

Group Medical Play and Children's Self-Reported Fear in the Pre-Operative Setting

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ABSTRACT

Previous research has demonstrated that medical play intervention is associated with decreased pain, fear, and anxiety in children undergoing surgical procedures; however, these studies have typically examined one-on-one, adult-directed, and preparation-focused uses of medical play. Therefore, the purpose of this mixed-methods pilot study was to examine the impact of a group medical play intervention on children's self-reported fear and observed anxiety in the pre-operative waiting area, and determine the feasibility of group medical play as a research intervention while balancing clinical care. Twenty children (ages 5 to 10 years) scheduled for a sedated surgical or medical procedure in the pre-operative services waiting area of a children's hospital in the Southeastern United States participated in a 30-minute group medical play session facilitated by a Certified Child Life Specialist. At the conclusion of the group activity, participants used a pictorial scale to rate their level of fear about surgery at two distinct timepoints: prior to and after the medical play session. In addition, they responded to three open-ended prompts about their perceptions of the activity. Participant fear ratings were analyzed using a two-tailed, paired samples t-test, revealing that the group medical play activity was associated with a statistically significant decrease in participant fears about surgery. In conclusion, group medical play as a research intervention was both clinically feasible and effective in reducing children's fears about surgery, highlighting the value of group play opportunities for children's coping in health care settings.

Play is essential for the developing child's cognitive, social, emotional, and physical understanding of the world around them. Moreover, play allows for exploration, self-expression, problem solving, and creativity (Brown et al., 2017). Thus, play is considered to be a cornerstone of the child life profession. Child life specialists capitalize on the power of play opportunities and interventions in generating treatment plans that decrease fear, build rapport, and relieve stress

(Cox, 2017). Facilitated play opportunities with an item or person related to the child's identified health care stressors (e.g., unfamiliar medical equipment, environment, or health care staff) has been found to reduce anxiety, increase coping, and elicit feelings of relief (Nabors et al., 2013). When a child is scheduled for a surgical procedure requiring general anesthesia, unfamiliar medical equipment, separation from caregivers, and anesthesia induction are just a few of the

many unknowns that children will need to process in order to cope with this potentially stressful encounter. However, play provides a language that is universal and intelligible to children, and provides the materials and confidence that they need to express themselves and advocate for their unique coping needs.

One specific mode of play incorporated into the work of a Certified Child Life Specialist is medical play. A distinct concept within the spectrum of play, medical play engages children in play with medical themes and/or equipment in a nonthreatening manner. Medical play is identifiable by four components: (1) it has a medical theme and/or uses medical equipment, (2) it can be adult initiated but must be child directed and maintained, (3) it is playful in nature and often accompanied by laughter and relaxation, and (4) it offers mastery and control over frightening medical environments (McCue, 1988; Turner & Dempsey, 2017). Medical play provides an opportunity for normalization of medical experiences, allows for common misconceptions to be dispelled, and creates an opportunity for a child to be in control, ultimately promoting autonomy and mastery over a situation (Bolig, 2018; Jones, 2018; Williams et al., 2019). These benefits can lead to decreased anxiety and stress throughout hospitalization (Jones, 2018; Williams et al., 2019).

Intentionally exploring and playing with medical equipment (e.g., masks, gloves, syringes, and stethoscopes) is an important component of children's coping in health care settings. Combining recognizable play methods (e.g., non-scripted and intrinsically motivated play) and unfamiliar medical equipment allows children the opportunity to integrate their thoughts and feelings regarding the situation (Bolig, 2018; Jones, 2018). For example, children's play with medical toys, such as the playful use of syringes for painting or spraying a stress target, is an effective mechanism for working through the stress related to their health care experiences (Nabors et al., 2013). Simultaneously, medical play can be a vehicle for self-expression, providing children with the opportunity to express their feelings and facilitate positive coping strategies (Nabors et al., 2013).

