Hospital, Lusaka, Zambia, 2Novartis Institutes for BioMedical Research, Cambridge, USA.

Introduction

Rheumatic heart disease (RHD), a disease of poverty and social inequity, affects more than 30 million people globally and is the main cause of heart disease in young people in Africa. RHD is entirely preventable by appropriate treatment of streptococcal pharyngitis and, as such, the public has an essential role to play in seeking skilled care promptly so that effective therapy can be received.

Objectives

As part of a multi-faceted public-private effort to combat RHD in Zambia, we initiated a public awareness program that had national reach. We sought to record progress and assess results and lessons learned for the purpose of informing future educational activities including scale-up.

Methods

The program was conducted in partnership with the Ministries of Health and Education. Public awareness activities took place in nearly 50 schools, 7 health clinics, public spaces, and via the media. The main intended educational message was a call for action to promptly seek skilled medical care to treat sore throat with antibiotics if needed, in accordance with recommendations from the Pan-African Society of Cardiology and the World Heart Federation. A scientific artist helped to develop novel educational brochures and flyers that were widely distributed, and two vans that circulated regularly around Lusaka were encased in educational messages. Public awareness activities had particular prominence during “RHD Week” in August 2015, in which the Minister of Health launched a series of educational events through a nationally televised address, nurses associated with the program gave radio interviews, and an hour-long television documentary about RHD was broadcast nationwide.

Results

The teacher community, which reported very little previous knowledge about RHD, demonstrated strong advocacy and helped to disseminate key program messages. Measureable support both in terms of advocacy and a call for action came also from health authorities. Immediately following RHD Week in 2015, the Permanent Secretary for Health in Zambia instructed all Provincial Medical Officers countrywide to conduct public awareness activities again the following year, to give prominence to RHD service delivery, and to integrate RHD-related activities into school health programs. In addition, program partners were invited to incorporate screening for RHD into mobile health clinics that the government sponsors in rural parts of the country approximately 9 times annually.

Conclusion

A variety of public awareness activities for RHD conducted in Zambia led directly to further opportunities for education and service delivery involving patients and the medical community. Continuation and scale-up of awareness efforts are now underway. Future work will include determining how best to practically measure impact on patients without siphoning limited time and resources from other programs, and to help ensure that the health system can deliver appropriate management of pharyngitis at the time patients seek care, with the ultimate goal of reducing new cases of RHD.
Integrating Local Community Global Health Experiences into Resident Education

Jennifer Watts MD, MPH; Stephen Warrick, MD

Children’s Mercy, Kansas City, MO, and Cincinnati Children’s Hospital, Cincinnati, OH

In 2012, both institutions independently developed a global health advocacy rotation, combining experiences from both global health and advocacy curriculum with didactic, interactive, group, and reflective activities.

Objective

Two separate institutions (Children’s Mercy Hospital, Kansas City, and Cincinnati Children’s Hospital Medical Center) independently worked to develop a new (hybrid) Global Health-Advocacy (GHA) rotation.

Methods

In 2012, both institutions independently developed a global health advocacy rotation, combining experiences from both global health and advocacy curriculum with didactic, interactive, group, and reflective activities.

Results

The third year of GHA rotations were completed in 2015 with a total of 55 residents participating in a GHA, 32 at CMH and 23 at CCHMC. Changes were incorporated based on resident feedback and evaluation.

Global Health experiences
- Travel clinics
- International adoption clinics
- Refugee intakes
- Immersion in an Indian Health Services Hospital.
- Volunteering with refugees
- Assisting with immigrant community gardens
- Home visits with refugee case
- Cultural Humility
- Videos and online modules
- Malaria Slide Preparation

Advocacy experiences
- Visiting domestic violence shelters
- Homeless shelters
- Local food banks
- Legislative activity
- Car seat training
- Food insecurity and nutrition
- Health Literacy
- Down Syndrome Guild
- Reach out and Read
- Environmental Health activities
- Family Court
- Child Abuse Prevention

Cincinnati Children’s

<table>
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Children’s Mercy Kansas City

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<td>Clinic</td>
<td>1:00 - 5:00 PM</td>
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Conclusions

The GHA has been a successful rotation as it is local and residents are learning skills in advocacy activities that may one day benefit them internationally. Our experience may be valuable to those seeking creative ways to enhance GH opportunities locally.
Differences in Attitudes Toward Morbidity and Mortality Conferences Among Medical and Surgical Specialists in Low to Middle Income Countries: Survey of Physicians in Armenia

Joshua D. Rouch¹, Nhan Huynh¹, Aaron J. Dawes¹-³, Biayna Sukhudyant⁴, Shant Shekherdimian¹

1 Division of Pediatric Surgery, David Geffen School of Medicine at UCLA; 2 Veterans Affairs/Robert Wood Johnson Foundation Clinical Scholars Program; 3 Department of Health Policy and Management, UCLA Fielding School of Public Health; 4 Division of Pediatric Neurology, Arabkir Joint Medical Center, Yerevan, Armenia

Introduction

- Morbidity and Mortality (M&M) conferences are a well-established tool for improving quality of care in surgical departments throughout the developed world.
- Like many low-to-middle income countries, most Armenian hospitals do not have formalized M&M conferences.
- We sought to better understand the opportunities and barriers to implementation of M&M conferences among both medical and surgical pediatric physicians.

Methods

- A 27-question, anonymous, self-administered written survey was distributed to all pediatric physicians working at the 4 major pediatric medical centers in Yerevan, the capital of Armenia.
- The survey was designed in English —→ translated into Armenian —→ independently re-translated to English to verify accuracy.

Results

- Of the 260 pediatric physicians in Yerevan, 229 agreed to participate (response rate 88%).
- Of the 229, 62 pediatric surgeons (27%), and 161 pediatricians (73%).
- Medical pediatric physicians reported significantly increased understanding of M&M conferences (p=0.01).
- Similarly, medical pediatric physicians were more willing to implement M&M conferences.
- Trend toward less fear for professional consequences (p=0.09).
- This includes fear for loss of income, loss of referrals, legal repercussions, diminished job security.
- Similar rates of concerns over confidentiality and resource constraints between surgical and medical pediatrics physicians.

Conclusions

- Overall, physicians understand M&M conferences and think they are effective.
- Among physicians at pediatric hospitals, non-surgical physicians tend to be both more familiar with M&M conferences and more willing to implement them.
- Collaboration between pediatricians and other medical specialists with surgical surgeons may improve system/hospital-wide adoption of M&M conferences as a means for QI and education.
- Modifications to the standard M&M conference format must address concerns regarding confidentiality, unequal participation, and fear of legal repercussions.

Future Work

- Sample M&M discussion at Arabkir Medical Center in Yerevan facilitated by UCLA Department of Surgery using teleconference technology.
- Opportunity for UCLA general surgery residents to travel during research years to continue to develop project.

Acknowledgements

Many thanks to the UCLA Global Surgery Initiative, UCLA Center for World Health, Armenian Medical Association (ArMA), Arabkir Medical Center, St. Mary’s Medical Center and Yerevan State Medical Center.
Background

- SIDS is one of the leading causes of death in infants between 1-12 months of age in the USA.
- After the implementation of the Back to Sleep Campaign in 1992, the rate of SIDS declined by > 50% over 10 years.
- Unfortunately, research has not been expanded to underdeveloped nations, specifically Peru.

