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Original Contributions

REDUCING ANXIETY IN THE PEDIATRIC EMERGENCY DEPARTMENT: A COMPARATIVE TRIAL

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☐ **Abstract—Background: Anxiety among patients in a pediatric emergency department (PED) can be significant, but often goes unaddressed. Objective: Our aim was to determine whether exposure to Child Life (CL) or hospital clowning (HC) can reduce anxiety in children presenting to a PED. Methods: Patients were randomized to CL, HC, or control and assessed upon entry to examination room (T1), before physician arrival (T2), and during physician examination (T3), using the modified Yale Preoperative Anxiety Scale (m-YPAS). CL and HC interventions occurred for 5 to 10 min before physician entry. Effects were analyzed using mixed analysis of variance. Results: m-YPAS scores ranged from 23 to 59, with a higher score indicating increased anxiety. Mixed analysis of variance on the study sample (n = 113) showed a significant interaction between groups (CL, HC, control) and time (p = 0.02). Additional analyses indicated effect of group only at T2 (CL: mean = 23.8; 95% confidence interval [CI] 23.2–24.5; HC: mean 25.2; 95% CI 24.2–26.2; control: mean = 26.1; 95% CI 24.2–27.9; p = .02). Subanalysis of patients with T1 m-YPAS score ≥ 28 (n = 56) showed a significant interaction between group and time (p = 0.01). Additional analysis showed effect of group only at T2 (CL: mean 24.4; 95% CI 23.3–25.6; HC: mean 27.0; 95% CI 25.2–28.7; control: mean 29.2; 95% CI 25.6–32.7; p = 0.003). Conclusions: CL services can reduce state anxiety for patients presenting to a PED with heightened anxiety at baseline. This reduction occurred immediately after CL intervention, but was not observed in patients exposed to HC or during physician examination.**

☐ **Keywords—emergency department; state anxiety; Child Life; hospital clowning; pediatrics**

Clinical Trial Registration: This study was approved by the Institutional Review Board at Children's Hospital Los Angeles under the study identification CCI-11-00172.

Data from this study have been previously presented at the following academic conferences: Gerry Schwartz and Heather Reisman 3rd International Conference on Pediatric Chronic Diseases, Disability and Human Development in Jerusalem, Israel (December 2012, oral presentation), Society of Pediatric Psychology National Conference in New Orleans, Louisiana (April 2013, poster presentation) and Pediatric Academic Societies Annual Meeting in Washington, DC (May 2013, poster presentation).

INTRODUCTION

Anxiety among patients treated in a pediatric emergency department (PED) can be significant. Causes of anxiety have been linked to environmental stimuli, physical discomfort, and loss of control (1). Situational anxiety, such as that experienced in a PED setting, is referred to

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as state anxiety (SA). SA can have lasting effects on how patients use the health care system or comply with treatment recommendations (2). However, SA in children can be difficult to detect and treat (3,4). For this reason, the American Academy of Pediatrics endorses that health care professionals have a responsibility to address anxiety and create favorable environmental conditions for pediatric patients in the PED setting (5).

Anxiety-reduction strategies vary, and include pharmacologic and Child Life interventions, hospital clown services, music, video games, parental coaching, and toys (5–13). When hospitals do employ behavioral strategies, they are often reserved for children in the pre- and periprocedural settings (6–11). Unfortunately, the psychosocial needs of many patients who have SA while in a PED are not adequately addressed. Child Life (CL) and hospital clown (HC) services are well established in various pediatric institutions. CL services can decrease anxiety, decrease pain, and support family involvement in anxiety reduction. CL has an established role in a PED, but specialists are often only involved during procedural care, such as laceration repair and angiocatheter insertion (14–16). Little research exists on CL for nonprocedural care in PEDs (16,17). HC services are available internationally at pediatric hospitals and have reduced SA in pediatric patients (18,19). Yet, there is limited scientific literature concerning the role of HC specifically in PEDs (20,21). Similar to CL studies, the majority of HC research is focused on the positive effects of HC among pediatric patients entering surgery or undergoing a procedure (22–24). Given that limited research exists concerning HC and CL and their effect on SA in the PED setting, our objective was to determine whether HC and CL services reduced SA in children presenting to a PED with nonprocedural complaints.

METHODS

This study was a prospective, single-blinded randomized controlled trial conducted between November 2011 and December 2012. Our investigation was performed at a university-affiliated children's hospital located in a large metropolitan area of the United States that sees approximately 65,000 pediatric patients per year. The Institutional Review Board of our institution approved the study. All interventions performed were in accord with the standards of the Committee on Human Experimentation at our institution.

Study investigators monitored the PED electronic tracking board for patients aged 5 to 12 years, triaged as nonurgent, and not requiring invasive procedures. Age limitations were determined by the modified Yale Preoperative Anxiety Scale (m-YPAS) tool, which was validated in children ages 5 to 12 years. We considered any procedure that would require a break in the skin or anatomical orifice as invasive. Those patients potentially requiring painful procedures who were younger than 5 or older than 12 years of age were automatically excluded. For example, a child with cough and rhinorrhea would be identified as a potential participant. Alternatively, a patient with limb pain who might need reduction, sedation, or intravenous analgesia would be excluded. During the course of enrollment, 135 patients were approached, 15 of these families declined participation for reasons such as not wanting to be video recorded. No patient during this study was enrolled and then excluded because he or she required an invasive procedure when one was not anticipated.

Once enrolled, patients were assigned to an intervention (CL or HC) or control group based on the predetermined randomization, using SAS/STAT software, which was distributed in numbered folders (SAS/STAT software, version 9.2, SAS Institute Inc., Cary, NC). The principal investigator would open a numbered folder and activate the appropriate intervention (CL or HC). Upon assignment, patients and families entered an empty examination room to complete a demographic questionnaire. At this point the patient was video recorded for 5 min to gather baseline data (T1).

After T1, patients were exposed to their intervention without continued recording. Control group patients waited 5 min in the examination room. CL group patients engaged in a 5-min protocol that included a greeting, gathering of name and age, assessment of previous PED or CL experience, asking about the presenting problem, providing an explanation of CL services, and finally, an age-appropriate CL activity. HC group participants received a 5-min entertainment show of bubbles, joke-telling, balloons, or music. Both the CL and HC interventions were administered by a CL specialist, who attended a formal 8-week hospital clown-training course before the start of the study.

After the intervention or nonintervention, patients were then video recorded without evidence of which group they were assigned to (T2). Participants were video-recorded for a third time (T3) during the physician's examination. The study design is depicted in Figure 1.

Video recordings of patients at T1, T2, and T3 were then scored using the m-YPAS that served as our primary outcomes measure. The m-YPAS is an observational scale used to assess anxiety in children aged 5 to 12 years and has been validated against the State Trait Anxiety Inventory for Children (STAIC) (25). The m-YPAS consists of five domains of anxiety that can be applied to assess anxiety in <1 min and does not rely on participants to answer questions concerning their level of anxiety.