Although past studies highlight the benefits of medical play within a pre-operative setting, these studies have only included one-on-one medical play sessions provided in the days leading up to surgery, rather than

the day of scheduled surgical intervention (Moore et al., 2015). Although one comprehensive review of the literature supporting medical play in the hospital setting has been conducted, health care systems and medical play practices have changed greatly in the 35 years since its publication (Ellerton et al., 1985). Today, there remains a dearth of literature examining the value of same-day, child-directed, group medical play for children undergoing surgery.

Observational studies incorporating medical play have been utilized to identify a child's prior understanding and new knowledge of their health condition (Dempsey, 2015). However, evaluation of a medical play intervention provided by a Certified Child Life Specialist could offer additional insight and a better understanding of how a child's stress or anxiety may increase or decrease within the hospital setting, based on participation in a medical play session. Thus, the purpose of this mixed-methods pilot study was to explore the impact of a group medical play intervention on children's observed anxiety and self-reported fear, while considering the feasibility of offering this intervention in addition to typical clinical child life care. The following research questions were addressed:

1. How do young children in the pre-operative waiting area experience a group medical play intervention facilitated by a Certified Child Life Specialist?
2. What is the feasibility of offering group medical play as a clinical or research intervention in the pre-operative setting?

Method

This pilot study was conducted at a children's hospital within an academic medical center in the Southeastern United States. The site's surgery department serves approximately 90 to 100 patients per day with a diverse range of diagnoses and surgical needs. Due to the heavy patient volume and high psychosocial acuity in this setting, two full-time Certified Child Life Specialists provide coverage to pre-operative services Monday through Friday from 6:00 a.m. to 3:30 p.m. The site was chosen for the study due to ease of access and the perceived relevance of a group medical play intervention for this population. Institutional Review Board approval for this study was obtained from the research site.

Participants

Participants included 20 children ($n = 11$ male, $n = 9$ female) ages 5 to 10 years ($M = 7.1$) awaiting a sedated surgical or medical procedure in the pre-operative services waiting area. On average, participants had previously undergone 3.5 surgical procedures (range = 0-13). During days of recruitment, participants were scheduled to undergo a range of surgeries or procedures, including dental ($n = 3$), eye ($n = 3$), ear, nose, and throat ($n = 4$), gastrointestinal ($n = 4$), cardiac ($n = 3$), or other ($n = 5$). Of the 20 children in this study, 15 identified as White (75%), three as Asian (15%), one as Black (5%), and one as Hispanic (5%). All participants spoke English as their primary language, presented as typically-developing (no observable cognitive or linguistic disabilities that would preclude participation in a child-directed group medical play activity), and were accompanied by a caregiver over the age of 18 willing to give consent.

Participants were not stratified by surgical type, estimated length of stay, or acuity of procedure; eligible participants were recruited two days per week, totaling 23 days, due to availability of study staff and counterbalancing of clinical service needs. At times, depending upon participant availability, play sessions consisted of one-on-one interactions with the Certified Child Life Specialists. However, of the 20 participants, 12 (60%) engaged in group play consisting of more than one participant.

Eligible participants were identified in the pre-operative waiting area by a trained, graduate-level research assistant. Primary caregivers were approached after completing registration for their child's procedure. Information about the study was provided by the research assistant, and both parental consent and child assent were obtained via a REDCap survey application on an electronic tablet. Of the families approached, only two declined to participate. One parent stated that they felt they would not have time to participate, and the other parent reported that his son was only having a minor procedure so he felt the intervention would not be necessary. For both situations, the research assistant clarified that the intervention could be stopped at any time and could be beneficial even for minor procedures. However, as participation was completely voluntary, the research assistant did not attempt to persuade the families further.