Objective

- Assess sleep practices and knowledge of SIDS in Sacred Valley and Chincha, Peru.

Methods

- Participants completed a pre-survey to evaluate current sleep practices and SIDS awareness.
- Subjects then participated in an educational presentation on SIDS.
- Following this intervention, participants completed a post-presentation survey to evaluate effectiveness.
- Data collected included maternal age, child parity, current sleep practices and baseline SIDS knowledge.
- Study data was collected using REDCap.
- P-Value of < 0.05 was considered statistically significant.

Results

Figure 1: Common Sleep Positions in Peru.

Figure 2: 75% of infants co-slept with parents. Only 3 parents (11%) kept their infant in an empty crib. 92% of families did not use a pacifier during sleep. None of our study subjects were exposed to cigarette smoke. 81% of infants were exclusively breast-fed in the first 6 months.

Figure 3: There was statistically significant increase in risk factor awareness including smoke exposure, co-sleeping, sleep position, and benefits of an empty crib.

Figure 4: 57% percent of parents could identify SIDS post-intervention compared to 17% prior. (P = 0.002). 68% of parents identified the back as the safest sleep position following intervention (P = <0.001).

Conclusion

- There is a lack of SIDS awareness in Peru with certain risk factors being common sleep practices at both sites.
- Our study illustrates the importance for further research to evaluate the incidence of SIDS in the developing world, learn common sleep practices, and educate the local population based on their risk factors.
- Through education, we can bring awareness to this issue and hopefully reduce the infant mortality rate in the developing world.

References


In Mexico, cancer is the number one cause of death in children 5-14 years old. Before 2008, a pediatric oncology unit did not exist in all of Baja California and many children went untreated. In 2008, physicians at Rady Children’s Hospital San Diego (RCHSD) and St. Jude Children’s Research Hospital established the International Outreach Program (St. Jude IOP) to transport pediatric patients with CNS tumors from HGT in Tijuana, Baja California, Mexico across the border to RCHSD in San Diego, California.

**Introduction**

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**Objectives**

- The purpose of this analysis is to assess the effectiveness of the Cross-Border Neuro-oncology Program (CBNP) as a short-term solution for improving the outcomes for pediatric CNS tumor patents in Baja California, Mexico.

**Materials and Methods**

- **Hospital system:**
  - No pediatric neurosurgeons exist throughout the entire state of Baja California.
  - There are no local pediatric or adult neuro-oncology training programs for physicians or nurses.
  - Before 2010, primary care providers were neither well versed in the signs and symptoms of pediatric brain tumors nor trained to refer such patients to specialist services.
  - Baja California is poorly prepared to treat pediatric CNS tumors.

- **Border crossing system:**
  - The 24 kilometers that separate San Diego, California and Tijuana, Baja California form the busiest land-border crossing in the world.
  - CBNP patients first receive MRI imaging at HGT, and the results are couriered 43 kilometers between Tijuana and San Diego.
  - Results are reviewed by the neuro-oncology team at RCHSD.
  - If the patient has a resectable tumor, transportation is coordinated between the San Ysidro Port of Entry, the US consulate in Mexico, the Mexican Ministry of Foreign Affairs, and ambulance teams either side of the border.
  - In San Diego, the patient will receive emergency resective surgery or return at a later date.
  - The patient receives post-operative care and imaging at RCHSD and returns to Tijuana for follow-up care.

**Results**

- Since 2007, 33 CNS tumor resections have been performed on 29 children living in Mexico.
- Of these children, 21 are still living.
- At the early stages of this program, structural limitations prevented 10 children from transportation to the US; 7 of these children are now deceased.
- Outcomes for Mexican children diagnosed with CNS tumors and treated at RCHSD approach levels similar to American children.
- By recruiting community leaders in Baja California, leaders of the CBNP have improved surveillance of pediatric CNS tumors.
- A close professional network of Mexican and American physicians, border personnel and diplomatic staff has been established.
- The twinning partnership between HGT and RCHSD has been strengthened by real-time collaboration of its many supporting actors.

**Conclusions and Discussion**

- These preliminary results suggest that the cross-border transportation of pediatric CNS tumor patients for resection surgery leads to better outcomes.
- Neighboring institutions across the US/Mexico border would likely benefit from similar collaborative programs.
- The CBNP takes advantage of the proximity of its contributing institutions to build upon the pre-established relationships of its actors.
- This is not a permanent solution, but it provides a much-needed short-term resource for CNS tumor patients in a region with a developing neurosurgical program.
- As the informal relationship between pediatric oncologists either side of the border has grown into a formal program, the efficiency of transfer has similarly improved, increasing the proportion of patients who are successfully treated each year as well as their outcomes.

**References**


**Acknowledgments**

Paula Aristizabal, MD, MAS; John Crawford, MD, MS; Spencer Fuller, MDc; the team at the Hospital General de Tijuana.
Introduction

A challenge for African health care providers is how to best evaluate and treat children who present with fever. Infections and malnutrition are the single most common cause of mortality in children under 5 years of age in Africa. New infections are often treated empirically, with current WHO recommendations to treat for malaria only when malarial pathogens are identified in clinical samples. The inability of African health care systems to appropriately manage febrile illnesses accounts in large part for the overwhelming burden of persistent non-malarial febrile illnesses. In large part for the overwhelming burden of persistent non-malarial febrile illnesses. In 2004, 20% of US children under 5 had a febrile illness. In contrast, in 2010 under 5 mortality per World Bank: 8/1000 in USA vs. 99/1000 in Uganda. In Africa, fevers in children have traditionally been assumed to be due to malaria, with guidelines to treat all fevers without obvious cause as malaria. Unlike in the US, comprehensive evaluation and management are unsatisfactory.

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Risk Factors of Chronic Infant Malnutrition: A Case-Control Study

Picon, M., Moreno Ruiz, D.V., Salcedo Mejia, F., Alvis Guzman, N.
Grupo de Investigación en la Economía de la Salud, Universidad de Cartagena

INTRODUCTION

Childhood malnutrition is a complex problem that cannot be attributed merely to lack of food or presence of illness, but results from the interaction of a variety of biological, socioeconomic, and cultural factors. In Colombia, chronic malnutrition affects 13.2% of children under 5, while 0.9% suffer from acute malnutrition.

OBJECTIVES

• To identify the characteristics of malnourished children age ≤24 months
• To determine the primary risk factors for infant malnutrition in Cartagena de Indias, Bolivar, Colombia.

METHODS

A case-control study was conducted at two clinics in Cartagena, Colombia. The WHO reference population for height-for-age Z-scores was utilized to determine chronic malnutrition. Cases are children with mild (“at-risk”), moderate, or severe malnutrition, determined by a Z-score < -1SD; controls are children with Z-scores between -1SD and +2SD. Cases and controls were recruited between August 2014 and October 2015. Chart review and in-person questionnaires were used to gather information on the child’s age, height, weight, birth weight and gestational age, maternal characteristics, socioeconomic factors, and household characteristics. Odds Ratios with 95% CI were estimated.

