



Relations Between Knowledge, Anxiety, and Distress in Children Undergoing Invasive Medical Procedures

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Introduction

- Children have varying responses to invasive medical procedures, such as the voiding cystourethrogram (VCUG), an x-ray of the urinary tract involving catheterization.
- Anecdotal reports suggest that, while the VCUG may be less painful than other procedures, it can be particularly distressing because of its invasiveness (Stashinko & Goldberger, 1998). For example, Herd (2006) reported that 61% of non-sedated children experience severe distress during the VCUG.
- Studies have found that children with prior knowledge and understanding of their medical procedure may experience less anxiety and distress during it (Rodriguez et al., 2012); however, other studies have a positive correlation between knowledge and distress (Jacobsen et al., 1990).
- To date, no studies have specifically investigated the role of procedural knowledge in children's experience during the VCUG.

Aims/Hypothesis

- To examine if there is a relationship between children's procedural knowledge and understanding and their anxiety and distress during the VCUG
- We predicted there would be a negative correlation between procedural knowledge and anxiety/distress during VCUGs as rated by parents, children, and medical staff.

Methods

Participants: 34 children (32 females) between the ages of 4 and 10 (M=5.68, SD=1.74) who underwent a VCUG at a medical center in upstate New York

Measures:

- **Procedural Knowledge Survey (PKS)**
 - 10-item questionnaire which asked parents to indicate whether their child knew about different aspects of the VCUG and hospital visit
 - All items asked parents "did you tell your child..." followed by each aspect (see Table 1)
 - Yielded *total knowledge score* based on summing number of items on which parents indicated their child knew about the particular aspect of the procedure
- **Child-Adult Medical Procedure Interaction Scale-Revised (CAMPIS-R)**
 - Rating scale used to code vocalizations during VCUG; produces *total distress score*
- **Post-Procedure Rating Scale**
 - *Parents and Staff:* Within 30 minutes following the VCUG, parents and examining technologists rated the *child's worry, fear, and pain* during the procedure on a scale from 1 (not at all) to 5 (extremely). Questions included "How afraid was your (the) child during the procedure?"
 - *Children:* Within 30 minutes following the VCUG, children rated their *worry, fear, and pain* from 1 (not at all) to 10 (extremely) on a 10-inch thermometer. Questions included "How worried were you when you had the x-ray of your belly?"

Results

- Table 1 presents descriptive statistics for the PKS, specifically the percentages of children with prior knowledge about each aspect of the VCUG.
- Over 50% knew about most significant aspects of the VCUG (e.g., reason for hospital visit), though fewer knew about more minor aspects (e.g., length of the procedure).
- Table 2 presents correlations between PKS and all outcomes as reported by children, parents, and staff, as well as the CAMPIS-R score. Positive correlations were observed between children's knowledge and parent-reported fear and staff-reported pain.

Table 1. PKS Questions and Percentages of Children with Knowledge

Reason for visit	This is an X-ray	About the catheter	He/she must lie still	His/her genitals will be cleansed
91.2%	72.7%	75.8%	72.7%	51.5%
His/her bladder will be filled	Why he/she will have to void	He/she may be uncomfortable	Catheter is painless	Procedure length
63.6%	63.6%	72.7%	45.5%	48.5%

Table 2. Pearson *r* Correlations Between PKS and Procedural Ratings

Child Ratings			Parent Ratings			Staff Ratings			CAMPIS-R
Anx	Fear	Pain	Anx	Fear	Pain	Anx	Fear	Pain	
-.007	-.147	.146	.073	-.258+	-.053	-.106	-.126	-.330*	-.228

+p < .10, *p < .05, **p < .01, ***p < .001

Discussion

- Findings suggest that most children knew about important aspects of the VCUG experience prior to their VCUG. In addition, despite lacking statistical significance, a pattern of correlations emerged suggesting that knowledge predicted less anxiety and distress.
- Limitations include the low sample size, which may have yielded non-significant correlations, despite magnitudes in low/moderate range
- Future research should consider whether the relationship between knowledge and procedural anxiety may be influenced by children's age.

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