Developing and Testing the Effectiveness of the Mesko-Eliades Pain Area Locator Tool to Assess Pain Location in Children
Presenters
Phyllis J. Mesko, RN, CPN
Aris Beoglos Eliades, PhD, RN, CNS
Akron Children’s Hospital
Delta Omega Chapter, Akron, Ohio, USA

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Objectives

• Describe the study background to establish the effectiveness of the Mesko-Eliades Pain Area Locator (PAL) tool in pediatric post-operative patients

• Describe the conduct, results, and implications of research studies of the PAL in pediatric post-operative patients
About Akron Children’s

• Ranked a Best Children’s Hospital by *U.S. News & World Report*

• 6th largest children’s hospital in country

• Magnet® Recognition for Nursing Excellence

• Largest pediatric provider in NE Ohio
  • 2 hospital campuses
  • 20+ primary care locations
  • 60+ specialty location

• Awarded a NorthCoast99 top employer

• More than 5,000 employees
  • 1,600+ nurses
  • 750+ medical staff
Background

• Prior to surgery, postoperative pain utmost concern (Apfelbaum, Chen, Mehta & Gan, 2003; Gottschalk & Smith, 2001)

• Pain location is an integral part of pain assessment for all phases of post-operative care (ASPN, 2003)

• Must find another way to communicate with child unable to self-report pain due to a temporary inability to speak following a surgical procedure (Mesko, 2010, Mesko, Eliades, Libertin & Shelestak, 2011)

• Gap in literature on effective tools to identify pain location in the pediatric post-anesthesia patient (Hamill, Lyndon, Hill & Liley, 2014)
DEVELOPING A PROGRAM OF RESEARCH
Study Design, Setting and Human Subjects Protection

- Quantitative, comparative design
- Post-anesthesia Care Unit of a Magnet® recognized free-standing pediatric hospital in northeast Ohio
- Reviewed by hospital Institutional Review Board
- Study identifier assigned to participants
- Parental consent obtained
Purpose

• Assess efficacy of picture communication aids to assess pain location in postoperative pediatric patients

• Determine parent satisfaction with the use of the picture communication tool among post-anesthesia pediatric patients

• Establish reliability and validity of tool
Sample

Convenience sample

• Ages three to nine years with known reluctance to communicate
  • 33 post-operative tonsillectomy & adenoidectomy patients
  • 22 males and 11 females
• Expanded to patients undergoing broad range of same-day surgical procedures
  • 41 children
  • 19 males and 22 females
• Preliminary reliability and validity analysis on subset
  • 26 children
  • 13 males and 13 females
Instruments

• **Mesko-Eliades Pain Area Locator (PAL) tool**
  • Picture communication aid
  • Study 1
    • Body outline front and back and 6 picture communication icons of the body
  • Study 2
    • 12 picture communication icons of the body and medical equipment
  • Created using pictures from Boardmaker graphic software (Dynavox, Mayer-Johnson, Pittsburgh, PA, USA)
  • Face and content validity established
Evolution of Instrument: Initial Study
Evolution of Instrument: Second and Third Studies

Mesko-Eliades Pain Area Locator (PAL)
Instruments

• Parent Satisfaction Survey
  • 10-items
  • Measured satisfaction with:
    • Standard pain management practice
    • Use of picture tool
Methods

- Subject Recruitment
  - Operating Room schedule reviewed daily
- Nurse completed standard pain assessment
- Data collector:
  - Explained study to parents and obtained consent
    - Assessed child’s pain location using the PAL tool
  - Collected data from computerized medical record
    - Pertinent medical history
    - Surgical site
    - Nurse’s pain assessment including location of pain
Findings: Location of Pain

Study 1
- 38% inconsistency between nurse’s documentation and child’s location of pain
- Nurses cited operative site as location of pain 81% of the time compared to 20% by the child

Study 2
- 41 participants with at least one pain assessment by the nurse and data collector
- 83% of cases pain location not documented and child indicated pain location using PAL
- 17% of cases documented pain location with 100% agreement of pain location child indicated using PAL and pain location documented
Parent Satisfaction Survey Findings