RESULTS

The total 481 children recruited had a median age of 10.93 (SD= 6.57) months and were 53% male. 71% had chronic malnutrition. 86% pertain to the lowest socioeconomic stratum, 89% are from families earning minimum wage or less, and 96% are covered by public health insurance. 139 cases were randomly matched to 139 controls according to gender and age.

Chronic malnutrition was significantly associated with low birth weight (OR 7.75; 2.74 – 21.95), preterm birth (OR 2.31; 1.29 – 4.16), maternal malnutrition (OR 3.00, 1.09 – 8.25), and adolescent motherhood (OR 2.25; 1.14 – 4.44). Breastfeeding was a significant protective factor, with any exposure to breastfeeding (OR 0.33; 0.11 – 1.03), breastfeeding duration >6 months (OR 0.17; 0.05 – 0.61), any exposure to exclusive breastfeeding (OR 0.52; 0.31 – 0.88), and duration of exclusive breastfeeding >6 months (OR 0.40; 0.16 – 0.99). Significant protective maternal characteristics include presence a partner (OR 0.40, 0.22 – 0.74) and completion of secondary education (OR 0.61, 0.36 – 1.02).

Risk Factors for Chronic Malnutrition

| Variable                      | Odds Ratio | ch2(p) | P>|z| | CI 95% |
|-------------------------------|------------|--------|-----------|--------|
| **Gestational factors**       |            |        |           |        |
| Low birth weight              | 7.75       | 0.000  | 21.95     |        |
| Preterm birth                 | 2.31       | 0.004  | 4.16      |        |
| **Breastfeeding factors**     |            |        |           |        |
| Ever breastfed                | 0.33       | 0.046  | 1.03      |        |
| Breastfed 1-6 months          | 0.50       | 0.252  | 1.63      |        |
| Breastfed 7-24 months         | 0.17       | 0.007  | 0.61      |        |
| Ever exclusively breastfed    | 0.52       | 0.012  | 0.88      |        |
| Exclusively breastfed 1-6 m   | 0.56       | 0.033  | 0.95      |        |
| Exclusively breastfed >6 m    | 0.40       | 0.047  | 0.99      |        |
| **Maternal factors**          |            |        |           |        |
| Maternal malnutrition         | 3.00       | 0.025  | 8.25      |        |
| Age 12-19                     | 2.25       | 0.016  | 4.44      |        |
| Age 20-29                     | 0.46       | 0.027  | 0.92      |        |
| Age ≥30                       | 0.40       | 0.033  | 0.93      |        |
| Primary education             | 0.71       | 0.564  | 2.25      |        |
| Secondary education           | 0.61       | 0.055  | 1.02      |        |
| Single                        | 2.50       | 0.003  | 4.65      |        |
| Married or civil union        | 0.40       | 0.003  | 0.74      |        |
| Employed                      | 1.15       | 0.306  | 2.42      |        |
| Housewife or unemployed       | 0.74       | 0.307  | 1.32      |        |
| **Socioeconomic factors**     |            |        |           |        |
| Socioeconomic stratum 1       | 1.06       | 0.866  | 2.05      |        |
| Income <=minimum wage         | 4.00       | 0.003  | 10.66     |        |
| Subsidized health insurance   | 1.33       | 0.706  | 5.96      |        |
| Housing with aqueduct         | 0.79       | 0.549  | 1.73      |        |
| Housing with sewage system    | 0.61       | 0.074  | 1.06      |        |
| Housing with inadequate walls | 1.29       | 0.480  | 2.59      |        |
| Housing with inadequate floors| 1.20       | 0.670  | 2.78      |        |

CONCLUSIONS

Low birth weight, preterm birth, maternal malnutrition and adolescent motherhood are risk factors associated with chronic malnutrition in infants of low socioeconomic status. Prevention of adolescent pregnancy and the improvement of prenatal care should be targeted in order to prevent infant malnutrition. Additionally, breastfeeding for ≥6 months should be promoted to improve infant nutritional status.

REFERENCES

1. UNICEF, La Desnutrición Infantil: Causas, consecuencias y estrategias para su prevención y tratamiento. 2011.

ACKNOWLEDGEMENTS

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Grupo de Investigación en Economía de la Salud
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Fulbright US Student Program

CONTACT

Michelle Picon
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MD/MPH Candidate, Class of 2017
mpicon@med.miami.edu
Background:
Interest in Global Health is at an all time high, however few residents are able to travel for long-term international electives.

Objectives:
This study sought to compile, categorize and describe the current online GH educational offerings.

Methods:
- Online searches were conducted using Google with terms Global Health OR International Health AND Residency OR Module OR Free OR Education
- Expert recommendations

Inclusion criteria required resources to be:
1. available to US learners,
2. less than $300,
3. targeted at medical learners interested in GH,
4. completed at your own pace.

Resources were then characterized by sponsoring body, cost, time, number of modules offered, audience, and opportunity to obtain certificate or proof of completion.

Results:

<table>
<thead>
<tr>
<th>Global Health Online Resources</th>
<th>Cost</th>
<th>Proof of Completion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berkeley Open Courseware</td>
<td>Tuition</td>
<td>Certificate</td>
</tr>
<tr>
<td>CDC Noncommunicable Diseases Training Modules</td>
<td>Free</td>
<td>No Certificate</td>
</tr>
<tr>
<td>CDC TRAIN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Colorado Center for Global Health Pediatrics in Disasters</td>
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<td></td>
</tr>
<tr>
<td>Consortium on Global Health Educational Training Modules</td>
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<tr>
<td>Consortium on Global Health Weekly Case Studies</td>
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<tr>
<td>Coursera</td>
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<tr>
<td>DisasterReady.org</td>
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<tr>
<td>eX</td>
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<td>Ethical Challenges in Short-Term Global Health Training</td>
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<td>GCHEMP</td>
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<td>Global Health eLearning Center Online Courses</td>
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<tr>
<td>Global Health Training Centre</td>
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<tr>
<td>INMED Self-Paced Course</td>
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<tr>
<td>Institute for Healthcare Improvement Open School</td>
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<tr>
<td>John Hopkins School of Public Health Open Courseware</td>
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<tr>
<td>KaiserEDU.org Archived Tutorials</td>
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<tr>
<td>London School of Hygiene and Tropical Medicine Online Courses</td>
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<td>Michigan Public Health Training Courses</td>
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<td>NextGenU.org</td>
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<td>United Nations University Online</td>
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<td>University of Minnesota Free Intro Class</td>
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<tr>
<td>University of Minnesota Global Pediatrics Education Series</td>
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<tr>
<td>UW Department of Global Health Learning Library</td>
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<td></td>
</tr>
<tr>
<td>World Bank e-Institute</td>
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<tr>
<td>Yale Open Courseware</td>
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<td></td>
</tr>
</tbody>
</table>

Results Con’t:

Conclusions:
There is a gap between the number of residents interested in GH and the number who are able to travel abroad for prolonged electives. Online resources can provide a relatively cheap, self paced alternative for residents seeking further global health education and experience without obtaining a passport.
Global Neonatal Mortality: Can We Do More?

