Selecting an Early Child Development Assessment Tool in Rural Limpopo, South Africa

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Research Questions

• Purpose – to compare the acceptability and feasibility of two pediatric assessment tools (ASQ and CAT/CLAMS) to track child development in a rural health district in Limpopo, South Africa.
  – Is a child development monitoring program feasible in this community?
  – What is the most appropriate child development assessment tool?
  – What is the perception of local public health nurses about the importance of child development?
  – What are the barriers to implementing a child development project in this community?
Limpopo, South Africa

- Population – 1.3 million
- 93% use public health care
- 38.7% unemployment
- Language - Tshivenda (69%) and Xitsonga (27%)
- 15% of households have running water
- Health care – 112 clinics, 8 community health centers, 6 public hospitals
Child Brain Development

• Brain development is most rapid during the first years of life
• Interruptions in these processes can effect the brain’s capacity to learn and function
• Four Major Areas of Development
  – Motor
  – Language
  – Adaptive/Cognitive
  – Personal/Social
• Developmental Delay - a child who is unable to reach certain developmental milestones at the expected age, after accounting for individual variations in development
Risk Factors for Developmental Delay

- Inadequate cognitive stimulation
- Stunted growth
- Nutritional deficiencies
- Intrauterine growth restriction
- Malaria
- Lead exposure
- Maternal Depression
- Exposure to Violence
- Low Parental Education
- Commanding Parenting Styles
- Mental Health Problems in Parents
- Single Parents
- Multiple Siblings
- Poor Social Support
- Minorities
Protective Factors for Developmental Delay

- Early interventions
- Maternal Education
- Community Support
- Maternal Attachment
Screening for Developmental Delay

• Most delays are detectable between 6 – 32 months
• Recommended routine, repeated screening
• Clinical judgment alone is not sensitive to Developmental delay
• The United States uses over 20 developmental screening tools – not validated in developing countries
Ages and Stages (ASQ)

• Screening for ages 2-66 months assessing gross motor, fine motor, communication, problem solving, personal-social

• Self-report from caregivers, completed at home prior to clinic visit
  – Administration time approximately 15 minutes

• ASQ used in US, Turkey, Holland, Brazil, Korea, Taiwan
  – No use in sub-Saharan Africa

• ASQ correlated well with Bayley Scales
GROSS MOTOR

1. Does your child bend over or squat to pick up an object from the floor and then stand up again without any support?  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

2. Does your child move around by walking, rather than by crawling on her hands and knees?  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

3. Does your child walk well and seldom fall?  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

4. Does your child climb on an object such as a chair to reach something he wants (for example, to get a toy on a counter or to “help” you in the kitchen)?  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

5. Does your child walk down stairs if you hold onto one of her hands? She may also hold onto the railing or wall. (You can look for this at a store, on a playground, or at home.)  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

6. When you show your child how to kick a large ball, does he try to kick the ball by moving his leg forward or by walking into it? (If your child already kicks a ball, mark “yes” for this item.)  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

GROSS MOTOR TOTAL  

FINE MOTOR

1. Does your child throw a small ball with a forward arm motion? (If he simply drops the ball, mark “not yet” for this item.)  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

2. Does your child stack a small block or toy on top of another one? (You could also use spools of thread, small boxes, or toys that are about 1 inch in size.)  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

3. Does your child make a mark on the paper with the tip of a crayon (or pencil or pen) when trying to draw?  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

4. Does your child stack three small blocks or toys on top of each other by himself?  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

5. Does your child turn the pages of a book by himself? (He may turn more than one page at a time.)  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

6. Does your child get a spoon into her mouth right side up so that the food usually doesn’t spill?  
   YES  |  SOMETIMES  |  NOT YET  
   |||  

FINE MOTOR TOTAL  

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CAT/CLAMS

• Screening up to 36 months assessing cognitive and language skills
• Uses instruments (toys) to directly observe child’s abilities during the clinic visit
  – Administration time 15 – 20 minutes
• Originally developed for screening high-risk children, used now in general populations
• Assessment builds on previously completed tasks
Methodology

