

subnormal cortisol response during ITT, only a single 1 µg CST is needed for further assessment of adrenal insufficiency.

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Concept Analysis of Fear: Focus on Childhood Fear and Implications for Endocrine Nursing

Carol Howe RN, MSN

University of Texas at Arlington, Arlington, TX

Background: Clinicians often underestimate the fear that children have with frequent needlesticks required in the care of many endocrine disorders (Bracha, 2004). While fear lessened, 28% of young children with Type 1 diabetes mellitus continued to report needle fear 6 months after diagnosis (Howe et al., 2011).

Aims: A concept analysis of fear with a focus on childhood fear was undertaken to define the antecedents, criteria, and consequences of fear to develop a theoretical definition of fear that informs nursing interventions to help children cope with fear.

Methods: A literature review was conducted on fear theories, neurophysiology of fear, and childhood fear. A brief review of animal fear was also included because it offers an interesting perspective. The methods of Walker and Avant (2005) were used to describe the criteria, antecedents, and consequences of fear.

Results: Two leading theories include fear as a conditioned response or fear as an evolutionarily adaptive response to imminent threat. There are two key criteria for fear: 1) a neurophysiologic response that triggers an autonomic physiologic response; 2) a behavioral response: freeze, flight, fight, fright, and faint (Bracha, 2004). The *antecedent* to fear is the presence of a real or perceived threat (Forsner et al., 2009). While the range of threats seem infinite, the subjective experience of what is feared and the fear itself are influenced by developmental age, vulnerability, past experiences, and genetic factors. The *consequences* of fear include conditioning and avoidance.

Conclusion: Fear is a conditioned or evolutionary adaptive, neurophysiologic and behavioral response that is part of the normal developmental experience in childhood to real or perceived threat. A model and contrary case will be presented.

Clinical Implications: Needle fear begins as an evolutionary adaptive response but with negative experiences, the child's fear response escalates. Desensitizing interventions with incremental exposure to needles help children cope. A nurse can turn a negative moment for a child fearful of needles into a powerful, empowering experience.

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A Prospective Study of Growth and Development of Children Recently Adopted From Orphanage Care

Margaret Keil PhD, CRNP

National Institutes of Health, Bethesda, MD

Background: More than 200,000 international adoptions by U.S. families occurred between 1999 and 2010. Prior studies suggest that the effects of institutionalized care on growth and development may not be fully reversible.

Aims: The exact mechanisms through which early life stress affect biobehavioral outcomes have yet to be determined, but environ-

mental influences could regulate both biological and psychosocial development through an effect on the hypothalamic–pituitary–adrenal (HPA) axis. Children were evaluated shortly after adoption for baseline HPA axis function and its association with biobehavioral measures.

Methods: This is a prospective study of 10 recently adopted children (19–40 months) with an average time spent in orphanage care of 23.6 ± 9 months. Eligible participants had no history of significant medical, developmental, or behavioral problems. Anthropometric measurements, physical examination, HPA axis tests, bone age, neurocognitive testing, and behavioral questionnaires were evaluated.

Results: Shortly after adoption by a U.S. family (1.8 ± 1 months), height standard deviation unit (Ht SDU) was -1.6 ± 0.8 ; weight SDU was -0.9 ± 1.2 ; and head circumference SDU (HC SDU) was -1.8 ± 1 (WHO growth standards). Bone age was consistent with chronological age in four, advanced in three, and delayed in three children. Time in orphanage care was positively associated with serum cortisol ($r = .64, p < .06$) and negatively associated with Ht SDU ($r = -.63, p < .05$). Neurocognitive testing (Bayley-III) showed significant delays in all scores. HC SDU was positively associated with cognitive and receptive language subscales on the Bayley III ($r = .62$ and $.69$, respectively). Child Behavior Checklist response endorsed one child with attention/withdrawal symptoms. However, response on the Behavior Rating Inventory of Executive Function endorsed clinically significant inhibitory control in half the children, and subscale scores for behavioral regulation were positively associated with HC SDU ($r = .9, p < .05$). HPA axis testing revealed no significant abnormality.

Conclusion: Children adopted from orphanage care experience a negative impact on linear growth, HC, cognitive, and behavioral development. Prenatal factors and time in orphanage care were associated with negative effects on linear growth, serum cortisol, cognitive, and behavioral outcomes.

Clinical Implications: Careful assessment of prenatal and environmental risk factors will help to identify children at risk for untoward effects on growth, cognitive, and behavioral outcomes and target early interventions.

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Social–Demographic Factors Associated With Pediatric Diabetic Ketoacidosis Admissions in Southern West Virginia

Kevin Lewis MSN, RN, PNP-BC, CDE, Crystal Clark BSN, RN,

Sachin Bendre MD, PhD

West Virginia University Physicians of Charleston, Charleston, WV

Background: Diabetic ketoacidosis (DKA) is a well-known complication in children with Type 1 diabetes, with a mortality rate estimated at 2%. Sparse data are available from the literature describing the sociodemographic factors associated with DKA admissions in children. A previous study identified that children with Type 1 diabetes who are of non-Caucasian race and those with Medicaid had increased incidence of DKA admissions.

Aims: The aim of this study was to identify the sociodemographic factors associated with DKA admissions including type of insurance coverage, income by county, race, gender, and HbA1c in West Virginia, a primarily rural part of Appalachia.

Methods: A retrospective chart review was conducted of patients, aged 1 to 18 years, with known Type 1 diabetes with DKA admitted

to the pediatric intensive care unit (PICU) at Women and Children's Hospital in Charleston, WV, from January 2007 to December 2010 in comparison with our general Type 1 diabetes population. The data collection tool included multiple sociodemographic factors, HbA1c, and markers of the degree of DKA.