Allison Judkins MD, Tyler Hartman MD

1Department of Pediatrics, Division of Neonatology, Loma Linda University
2Department of Pediatrics, Division of Neonatology, Geisel School of Medicine at Dartmouth

BACKGROUND

An estimated 2.9 million newborns are expected to die worldwide within the first 4 weeks of life. In 2000, more than 190 nations committed to reach eight interlocking goals that address hunger, poverty, education and health by 2015 known as the Millennium Development Goals (MDGs). MDG 4 called for a two-thirds reduction in childhood mortality. During the 25 year time period, the under-five mortality rate dropped 53%. Neonatal mortality, however, has not kept pace. In 2013, approximately 44% of under-five deaths occurred during the neonatal period, up from 37% in 1990. Estimates suggest that up to 75% of these deaths could be prevented through cost-effective interventions at a cost of less than US$1 per baby. Despite this, less than 1% of the published neonatal research addresses deaths in low resource settings.

METHODS

We trended the neonatal mortality reduction and compared it to other major diseases identified by the MDGs from 1990-2015. In MDG6, the targets were to halt and reverse the spread of HIV, achieve universal access to anti-retroviral therapy, and halt the incidence of malaria and other major diseases, specifically tuberculosis. The data collected came from the WHO Database. We reviewed the funding support for research and program implementation compared to the global burden of disease.

RESULTS

There has been significant improvement in mortality across all areas from 2000-2013. However, the rate of decline in neonatal mortality is slower than that of tuberculosis, malaria, and HIV/AIDS. Moreover, the total number of deaths reported from the three major disease processes is now less than the total number of neonatal deaths. In 2015, 2.7 million babies died in the neonatal period as compared to 2.56 million people who died from HIV, malaria, and tuberculosis, combined. There are large discrepancies in research and funding for newborn health compared to other diseases that carry a large global burden. For example, the Global Health Fund disbursed more than US$27 billion to accelerate the end of AIDS, TB, and malaria. In contrast, the amount of funding available from USAID was US$15 billion for ending preventable causes of maternal-newborn death.

LOOKING Foward

- These results demonstrate that there is need for increased commitment through funding, research and government leadership to support program implementation on a global scale.
- Problems that go unmeasured go unsolved. There is a need for strengthened national databases, including timely birth and death registration.
- Success in improving neonatal mortality is possible through key cost-effective interventions such as early and sustained breastfeeding, early recognition of newborn infections, and scaled up simplified resuscitation.
- In the post-MDG era, the challenge in improving neonatal survival remains the provision and expansion of simple, low cost interventions through sustainable means in low-resource settings.
A CLUSTER-RANDOMIZED TRIAL TO ASSESS A SEXUAL ASSAULT PREVENTION INTERVENTION IN UPPER PRIMARY SCHOOL ADOLESCENTS IN NAIROBI, KENYA

Clea Sarnquist, DrPH, MPH\(^1\)
Michael Baiocchi, PhD\(^2\)
and the Stanford Gender-Based Violence Prevention Collaboration

(1) Stanford University School of Medicine, Department of Pediatrics;
(2) Stanford University School of Medicine, Stanford Prevention Research Center

BACKGROUND
Sexual violence is a threat to women and children worldwide. An estimated 50 percent of sexual assaults are committed against girls under 16. In Kenya, up to 46% of women report childhood sexual assault. That percentage is likely higher in urban informal settlements, where up to 25% of secondary-school girls report sexual assault annually.

OBJECTIVE
To determine if a 6-week classroom-based girl’s empowerment program, in parallel with a boy’s educational program, significantly reduced the incidence of sexual assault in primary schools in the informal settlements around Nairobi compared to a standard of care (SOC) life skills course. The primary outcome of interest was the rate of sexual assault among girls in this population.

METHODS
The study was a cluster-randomized controlled trial in upper primary schools (adolescents aged 10-15). The intervention included 12 hours of behavior-change and skills training in empowerment and self-defense. The SOC was a 2-hour life-skills course.

Analysis utilized a generalized mixed models approach. Included in the analysis were 14 schools with 3,147 girls from the intervention group and 14 schools with 2,539 girls from the control group.

RESULTS
For the primary outcome, 14 schools with 3,147 girls from the intervention group and 14 schools with 2,539 girls from the control group were included in the analysis. We estimate a 3.7% decrease, \( p=0.03 \) and 95% CI=(0.4%, 8.0%), in risk of sexual assault among girls in the intervention group due to the intervention (7.3% at baseline). We estimate an increase in mean Generalized Self-Efficacy Scale (GSES) score of 0.19 (baseline average 3.1, on a 1-4 scale), \( p=0.0004 \) and 95% CI=(0.08, 0.39).

CONCLUSIONS
This innovative intervention that combined parallel training for young adolescent girls and boys in school settings showed significant reduction in the rate of sexual assault among girls in this population. We have now secured funding for a much larger, longitudinal study of an enhanced version of this intervention, as part of the larger What Works to Prevent Violence Programme, a global initiative to prevent violence against women and girls.

ACKNOWLEDGMENTS
Thanks to the trainers who provided the intervention, as well as the adolescents who participated with enthusiasm.
Introduction

- Unintentional injuries are the leading cause of death in children 1-19 years old worldwide.¹
- In Sri Lanka, National Police statistics from 2012 indicate that there were 42,145 road traffic crashes, of which over 18,000 were motorcycle/moped or bicycle accidents.²
- 31,831 people were injured in road traffic crashes with a severe injury rate of 27.4% and a mortality rate of 7.7%.
- 15.5% of fatalities occurred in those < 20 years old (~5000 children).
- The most common injury pattern included that of head and neck injuries, both potentially preventable with the use of helmets.
- Helmet use in adults is 70-99% while helmet use in children is 25-31% in Sri Lanka.
- Kurunegala is a large urban district which has a population of ~1.5 million people.

Objective

- To identify and describe barriers to the use of helmets by children between 3 and 18 years old in Kurunegala district whom are motorcycle riders

Hypothesis

- We hypothesize that children of caregivers with lower education levels are less likely to wear helmets on a motorcycle.

Methods

Survey

- Cross-sectional descriptive study to assess the frequency of and barriers to motorcycle helmet use among children between 3 and 18 years of age in the Kurunegala, Sri Lanka
- Anonymous survey distributed via convenience sampling
- 360 surveys distributed at the Vision Tuition Center which is an after-school and weekend tuition class for high school students. Class available for all socio-economic populations.
  - Students aged 17-18 years old
  - 500 surveys distributed at the Royal International School which is a private school with enrollment of 2500 students. School has wider age range of students but with narrower socio-economic populations who can afford private school.
  - Students aged 3-18 years old
- Surveys were brought home by students for parents to complete in a private setting. Surveys were then returned to school administrators.
- IRB approval was obtained from Stanford Hospital and the Department of Health Services Provincial Council of the North Western Province, Sri Lanka
- No personal identifying information was collected.