Procedures

After completing the consent form, the child was accompanied to a child-sized play table in a designated corner of the pre-operative waiting room. Participants who had completed consent and assent forms were given a color-coded sticker to wear, demarcating their participation to the study staff at the table. Parents could choose to watch from seating nearby if preferred; siblings were invited to participate in the intervention as well, but no data was collected on their experiences in this study. Once the participant joined in the activity, the trained research assistant administered a tablet-based demographic survey to the child's parent; the survey asked caregivers to identify the child's date of birth, gender, race, ethnicity, reason for surgery, and number of previous surgical procedures, if applicable.

Group Medical Play Intervention

As the child approached the medical play intervention table, they were greeted by a Certified Child Life Specialist who was a trained member of the research team. The Certified Child Life Specialist introduced the activity and supplies and invited the child to observe or join in, depending on their comfort level. As the child approached the table and began to observe the play, another member of the research team assessed the level of pre-operative anxiety at that moment in time using the modified-Yale Preoperative Anxiety Scale (m-YPAS; Kain et al., 1997). For this pilot study, only an overall pre-operative anxiety level was measured.

To initiate the child-directed, group medical play intervention, a Certified Child Life Specialist offered participants their choice of materials, including a blank cloth doll, patient puppet, and stethoscope. Participants were invited to join the play activity using the following script:

Hi my name is--- . Welcome to the medical play table, would you like to be a doctor or a nurse today? Would you like to check on the patient puppet or make your own patient using this cloth doll and markers?

[child life specialist picks up the stethoscope and asks] Have you seen one of these before?

[pausing and allowing the child to respond] You can handle any of the supplies on the table. I am here to help you.

One Certified Child Life Specialist provided a supportive presence at the table while completing behavioral observations of the participants as they played.

The other Certified Child Life Specialist took the lead in facilitating the group medical play intervention, following children's cues throughout the activity to support both unstructured and structured play needs. The facilitating Certified Child Life Specialist would enter the play at times with an open-ended question or using reflective language for clarification of play and insights on the child's thoughts. This Certified Child Life Specialist also facilitated the invitation of other children to join in the group and engage in play with their peers, introducing the participants to one another and prompting social interactions during play. At the end of the child's play engagement or at the end of the 30-minute play session (whichever came first), a member of the research team asked the child to answer three open-ended interview questions about the play session and to indicate their fears about surgery (prior to and after the medical play intervention) using a 5-point pictorial fear assessment scale.

Measures

Modified-Yale Preoperative Anxiety Scale (Kain et al., 1997)

One of the members of the research team rated the child's overall anxiety throughout the group medical play intervention using the m-YPAS (Kain et al., 1997; see Appendix A). The m-YPAS assesses pre-operative behaviors of children that may be indicative of anxiety at a particular period in time, rather than a more generalized state of anxiety that can persist across times and events. The five m-YPAS items are labeled "Activity," "Emotional Expressivity," "State of Apparent Arousal," "Use of Parents," and "Vocalizations." Ratings on each item are made on a 4-point scale, except for "Vocalizations," which is rated on a 6-point scale. For example, a child scoring 1 in "Vocalizations" indicates the child is "reading, asking questions, making comments or babbling, laughing, readily answers questions but may be generally quiet," whereas a score of 6 would refer to "crying, screaming loudly, sustained." To form an overall score of the child's pre-operative anxiety, the sum of the ratings across each of the five dimensions were tallied.

Pictorial Fear Assessment

This two-question pictorial scale created by the research team (see Appendix B) was used to assess the child's self-reported fear. At the conclusion of

the group activity, children were asked to think back to how they felt prior to the medical play session, as well as describe feelings following the play session. The items are labeled "Very afraid," "A little afraid," "Not sure," "Not afraid," and "Happy." Ratings are made up of a 5-point scale representing each face (1 = happy, 5 = very afraid).

Brief Participant Questionnaire

At the conclusion of the participant's medical play engagement, a research team member asked the child to answer three open-ended questions:

1. What did you think about getting to play doctor with us today?
2. How do you feel about having a surgery/procedure today?
3. What would other kids who are having surgery think about playing doctor with us?