Results: We reviewed a total of 167 patients with an admitting diagnosis of DKA; 63 charts were excluded because they did not meet either DKA criteria and age criteria, had new-onset diabetes, or lived outside of West Virginia; 57% were female, 43% male. Average age was 13.6 years (SD = 2.81 years); 56% were covered by Medicaid or CHIPS insurance and 44% by commercial payers; 11.5% were African American and 88.5% were Caucasian. The average HbA1c was 10.85% (SD = 2.364). Average length of stay in the PICU was 17.8 hours (SD = 11.13). We identified peak DKA admissions during April to October, with the lowest admissions being December through March.

Conclusions: Salient findings include higher HbA1c and higher rates in African American patients and in those covered by Medicaid/CHIPS.

Clinical Implications: This study identifies sociodemographic factors associated with children admitted for DKA in West Virginia. Patients identified to be at higher risk for DKA include those with elevated HbA1c, of African American race, and covered by Medicaid/CHIPS. Nurses can utilize these findings to develop strategies to educate these high-risk groups on the prevention of DKA.

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Dance for Health: Implementation of a Dance Program to Improve Physical Activity of Children

Terri Lipman PhD, CRNP, FAAN

University of Pennsylvania, School of Nursing, Philadelphia, PA

Background: Sedentary lifestyle, decreased physical activity, and poor diet contribute to the increasing problem of childhood obesity and risk for Type 2 diabetes. Children living in urban areas often have limited access to physical activity.

Aims: The purpose of this study was to compare the effect of dance, with unstructured playtime, on the physical activity level of an underserved, urban population of children. Activity, via pedometer readings (PR), effect on heart rate (HR), and body mass index (BMI), were assessed.

Methods: In this longitudinal study, height and weight were measured and BMI was calculated during the first week of the 4-week program. Every week, heart rates were measured, as well as the PR. Pre-activity heart rates were obtained, and a hip-hop dance class was taught for 30 minutes, once a week, by a dance team. Resting HR and PR were measured after the dancing. During the nondancing days, PR were taken to gauge physical activity during usual activity.

Results: Thirty-eight children (16 were female, and 22 were male; 4.7–12.9 years) participated in the study. Average BMI was 18.3 (± 5.5); 20% were above the 85th percentile for age and gender. Overall, the average PR measurement for dancing days was 1,760 (± 945) versus 851 (± 619) on nondancing days. The number of steps in dancing days was approximately double those in the nondancing weeks ($p < .001$). The number of steps significantly increased in the later weeks in comparison with the first week ($p < .001$). Children 8–10 years had more steps than younger and older

age groups. Age had a quadratic association with PR ($p < .001$). Males had 37.2% more steps than females ($p = .026$), and BMI was found to not be associated. Resting HR was significantly higher than baseline ($p < .001$).

Conclusions/Clinical Implications: Children in this population were not physically fit as evidenced by their elevated resting heart rates after exercise. Implementing dancing increased steps and activity of the children. Dance is a culturally relevant, enjoyable, free, and easily accessible method of activity. It is crucial for nurses in pediatric endocrinology to address the obesity epidemic with culturally appropriate interventions and to partner with the community to tackle this public health crisis.

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Improving the Efficiency and Safety of Managing Children With Diabetic Ketoacidosis

Joan Luce BSN, RN, CPN

York Hospital/Wellspan Health, York, PA

Background: Typically, managing diabetic ketoacidosis (DKA) in children is labor intensive and includes collection and monitoring of hourly subcutaneous blood glucose, vital signs, neurological assessment, and other laboratory values every 2 to 4 hours by nurses. Intravenous (IV) hydration is imperative and requires frequent fluid changes based on laboratory results. Managing IV fluids is problematic because of delays in physician return calls, pharmacy response to physician orders, and delivery of IV fluids to patient areas.

Aims: The purpose of this pilot study was to investigate whether a streamlined process using a three-bag system for treating children with DKA would improve efficiency for nurses, length of hospitalization, cost, and blood glucose levels.

Methods: Pediatric hospitalists developed an order set to treat children with DKA using a three-bag system: Bag 1—3/4 normal saline (NSS) with 20 mEq/L potassium chloride (KCL) and 20 mEq/L K-Phosphate. Bag 2—dextrose (D) 10% 3/4 NSS with 20 mEq KCL/L and 20 mEq/L K-Phosphate. If the serum potassium is greater than 6.0 mmol/L, IV bags without potassium supplements would be used until serum potassium is less than 5.5 mmol/L. Bag 3—1 U regular insulin/1 mL NSS (usually 250 mL IV bag). Pharmacy delivers the bags prepared to the physician's specifications to the unit, and nurses manage administration based on the order set with minimal need to contact the physician. A comparative nonexperimental design was used to evaluate the outcomes of children hospitalized with DKA before and after initiation of the three-bag system. Thirty medical records were reviewed with 16 patients not using the three-bag system (control group) and 14 patients using the three-bag system (study group).

Results: Independent samples *t* test and chi-square were used to determine significance. There was no difference between the groups for change in glucose. Length of stay, number of IV bags, and cost were reduced in the study group; however, this change was not significant. Verbal orders significantly decreased from the control group (68%) to the study group (14%; $p < .008$).

Conclusions: By using the three-bag system, there is no indication for reduction in number of IV bags, cost, and length of stay; however, the sample size was too small to demonstrate significance. The reduction in verbal orders may create efficiency by saving nursing time and decreasing medication errors.