Analysis

- Data Entry: REDCap Electronic Data Capture Tool
- STATA-14 software, Student’s T-test, Wilcoxon-Mann-Whitney test, and Chi-square Analysis

Results

<table>
<thead>
<tr>
<th>Location</th>
<th>N</th>
<th>%</th>
</tr>
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<tbody>
<tr>
<td>Royal International School</td>
<td>113</td>
<td>44.7</td>
</tr>
<tr>
<td>Vision Tuition Center</td>
<td>140</td>
<td>55.3</td>
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<table>
<thead>
<tr>
<th>Age of Child (Mean Age: 15.3 SD 3.6)</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ages 3-12</td>
<td>60</td>
<td>23.7</td>
</tr>
<tr>
<td>Ages 13-18</td>
<td>182</td>
<td>72</td>
</tr>
<tr>
<td>No Response</td>
<td>11</td>
<td>4.3</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gender of Child</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>96</td>
<td>22.1</td>
</tr>
<tr>
<td>Female</td>
<td>106</td>
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<tr>
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<td>1</td>
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<th>Caregiver Education Level</th>
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<tr>
<td>Grade 5 or below</td>
<td>4</td>
<td>1.6</td>
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<tr>
<td>Grade 6 to 10</td>
<td>31</td>
<td>12.3</td>
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<tr>
<td>Grade 11 to 13</td>
<td>124</td>
<td>49</td>
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<td>Formal Tertiary Education</td>
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<tr>
<th>Sources of Motorcycle Helmet Information</th>
<th>N</th>
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</tr>
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<tbody>
<tr>
<td>Television advertisements</td>
<td>170</td>
<td>67.2</td>
</tr>
<tr>
<td>Radio advertisements</td>
<td>18</td>
<td>7.1</td>
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<tr>
<td>Billboard advertisements</td>
<td>14</td>
<td>5.5</td>
</tr>
<tr>
<td>Posters</td>
<td>13</td>
<td>5.1</td>
</tr>
<tr>
<td>Your doctor</td>
<td>3</td>
<td>1.2</td>
</tr>
<tr>
<td>Your child’s school</td>
<td>22</td>
<td>8.7</td>
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<tr>
<td>No information received</td>
<td>32</td>
<td>12.6</td>
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<tr>
<td>Other</td>
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<td>4.3</td>
</tr>
<tr>
<td>No Response</td>
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<td>3.6</td>
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<table>
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<tr>
<th>Caregiver Concern about Child Injury on a Motorcycle</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Always</td>
<td>121</td>
<td>47.8</td>
</tr>
<tr>
<td>Most of the time</td>
<td>38</td>
<td>15</td>
</tr>
<tr>
<td>Sometimes</td>
<td>41</td>
<td>16.2</td>
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<tr>
<td>Rarely</td>
<td>14</td>
<td>5.5</td>
</tr>
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<td>Never</td>
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<td>13.4</td>
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<tr>
<td>No Response</td>
<td>5</td>
<td>2</td>
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<table>
<thead>
<tr>
<th>Frequency of Child Travel on Motorcycle</th>
<th>N</th>
<th>%</th>
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<tbody>
<tr>
<td>1-2 days/week</td>
<td>64</td>
<td>34.4</td>
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<tr>
<td>&gt;2 days/week</td>
<td>119</td>
<td>64</td>
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<td>No Response</td>
<td>3</td>
<td>1.6</td>
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<tr>
<th>Sri Lanka Standards (SLS) sizes of Child’s Helmet</th>
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<th>%</th>
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<tr>
<td>Yes</td>
<td>78</td>
<td>44.1</td>
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<td>50</td>
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<td>48</td>
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<th>Appropriately sized Child’s Helmet</th>
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<td>No, too small</td>
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<td>6.2</td>
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<td>2.8</td>
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<table>
<thead>
<tr>
<th>Reasons for Incorrect Helmet Size</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>It is not a concern</td>
<td>1</td>
<td>0.04</td>
</tr>
<tr>
<td>It is too costly to buy</td>
<td>1</td>
<td>0.04</td>
</tr>
<tr>
<td>Proper size helmets are not ready to buy</td>
<td>12</td>
<td>7.8</td>
</tr>
<tr>
<td>Same helmet shared amongst several children</td>
<td>8</td>
<td>4.7</td>
</tr>
</tbody>
</table>

Conclusions and Future Directions

- This is the first study in Sri Lanka that explores the use of helmets specifically among children in Sri Lanka. This research fills a critical gap in knowledge towards understanding the barriers to pediatric motorcycle helmet use in Sri Lanka.
- Only one third of the population reported using a helmet all the time, despite 65% of the respondents being concerned about child injury on a motorcycle “Always” or “Most of the time”.
- Surprisingly, no difference was noted between gender and helmet use as would have been anticipated particularly since 72% of the respondents fall into the adolescent age group of 13-18 years.
- Caregivers recognize that using a helmet for their children is important, but there are barriers to using them. Our survey suggests this is a behavioral barrier and not an issue of health literacy.
- We observed a statistically significant association between caregiver education and frequency (%) of helmet use (X2=47.28, p<0.00) • Unexpectedly, caregivers reporting an education level of grade 6-10 had the highest frequency (%) response of “always” wearing a helmet.
- The source of helmet information for the majority of respondents was television advertisements, suggesting this may be an effective mode of dissemination of any future educational intervention.
- Further research is needed to explore barriers to use among other socio-economic groups and identify public health policies and strategies to improve use of motorcycle helmets.

Acknowledgments

Mary Le Chiou¹, Walter Wickremasinghe¹, Lakshika Tennakoon¹, Aisha Talib¹, Jennifer Kang¹, E.A.L.K Edirisinghe, W.M.A Wijekoon, P.G. Amarasinghe and Saraswati Kache¹
¹Department Of Pediatrics, Lucile Packard Children’s Hospital at Stanford

Conferences and Workshops

- STATA-14 software, Student’s T-test, Wilcoxon-Mann-Whitney test, and Chi-square Analysis

- Data Entry: REDCap Electronic Data Capture Tool

References

- EFERENCES

- It can save my child’s life (n=143)
- It can protect my child from injury (n=58)
- It is required by law (n=30)
- This is the first study in Sri Lanka that explores the use of helmets specifically among children in Sri Lanka. This research fills a critical gap in knowledge towards understanding the barriers to pediatric motorcycle helmet use in Sri Lanka.
- Only one third of the population reported using a helmet all the time, despite 65% of the respondents being concerned about child injury on a motorcycle “Always” or “Most of the time”.
- Surprisingly, no difference was noted between gender and helmet use as would have been anticipated particularly since 72% of the respondents fall into the adolescent age group of 13-18 years.
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- The source of helmet information for the majority of respondents was television advertisements, suggesting this may be an effective mode of dissemination of any future educational intervention.
- Further research is needed to explore barriers to use among other socio-economic groups and identify public health policies and strategies to improve use of motorcycle helmets.
Background
- The percentage of under-5 mortality attributable to early neonatal mortality is increasing globally (31.9% in 2013)\(^1\)
- 27% of early neonatal deaths are due to perinatal asphyxia\(^2\)
- India has the highest absolute number of neonatal deaths in the world (790,000 in 2012)\(^3\) and an early neonatal mortality rate (22.4 per 1000 live births) comparable to sub-Saharan Africa\(^1\)
- Bihar has one of the highest neonatal mortality rates in India (32.2 per 1000 live births)\(^3\)
- The odds of neonatal death in Bihar more than double (OR 2.17) with the presence of maternal intrapartum complications\(^3\)
- In 2015 Bihar’s community health centers had a total of 13 pediatricians and 16 OB/GYNs\(^4\)
- Traditional neonatal resuscitation (NR) simulation trainings such as the Neonatal Resuscitation Program and Helping Babies Breathe are focused solely on the infant, and thus are limited in their ability to replicate the reality of low-resource settings where few providers face competing demands for their attention
- PRONTO training is conducted in-situ and teaches trainees to simultaneously attend to maternal and neonatal emergencies