• Two focus groups of public health nurses in Limpopo
  • What did you like about the assessment tool?
  • What was difficult or challenging about the assessment tool?
  • How confident do you feel using the assessment tool on a child in your clinic?
  • How do you see this assessment tool fitting into your work with young children in the clinics?
• Qualitative analysis using versus coding was used to compare ASQ versus CAT/CLAMS and Group 1 versus Group 2
Data Analysis

• Transcripts and field notes from focus groups
• Versus Coding
  – Group 1 vs Group 2
  – ASQ vs CATCLAMS
• Codes were grouped into categories and clustered into themes
  – 150 unique data
  – 16 codes
  – 6 categories
  – 2 themes
Current Practice

- No system for screening children for developmental delay
- “Road to Health” card
- Knowledge deficit
- Delay of care
Usability

**CAT/CLAMS**
- Calculates developmental score
- Well suited for hospital or school environment
- Feasible for use in clinic work flow
- Described as costly, time consuming, and difficult to calculate
- Score calculation is moderately challenging
- Better suited for low-volume days

**Ages and Stages**
- Described as easy, practical, uncomplicated, and simple
- Uncomplicated administration
- Visual graph to show where a child falls in relation to “cut off” scores
- Identified as primary assessment tool
- Feasible for use in clinic work flow
- Requires assessor to be literate
- Score calculation is mildly challenging
<table>
<thead>
<tr>
<th>Resource Management</th>
<th>CAT/CLAMS</th>
<th>Ages and Stages</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>High cost of toys</td>
<td>Low cost</td>
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<tr>
<td></td>
<td>Long administration time</td>
<td>Utilization of CHW</td>
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<td></td>
<td></td>
<td>Minimal time commitment for nurses</td>
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<tr>
<td></td>
<td></td>
<td>Cost of copying assessment surveys</td>
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<td></td>
<td></td>
<td>Insufficient numbers of CHW to complete home assessments</td>
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<tr>
<td>Cultural Adaptations</td>
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<tr>
<td>----------------------</td>
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<tr>
<td><strong>CAT/CLAMS</strong></td>
<td></td>
<td></td>
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<tr>
<td>• Moderate amount of translating needed</td>
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<td></td>
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<tr>
<td>• Expensive toys which are not all culturally appropriate</td>
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<td></td>
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<tr>
<td><strong>Ages and Stages</strong></td>
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<tr>
<td>• Substantial amount of translating needed</td>
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<tr>
<td>• Poor access to copiers and printers</td>
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<td>• Requires cultural modification of survey assessment questions</td>
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### Patient and Parent Factors

#### CAT/CLAMS
- Direct observation of child’s abilities
- Can use toys to teach mothers about meaningful play
- Spend more time with patients
- Nurses want to assess their own children using the tool
- Parents may not understand the importance of “play” during assessment and become impatient and leave
- Child may be afraid of the nurse and underperform

#### Ages and Stages
- Assessment done in-home
- Nurse can teach parents about results when they score the assessment tool
- Nurses distrust accuracy of information reported by parents
New Knowledge

• Either tool would improve child health through
  – Improved surveillance
  – More contact with health providers
  – Parental education about meaningful play

“It is important for us [nurses] to educate the home-based carer [CHW], to educate the people in the community, to know the importance of child health in the community.”
Conclusions

• What is the most appropriate child development assessment tool?
• Is a child development monitoring program feasible in this community?
• What is the perception of local public health nurses about the importance of child development?
• What are the barriers to implementing a child development project in this community?
Conclusions

• Limitations
  – Generalizability
  – Cultural Barriers

• Future Research
  – Train public health nurses about child development and screening tools
  – Adaptation and validation of assessment tool in this population
  – Longitudinal pilot study

• Significance
  – First to investigate child development in rural Limpopo, South Africa
  – First to investigate child development assessment tools in rural, sub-Saharan Africa
  – Long-term improvements in child health and injury prevention
Acknowledgements

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References

References