Results

The purpose of the study was to assess how young children in the pre-operative waiting area experienced a group medical play intervention facilitated by a Certified Child Life Specialist and to consider whether offering group medical play as a clinical or research intervention in this context is feasible within the bounds of typical child life staffing. To address these questions, both quantitative (descriptive statistics) and qualitative (content analysis) strategies were used.

Length of Play Participation

Average time played, average m-YPAS ratings, and changes in child-reported fear questions were analyzed using Microsoft Excel. Play time was measured from the time the child approached the table to the time at which they completed play engagement (either by choice or by being called to the holding room). Depending on the child's interest level and surgery or procedure start time, participants engaged in the intervention anywhere from five to 30 minutes. On average, participants played for 16 minutes.

Observed Anxiety and Self-reported Fear

Within the parameters of the m-YPAS, scores can range from as low as 5 points (minimal distress) and as high as 22 points (maximum distress). While participating in the group medical play intervention, participants demonstrated an average m-YPAS score

of 5.65 that reflected their overall anxiety from start to finish, meaning that children showed relatively low levels of pre-operative anxiety throughout the medical play interaction. When asked to report their feelings of fear about their surgery or procedure prior to and after the medical play intervention, a paired sample t-test demonstrated significant decrease in fear ($p \leq .05$) after engaging in the group medical play activity. Specifically, children reported an average fear rating of 2.35 prior to the intervention and an average of 1.7 after playing doctor (happy = 1, very afraid = 5).

Qualitative Findings

Participant responses to the three open-ended prompts were analyzed using content analysis (Hsieh & Shannon, 2005). Content analysis is a methodology in which researchers examine qualitative data to identify common categories and themes that characterize responses. In this study, content analysis involved two members of the research team independently reading through all of participants' responses to open-ended questions about their play experiences. Given the brief nature of these responses, these team members were able to quickly identify commonalities without discrepancy.

Overall, 90% of participants reported positive feelings about their medical play experience, stating that they felt "playing doctor" was "fun," "good," "happy," or "I liked it." In the words of one participant, "I liked it, I really liked it." Participants also reported that they felt other children having surgery would also "enjoy" "have fun," or "feel good" about the group medical play intervention. Only two participants reported that they either did not know how they felt or felt "just okay" when engaging in the activity. These two particular responses could be due to a variety of external influences, such as a hurried transition to the holding room or competing environmental stimuli in the busy pre-operative waiting area. When participants were asked how they felt about their scheduled surgery that day, 40% reported feeling positive by either responding, "good" or "happy." One participant shared, "I feel good, I'm ready for it." The rest of the participants stated feeling either "a little scared," "sad," or "bad about having surgery" (30%) or "unsure" about how they felt (30%).

Feasibility

The research team, through consensus discussion and efficacy of data collection, found this study and the

group medical play intervention to be feasible while also balancing clinical child life care. As the research team was composed entirely of individuals with expertise in child life services, it was possible to design an intervention that explored the use of a foundational child life intervention for evaluative purposes (i.e. evaluating the efficiency and the feasibility of conducting a group medical play session in the pre-operative waiting area). Furthermore, the child life lens shared by team members encouraged reflection not only on the individual participants' experiences but also aspects of intervention design, group dynamics, and workflow.

In terms of feasibility, the research team identified the importance of staffing the medical play intervention table with two clinicians at a time, which promoted optimal data collection and maximized the balance of group medical play with typical clinical workflow. In this model, one Certified Child Life Specialist facilitated the group play activity and the other served in a data collection role, recording observations and scoring the m-YPAS. This model also proved effective in balancing clinical workflow—when one Certified Child Life Specialist was called away, the other was still able to collect data with the research assistant. In addition, varying participant recruitment techniques and schedules revealed that mid-morning hours (typically between 9:00 a.m. and 11:00 a.m.) on Mondays and Thursdays yielded the largest numbers of eligible participants, likely due to the types of procedures scheduled on these days. Finally, the addition of a research assistant made it possible for parents to complete the demographic survey while their child engaged in the group medical play activity, thereby minimizing burden on the family and maximizing the short wait times experienced in the pre-operative waiting area.