Aims
- To assess the impact of PRONTO simulation training on health worker competency in NR in Bihar, India in Round 1 of an ongoing implementation evaluation
- To capture the unique mission of the PRONTO training competence was evaluated in the context of increasing complexity of simulated scenarios requiring care of the infant only, the infant and mother sequentially, or the infant and mother simultaneously

Methods
Study Population
- 658 nurse trainees from 80 primary health centers (PHC)

Nurse Mentor Training
- CARE India and the government of Bihar are implementing a quality improvement project, called AMANAT, with the goal of reducing both maternal and neonatal mortality
- Nurses from the AMANAT program were selected to serve as mentors in the implementation of the PRONTO training
- CARE India, the government of Bihar, and PRONTO International trained mentors in team building, teamwork and communication skills, debriefing, and simulation

PRONTO Simulation Training
- Nurse mentor pairs visited PHCs across Bihar an average of 7 times (for one week at a time) over a 9-month period
- Week 1: Team building
- Week 2: Normal spontaneous vaginal delivery (NSVD)
- Week 3: NR + post partum hemorrhage (PPH)
- Weeks 4-7: NSVD + NR + PPH
- Complexity of NR simulations are defined as follows
  - Level 1: requires resuscitation of a non-vigorous infant only
  - Level 2: requires management of a maternal complication followed by resuscitation of a non-vigorous infant
  - Level 3: requires simultaneous management of a maternal complication and resuscitation of a non-vigorous infant

Simulation Video Monitoring
- All simulations were videotaped to assist with debriefing

Results

Table 1: Percent Completion of Key Steps of Newborn Care and Neonatal Resuscitation by Simulation Difficulty

<table>
<thead>
<tr>
<th>Key NR Step</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baby moved to warmer</td>
<td>286</td>
<td>158</td>
<td>91</td>
<td>0.001</td>
</tr>
<tr>
<td>Baby stimulated and dried</td>
<td>286</td>
<td>158</td>
<td>91</td>
<td>0.001</td>
</tr>
<tr>
<td>Breathing assessed</td>
<td>258</td>
<td>144</td>
<td>65</td>
<td>0.001</td>
</tr>
<tr>
<td>Breathing reported</td>
<td>258</td>
<td>144</td>
<td>65</td>
<td>0.001</td>
</tr>
<tr>
<td>Heart rate assessed</td>
<td>258</td>
<td>144</td>
<td>65</td>
<td>0.001</td>
</tr>
<tr>
<td>Heart rate reported</td>
<td>258</td>
<td>144</td>
<td>65</td>
<td>0.001</td>
</tr>
<tr>
<td>PPV</td>
<td>258</td>
<td>144</td>
<td>65</td>
<td>0.001</td>
</tr>
</tbody>
</table>

- Total number of simulations with step required, exceeding of clinical competency
- Percent completion of step required (Level 1 vs. Level 3)
- Fisher’s exact test comparing Level 1 vs. Level 3

Table 2: Time to Completion of Key Steps of Newborn Care and Neonatal Resuscitation by Simulation Difficulty

<table>
<thead>
<tr>
<th>Key NR Step</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to delivery to PPV</td>
<td>144</td>
<td>94</td>
<td>88</td>
<td>0.12</td>
</tr>
<tr>
<td>Time to delivery to warmer</td>
<td>225</td>
<td>114</td>
<td>94</td>
<td>0.12</td>
</tr>
<tr>
<td>Time to delivery to baby dried</td>
<td>205</td>
<td>108</td>
<td>88</td>
<td>0.12</td>
</tr>
</tbody>
</table>

- Total number of simulations with step required, exceeding of clinical competency
- Percent time required completing Level 1 vs. Level 3

Table 3: Time to Completion of Steps of Newborn Care and Neonatal Resuscitation in Simulations with 1-2 Participants

<table>
<thead>
<tr>
<th>Key NR Step</th>
<th>Level 1</th>
<th>Level 2</th>
<th>Level 3</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to delivery to PPV</td>
<td>108</td>
<td>67</td>
<td>55</td>
<td>0.07</td>
</tr>
<tr>
<td>Time to delivery to warmer</td>
<td>108</td>
<td>67</td>
<td>55</td>
<td>0.07</td>
</tr>
<tr>
<td>Time to delivery to baby dried</td>
<td>108</td>
<td>67</td>
<td>55</td>
<td>0.07</td>
</tr>
</tbody>
</table>

- Total number of simulations with step required, exceeding of clinical competency
- Percent time required completing Level 1 vs. Level 3

Conclusion
As the complexity of simulations increased from level 1, requiring care of the infant only, to level 3, requiring co-management of maternal and neonatal emergencies:
- There was no change in the percentage of simulations in which trainees completed key NR steps suggesting maintenance of skills despite increased clinical complexity
- True even with only 1-2 participants in the simulation
- Trends indicated trainees performed key steps of NR with increased efficiency
- Infant moved to warmer an average of 17 sec faster in level 3 simulations compared to level 1
- Infant dried 19 sec faster
- PPV initiated 20 sec faster

Similar trends with only 1-2 participants in the simulation The PRONTO methodology focused on in-situ care of the mother-infant dyad has the potential to effectively train health workers in efficient use of evidence-based NR skills immediately relevant to the clinical reality of low-resource settings and offers a new approach to reducing early neonatal mortality.

Acknowledgements
The authors would like to thank the Round 1 trainees, mentors, regional clinical capacity building specialists, and video analysis team. We also thank Dr. Hershey Shah, Indrajit Chaudhuri, Dr. Tarney Mahapatra, Dr. Sunita Skanthakumar, Kingshuk Bagchi, and the CARE India management team. Lastly, we thank Claudia Gerard, Jan Taylor, Patty Spencer, and other PRONTO International Mentor Trainers as well as Jason Stern, Jessika Dyer, and other PRONTO International Staff.

This study was supported by the Bill and Melinda Gates Foundation.
Assessing and Addressing Early Childhood Malnutrition in an Isolated Population in Rural Cambodia

Emily Whitaker MBChB, Jameel Winter MD*, Kolyan Ky, Toymoi Maehara, Jon Morgan MPH

Methods:
• Since 2008, TLC has been providing primary care and referral services to floating fishing villages on the Tonle Sap Lake in central Cambodia.
• Two clinical teams provide healthcare services every week in 9 different villages on the Tonle Sap Lake and Stung Sen River.
• Poverty, geographic isolation & environmental degradation limit access to nutritious foods.