“Nurses concern for comfort”
- Study 1 mean response of 94.7 was significantly higher (p=0.007) compared to historical data from the study site (m=90.4)
- Study 2 mean response of 100 was higher compared to historical data from the study site (m=93.3)

“Degree pain was controlled”
- Study 1 mean response of 92.1 was higher (p=0.017) compared to historical data from the study site (m=89.8)
- Study 2 mean response of 97.3 was higher compared to historical data from the study site (m=93.0)
Preliminary Reliability of PAL Study 3

- Parallel forms testing
  - Nurse’s standard pain location assessment
  - Child’s pointing to picture of where they hurt on PAL tool
  - Child pointing to pain location on their body

- 29 post-operative patients ages three to nine
Inter-rater Reliability

- Used to minimize bias
- Systematically recorded for data collectors in each study:
  - Inter-rater reliability for PAL = 100%
  - Inter-rater reliability for assessment of pain location by child pointing to their body = 89%
# Preliminary Reliability of PAL Parallel Forms Testing

<table>
<thead>
<tr>
<th>Parallel Forms</th>
<th>Intraclass Correlation Coefficient (ICC)</th>
<th>Level of Significance</th>
<th>Percent Agreement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse's assessment to PAL</td>
<td>Weak, ICC=0.105</td>
<td>p=0.234</td>
<td>19%</td>
</tr>
<tr>
<td>Nurse’s assessment to child pointing</td>
<td>Weak, ICC=0.085</td>
<td>p=0.286</td>
<td>15%</td>
</tr>
<tr>
<td>PAL to child pointing</td>
<td>Strong, ICC=0.821</td>
<td>p=0.000</td>
<td>65%</td>
</tr>
</tbody>
</table>
Validity of PAL

- Content and face validity established by:
  - speech therapist
  - nurse expert
  - six pediatric nurses
  - nurse researcher
  - nurse statistician
- Validity of PAL as an accurate assessment of pain location by the post-operative children who comprise a key ‘stakeholder’ group
Discussion

• Study results indicated
  • Pain location often not documented
  • Pediatric postoperative patients are able to identify pain location
  • Children experience pain at other areas other than the surgical site
  • Parental satisfaction with use of pictures to identify location of pain
Implications for Nursing

• Perianesthesia clinical practice standards are advanced by findings that patients’ undergoing a variety of pediatric surgical procedures effectively used the PAL post-operatively to identify location of pain.

• Parent satisfaction increased compared to standard pain location assessment
Future Research

• Further establish validity and reliability of PAL
• Establish usability of PAL in practice
  – Study in progress
• Additional single and multi-site studies
• Comparison of pain intervention in patients where the PAL was and was not used
• Expand ages and sites beyond pediatrics
Conclusions

• Findings
  • Provide strong evidence PAL is effective tool
  • Consistent with literature that nurses often fail to document pain location
  • Advance perianesthesia clinical practice standards regarding pain location
  • Provide evidence to support incorporating the PAL to identify pain location in children
  • Parents reported that the PAL was easy to use
Research Program
Scholarly Outcomes through 2015

Publications
• 2 and 1 manuscript in review

Oral Presentations
• 4 local
• 3 state
• 4 national
• 1 international

Poster Presentations
• 3 local
• 4 state
• 3 national
• 2 international
Research Program
Honors and Awards through 2014

• 2011 Second Place Research Poster Award at the Inaugural International Conference for PeriAnesthesia Nurses (ICPAN), Toronto, Canada

• 2012 Second Place Mary Hanna Memorial Journalism Award, American Society of PeriAnesthesia Nurses (ASPN), Orlando, Florida

• 2012 ASPAN Novice Research Grant

• 2013 First Place Research Poster Award at the ICPAN Conference in Dublin, Ireland

• 2014 Ohio March of Dimes Nurse of the Year, Pediatrics

Work cited:

• Book chapter and articles
Thank you

Questions please contact:

Phyllis J. Mesko, RN, CPN
pmesko@chmca.org

Aris Beoglos Eliades, PhD, RN, CNS
aeliades@chmca.org
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