

Emergency Department Pediatric Self Efficacy Scale (PEDI-ED-SE)

A Psychometric Study

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INTRODUCTION

Literature supports that Emergency Department (ED) clinicians lack self-efficacy for recognizing and managing pediatric emergencies, particularly in community based settings.

Empirical evidence supports that in-situ simulation provides an effective educational venue for improving self-efficacy.

A gap exists in measuring clinicians self-efficacy for recognizing and managing pediatric emergencies with a validated, reliable and responsive instrument.

OBJECTIVES

1. Construct a self-efficacy scale for recognizing and managing pediatric emergencies
2. Conduct validity testing (content and structural)
3. Conduct reliability testing

BACKGROUND/LITERATURE REVIEW

- Children pose a challenge to healthcare providers because they have unique physical and psychological needs (Remick et al., 2019).
- Most pediatric ED visits occur at community based hospitals due to their proximity to the schools, homes and playground settings (Remick et al., 2019).
- 83% of all children present at general ED settings compared to specialized ED settings (Gausche-Hill et al., 2015).
- In 2019, the American Academy of Pediatrics, American College of Emergency Physician and the Emergency Nurses Association released a joint policy statement that outlines how hospitals should prepare for caring for pediatric patients (Remick et al., 2019).
- Despite the existence of policy statements spanning over a decade, evidence suggests that healthcare providers (i.e., nurse, patient care technicians, providers) often lack the self-efficacy to care for pediatric emergencies (Lubber & Rossman, 2016; O'Leary, Nash & Lewis, 2016; Sage-Rockoff et al., 2019; Saied, 2017).
- Sage-Rockoff et al.(2019), in a pre-post design study of 43 RNs, found that the mean baseline scores for confidence ranged from 2.4-2.5, on scale with 1 (lowest confidence) to 5 (highest confidence).
- O'Leary et al., (2016), in a two group pre-post design study, found baseline self-efficacy scores, ranged from Mdn= 43 to Mdn =140, on a 14-item scale with a maximum score of 140, among nurses.

Despite the evidence demonstrating this problem, a gap exists in the literature.

SETTING

The setting was conducted in an ANCC Magnet designated, 275 bed, acute care community based hospital in the Northeast. The study was conducted within the health systems Emergency Departments, inclusive of a hospital based ED and two satellite ED's. Combined ED census of 81,000 with > 10,000 pediatric visits yearly.



METHODS

Step	Description
#1 • Item pool generation • Scale construction	<ul style="list-style-type: none"> • Salient concepts identified • 3 themes: general concepts, recognize emergencies, manage emergencies • Stems: avoided double negatives, double-barreled items, nurse centric bias • Temporal frame set as "currently" • Self-report, multidimensional
#2 • Cognitive Interviews (CI)	<ul style="list-style-type: none"> • Participants rated ease of completion (1= very hard; 5= very easy) • Probing questions (ex: I noticed you gave yourself a 3, tell me what you were thinking; what does the word Broselow tape mean?) • Two researchers measured concordance with participants definition to pre-defined definitions (1= completely incorrect; 5= completely correct)
#3 • Content Validity (CVI) testing	<ul style="list-style-type: none"> • Information packets sent; experts rated each item for clarity and relevance (1=not relevant/clear; 4 = highly relevant, clear)
#4 • Test-retest validity • Stability test	<ul style="list-style-type: none"> • Two – week interval • No intervention between completion • Matched responses with anonymous codes
#5 • Revised scale items	<ul style="list-style-type: none"> • Used above results to revise scale • Reorganized scale for better flow • Measured health literacy (Flesch-Kincaid)
#6 • Structural validity • Reliability testing	<ul style="list-style-type: none"> • Confirmatory factor analysis with principal axis factoring [PAF] • Cronbach alpha

SAMPLE

Step	Participants
#1 & #5	Research team
#2 • Purposive sampling	Minimum: 5 years of acute care experience related to emergency resuscitation; Bachelor's degree; certified (n=13)
#3 • Purposive sampling	Minimum: 5 years of ED experience; Bachelor's degree, certified in specialty, PALS/ENPC experience; 1 year experience in simulation; worked in pediatric resuscitation (n=11)
#6 • Convenience sampling	Healthcare provider (provider, nurse, patient care technician or paramedic), off of orientation; participating in simulation cases (n=260)

RESULTS

Step	Result
#2	Ease of completion: $M=4.80$ Concordance: $r=.95$ Probing questions: No respondents reported concerns about the directions Identified concerns with definitions of 2 key terms: pediatric and precipitous labor
#3	I-CVI: • General (I-CVI= 1.00) • Recognize (I-CVI =1.00) • Manage (I-CVI = 0.90); S-CVI = 0.95
#4	Using the mean score for correlation, coefficient of stability: $r=.90$
#5	FK = 22.5 with reading grade level of 10 th grade FK increased to 44.7 with reading grade level of 5 th grade with removal of words pediatric, Broselow and precipitous
#6	<ul style="list-style-type: none"> • Sampling adequacy met requirements (KMO = 0.88) • Scree plot: break in eigenvalue between factors 2 and 3 • All factors loaded strongly on a forced 3 factor solution with rotation (loadings >.400, .200 difference) • Cronbach alpha internal consistency: full scale: alpha=.92; general: alpha=.79; recognize; alpha = .86; manage: alpha=.89. • Squared multiple correlations showed removal of any item would decrease the internal consistency results



Pediatric ED Self-efficacy (Pedi ED-SE) scale

Please indicate your degree of agreement <i>currently</i> (at this moment) in regards to recognizing and managing emergency pediatric situations.	4= Strongly Agree	3= Agree	2= Disagree	1= Strongly Disagree
Definitions: Pediatric: birth to age 15 Precipitous: sudden, fast, emergent				
I am confident in my ability to:				
utilize the Broselow tape.	4	3	2	1
navigate the Pediatric (Broselow) Code Cart.	4	3	2	1
work as a team to handle critical pediatric cases.	4	3	2	1
I am confident in my ability to recognize:				
abnormal pediatric vital signs.	4	3	2	1
signs of child abuse.	4	3	2	1
pediatric shock	4	3	2	1
precipitous delivery.	4	3	2	1
pediatric trauma.	4	3	2	1
pediatric cardiac arrest.	4	3	2	1
I am confident in my ability to manage:				
abnormal pediatric vital signs	4	3	2	1
pediatric shock	4	3	2	1
precipitous delivery.	4	3	2	1
pediatric trauma.	4	3	2	1
pediatric cardiac arrest.	4	3	2	1

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IMPLICATIONS

- Preliminary testing supports the use of PEDI-ED-SE
- Additional structural testing needs to be completed in various ED settings and among different levels of experience
- Responsiveness testing needs to be completed to measure the ability of PEDI-ED-SE to measure changes in self efficacy
- The team seeks collaborative opportunities for the use of PEDI-ED-SE in other ED settings among educators and researchers.

CONCLUSIONS

Increasing the self-efficacy among healthcare providers caring for pediatric emergencies is a priority in all ED settings. Initial testing supports the validity and reliability of PEDI-ED-SE as a multidimensional (three) scale with minimal respondent burden. This scale has the potential to improve outcome measurements for quality improvement or research studies.



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