Results:
• Population: 314 children < 5 years in six villages served by TLC were identified and measured in January & February 2016.
• Children were assessed for undernutrition based on WHO criteria using weight-for-age, height-for-age and weight-for-height Z-scores.
• A package of individual & community level interventions were implemented and the population will be followed up every six months over next 3 years:

<table>
<thead>
<tr>
<th>Individual</th>
<th>Community</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Caregiver counselling on optimal nutrition for child health</td>
<td>3. Group education on construction of floating gardens for food security</td>
</tr>
<tr>
<td>2. Referral to clinic for distribution of ready to use therapeutic food</td>
<td>4. Primary school education on health, hygiene &amp; nutrition</td>
</tr>
</tbody>
</table>

Objective: To characterise current rates of childhood malnutrition in the population living on the Tonlé Sap Lake, implement a package of interventions aimed at improving the nutrition status of these children, and follow them over time to assess the impact of this program.

Background:
• Despite economic growth, early childhood malnutrition remains a significant problem in rural Cambodia.
• The Tonlé Sap Lake is one of the most remote areas inhabited by populations living in floating fishing villages.
• Poverty, geographic isolation & environmental degradation limit access to nutritious foods.

Conclusion: Children < 5 years in floating villages on the Tonlé Sap Lake have significantly higher rates of all measures of severe malnutrition (Z < -3).

Future Directions: Follow-up data will be collected to evaluate the efficacy of these interventions on child health.

Disclosures: None
Background

Malawi's PMTCT Option B+ program places pregnant and breastfeeding women on lifelong antiretroviral therapy with efavirenz (EFV) lamivudine (3TC) and tenofovir disoproxil fumarate (TDF) regardless of CD4 count or WHO clinical stage.

HIV-infected children receiving therapeutic doses of these drugs have experienced neurodevelopmental problems.

Methods

Prospective cohort study assessing neurodevelopment through repeated measures of the Bayley Scales of Infant and Toddler Development (Bayley-III).

HIV-exposed matched to HIV-unexposed in a 2:1 ratio.

Inclusion criteria: intending to breastfeed infant as primary feeding means.

HIV-unexposed breastfeeding children of HIV- mothers

HIV-exposed breastfeeding children of HIV+ mothers on ART

HIV-exposed matched to HIV-unexposed in a 2:1 ratio.

Results

Preliminary supports safety of breastfeeding HIV-exposed children.

Conclusion

Long-term exposure to TDF and EFV through breast milk does not appear to result in neurodevelopmental adverse outcomes, specifically infant cognitive, language, or motor development.

All three subscales followed similar patterns that mirror previous findings of above-average performance before 6 months of age and below-average findings at older ages relative to the Bayley-III Western population from which the scaled scores were standardized.

Pharmacokinetic levels of TDF and EFV in maternal plasma, breast milk and infant plasma pending.

18 month visits pending.

References


Contact Austin Wesevich

wesevich@wustl.edu
ASSOCIATION OF BASIC MATERNAL FACTORS AND MATERNAL AUTONOMY WITH MALNOURISHMENT AMONG CHILDREN 6-36 MONTHS OLD IN AN URBAN SLUM IN BANGALORE, INDIA

Sindhu Sudanaganunta, M.D. *, Carolin George, M.B.B.S. *, Joan Reisch Ph.D.*, Gift Norman M.B.B.S.*

*University of Texas Southwestern Medical Center, *Bangalore Baptist Hospital, and *Children’s Health System of Texas

Background
- Child malnutrition is a significant problem in many developing countries with much of the burden falling on economically and historically underprivileged societies.
- Chronic undernutrition leads to decreased height for age (stunting) and contributes to reduced intellectual capacity, morbidity, and mortality.
- Acute undernutrition results in decreased weight for height (wasting) and can diminish a child’s reserve for fighting illnesses and for day-to-day activities.
- Recent attention on psychosocial dynamics has encouraged researchers to focus on maternal factors and its effect on child malnourishment.

Objectives
To assess if:
- Previously studied maternal factors (age, number of children, educational level, etc.) will differently correlate to child malnourishment in Bangalore slums.
- Higher levels of maternal autonomy – the freedom and ability to control the resources available to the mother to care for her child – lead to lower levels of stunting and wasting in children.
- Decreased maternal autonomy is more correlated with child malnourishment than other maternal factors.

Methods
- A cross-sectional observational study was conducted on 199 mother-child dyads in DJ Halli.
- Anthropometric measurements were collected on children between 6-36 months of age.
- A 34 question survey covering issues of basic maternal factors, decision-making abilities, and domestic violence was administered to the mothers with the aid of an interpreter.
- To assess if maternal autonomy in decision-making was associated with child malnourishment.

Results
- On average, the mothers were 22 years old, received a secondary education (>8th grade), religiously identified as Muslim, were unemployed, and were married with 2 children.
- Average age for the children was 18 months and both genders were represented equally (female: 51.76%).
- There was a significant difference in undernutrition between genders.
- Stunting was present in 32% of children (7.5% were severely stunted) and wasting was present in 23% (6.5% were severely wasted).
- Lower rates of malnourishment were noted among children with mothers at least secondary level (>8th grade) education.
- Mothers who sought medical care >3 times during pregnancy were more likely to have children who are normal height for age.
- Less than half the mothers had autonomy in daily household purchases, major household purchases, and freedom to travel (47.7%, 44.8%, and 15% respectively)
- The only maternal autonomy factor significantly associated with stunting and wasting was her ability to decide on major household purchases.

Conclusion
- In this population higher levels of maternal education were associated with lower rates of malnourishment.
- Proper antenatal medical care was correlated with decreased rates of stunting.
- The healthcare received during visits may not be the only reason for the negative correlation to stunting. It is possible that mothers who did not have at least 3 antenatal visits might not have done so for many reasons which could include the following: lack of resources (money, transportation, time, freedom to travel), uneducated or improperly educated regarding pregnancy and child rearing, decreased health seeking behavior, etc.
- There was a significant but inverse association between maternal input on major household purchases on both stunting and wasting.
- Further studies need to be conducted to tease apart the influence of maternal factors, including autonomy, on a child’s ability to thrive.

References

The authors of this poster have nothing to disclose.

For more information, please contact: Sindhu.Sudanaganunta@childrens.com
The racial and ethnic composition of the U.S. population has undergone significant changes with Asian Pacific Islanders being one of the fastest growing populations. Furthermore, the number of immigrant children has doubled in the past two decades, and a quarter of U.S. children are estimated to have at least one foreign-born parent. Compared to their white counterparts, Korean children are more likely to be rated by parents to be in fair or poor health, to lack health insurance, and to have had no well child examinations, even after adjusting for socioeconomic differences in both children and adults.

Objective

The purpose of this exploratory study was to identify barriers and enabling factors that influence healthcare access and utilization in pediatric population of Korean descent in an urban Midwest community.

Methods

The current study used qualitative methods to explore the experiences of Korean parents and their understanding and use of the healthcare system for their children. Study participants were members of faith-based and community-based organizations recruited by working with community leaders and utilizing existing Korean business advertisements as well as personal rapport within the community.

A semi-structured facilitator-guide was used to guide questions on cultural influences on health care decisions and interactions and utilization of health services. IRB approval was obtained.

Four focus groups were conducted in the language of preference of participants: Korean or Korean mixed with English for clarification. Data were analyzed using grounded theory methodology. Using NVIVO, the researchers coded and identified recurring themes and a model developed to characterize the findings.

Results

Three overarching themes were identified focused on language barriers, differences in healthcare delivery, and the understanding of primary care.

Language barriers in health care interactions

- Patient knowledge regarding and quality of interpreter services
- Physician inquiry regarding the need for such services and their effective utilization
- Usefulness of written instructions and visit-summaries

Differences in healthcare between Korean and the United States Systems

- Health insurance expenses and perceived healthcare costs
- Wait-times involved in scheduling as well as during appointments
- Physician inquiry and understanding of common Korean home remedies or multicultural lifestyle
- Quality of physician’s time spent with patients
- Patient autonomy in care and discussion of primary treatment options

Understanding of primary care

- Effectiveness of well-child examination and immediate care facilities
- Korean-speaking acquaintance and internet for medical information

Sample Parental Quotes

"I typically use English during my child’s well-child examinations. I request interpreter service however when my child is going through surgery or I have important questions I wanted to address." In Korea, all medical providers including the doctors and the pharmacists have clear sense of what is covered and not covered by insurance and prescribe and suggest management accordingly. Maybe it has to do with having every legal residents service however when my child is going through surgery or I have important questions I wanted to address." "I do not use the Korean oriental combination herbal medicine but I do use Korean ginseng for my children. Everyone in Korea uses this, and it is available in a tube-paste form. This never comes up during my doctor’s visits here, and the providers do not know much about the usefulness or side effects associated with its use." "I had a hard time understand the concept of primary care physician and the fact that I am expected to see my primary care physician dictated by the insurance when I am sick for the insurance to cover my sick visits."

Limitations

A relatively small number of subjects participated in the focus groups, therefore findings may not be generalizable to other Korean communities.

Conclusions

Korean children may experience unique barriers to health care access. We have also learned that there were misconceptions about appropriate use of the healthcare system.

We have also learned that there were misconceptions about appropriate use of the healthcare system. These findings merit additional research to further examine these barriers and establish quality improvement efforts within the community. Community resources aimed to empower ethnically and linguistically diverse populations through education and networking as well as a more nuanced and inquisitive cultural competency training within healthcare system are needed.

Acknowledgments

We want to express our appreciation to our community partners for assistance with recruitment, Korean School of Louisville for providing picture, and the University of Louisville Pediatric Residency Office of Medical Education for technical support.

References

6. V. Faye Jones MD PhD MSPH1 2
7. Angela Choe MD1, Katie Leslie PhD2, Sliyoung Choe MPH3, Jae M Seo4, V. Faye Jones MD PhD MSPH1 2
8. SI Young Choe MPH3
THE GITWE DEVELOPMENTAL DELAY SCREENING TOOL (GDDST): A LOW-TECH, CULTURALLY-CONTEXTUALIZED TOOL TO INCREASE DETECTION OF DEVELOPMENTAL DELAY AMONG CHILDREN IN RURAL RWANDA

Introduction

In low and middle income countries (LMICs) an estimated 200 million children are developmentally delayed, meaning they are not reaching their developmental milestones. Undernutrition and psychosocial factors, including limited cognitive stimulation, are the leading drivers of developmental delay in LMICs. Western tools to evaluate the five domains of development – social, language, cognitive, gross motor, fine motor – have previously been shown to lack appropriate evaluation of psychosocial development. Thus culturally-contextualized tools have been developed for LMICs. Even still, many such tools require in-depth knowledge of child development to administer and therefore screening must be done by trained specialists. Further, given that children in rural communities are less likely to receive care in LMICs, these children are, at baseline, less likely to be identified if delayed. Thus easy to use evaluations of development are needed for rural communities in LMICs.

Aim

To develop a psychometrically reliable and valid, culturally-contextualized development screening tool that can be utilized with minimal training, require no additional materials (e.g.) blocks, and be utilized with the 5-20% prevalence of developmental delay and thus improve quality of life and support poverty alleviation efforts.

Study Population & Rwandan Community Health Workers

Ruhango, Rwanda is home to approximately 53,000 children under-5, one in three of whom is undernourished. (DHS, Rwanda, 2010) At risk of becoming developmentally delayed, undernourished children are more likely to have learning disabilities, to struggle in school, and have been shown to earn less money during their lifetimes than healthy peers. (Diop, WHO, 2007) In Rwanda, a network of 60,000 Community Health Workers (CHWs) are playing a key role in improving outcomes in under-5 health. There are over 400 CHWs serving the population of Ruhango (~220,000, DHS, Rwanda, 2010).

Methods

We conducted focus groups with Rwandan physicians (12), pediatric nurses (8), CHWs (9) and parents of under-5 (16) children to explore cultural ideas of “normal” childhood development among rural Rwandan children. Transcripts were translated, back-translated, and analyzed for themes of social, cognitive, language, gross motor, and fine motor development. Thereafter, the Gitwe Developmental Delay Screening Tools (GDDST) was designed to not require any tools, significant cost, or expertise in Child Development. Psychometric evaluation was conducted. Sixteen CHWs were trained in the GDDST and a pilot was conducted to assess the feasibility of CHWs screening for developmental delay. IRB approval was received from Stanford University and L’Institut Superieur Pedagogique de Gitwe.

Results: Focus Group Themes

Focus group themes as cultural indicators of "normal" development

- Socialization in groups
- Cognitive recognition of siblings and community members
- Language articulation of common foods
- Playing games
- Completing chores of rural life requiring gross and fine motor skills (e.g. fetching water, tending spaces, helping with cooking)

Results: Psychometrics, Kappa Results


Conclusions and Next Steps

We developed the Gitwe Developmental Delay Screening Tool (GDDST), a low-cost, culturally-contextualized, validated screening tool for developmental delay among rural Rwanda children under 5. We have demonstrated that CHWs can be engaged in low-cost, rapid screening of child development progress in rural Rwanda and that prevalence of developmental delay may be as high as 9% among children under 5 years. We anticipate conducting a “gold standard” evaluation of children by a Rwandan pediatrician to optimize the GDDST. The GDDST has the potential to be used in routine health evaluations of the 2,000,000 children under-5 living in rural communities in Rwanda to help detect children at risk of developmental delay and thus improve quality of life and support poverty alleviation efforts.

References & Acknowledgements


Figure 1. Twelve of sixteen (75%) CHWs trained collected surveys independently. In four weeks a total of 384 surveys were collected. Eighty-two percent (82%) were collected without missing data points. It is feasible to train CHWs to include developmental screening in their workflows.

Figure 2. CHWs identified an average of 9% of children with suspected developmental delay. Though underpowered, these data are the first in the Ruhango District to estimate prevalence of developmental delay. The GDDST can be utilized to increase detection and referrals for further evaluation.

Figure 3. Children with suspected developmental delay performed significantly less well in all developmental categories compared with children with suspected age appropriate development among children ages 2 through 5 years on the GDDST. (n delayed = 26, n age appropriate = 132, t-Test Statistics all < 0.005). This further validates the GDDST as a tool capable of detecting developmental delay and provides insight that no single deficit seems most prevalent among the study population.