Additional Findings

Additional informal observations of the group dynamics and level of engagement in the activity also provided insight into the effects that group medical play can have on a child's pre-operative distress. While siblings and children who did not meet inclusion criteria for this study were not invited to participate in the study, they were not excluded from the play activity; rather, the addition of siblings and other non-participant children may have broadened the play themes and opportunities available to participants as the group dynamics continually shifted.

In addition, several participants were observed to engage in role play with siblings or caregivers seated nearby, while others utilized peer interaction as an opportunity to share their own medical experiences or ask other children about theirs. These interactions gave depth to the activity and provided children with an opportunity to demonstrate mastery of their own health care experience.

Differences in interest level in the activity, based on age, were also anecdotally observed. Children ages five to eight years were observed to utilize a combination of both real and play medical equipment throughout the activity and typically chose to engage with the patient puppet or create their own blank cloth doll. In contrast, it was noted that several participants ages nine to 10 years gravitated towards engaging solely with the real medical equipment. A lack of interest in the blank cloth dolls and patient puppet appeared to be consistent across this older age group, in line with what would be expected with regards to school-age development.

The information that the children revealed during the intervention became a helpful source of insight to the clinician for future assessment, intervention, and research planning. As the assigned surgery Certified Child Life Specialist collected study data, they gained additional information to inform assessments related to patient care. They were able to predict which children would require additional support once they transitioned to the holding area and then eventually the operating room. Furthermore, these insights were gathered without compromising or disrupting the flow of patient care in the pre-operative waiting area and the interventions initiated as a result of these insights were positively received by patients, families, and pre-operative services staff.

Discussion

The purpose of this study was twofold: first, to examine the impact of a group medical play intervention on children's self-reported fear and observed anxiety in the pre-operative waiting area, and second, to explore the feasibility of group medical play as a research intervention. The results of the pilot study align with foundational principles of child life practice, namely, the emphasis placed on play as a coping tool for children undergoing stressful health care experiences. The children in this study reported a decrease in

fear about surgery or their procedure after engaging in the child-directed group medical play activity, thus reinforcing previous work by Moore and colleagues (2016) and Turner and Dempsey (2017). Group medical play appears to be a promising research intervention alongside its value as a clinical tool for assessing children's fear and anxiety regarding surgery.

The medical play activity presented in this pilot provided participants with a nonthreatening opportunity to handle, explore, and investigate real and pretend medical equipment to which they may or may not have been exposed before. The format of the intervention appeared to foster a sense of trust and exploration like previous work by Nabors and colleagues (2013); most participants were observed to feel comfortable enough to ask a question about an item they were not familiar with, such as the anesthesia mask. Maintaining a child-directed atmosphere as defined by McCue (1988), the intervention provided the clinician opportunities to enter the play when asked, for example, to provide a description of the equipment or clarification about how it is used. This occurred frequently around the anesthesia mask, with the Certified Child Life Specialist stating, "that is called an anesthesia mask or what some kids call the 'sleepy air' mask." Following the short explanation, play resumed quickly, and children played on. While past studies highlight the use of medical play interventions in the days leading up to surgery (Moore et al., 2015), this study reveals a significant decrease in anxiety when the intervention is implemented on the day of surgery; thus, supporting the design and the effectiveness of the study.

Another outcome of this study was the feasible adaptation of a clinical intervention for the purposes of research. Not only was it feasible to study group medical play for children undergoing surgery, but also to provide clinical care as an intervention for empirical evaluation without sacrificing clinical time or quality of clinical care. Although two Certified Child Life Specialists were needed to conduct this study, they were able to effectively work together to manage concurrent clinical needs, especially with the addition of a trained graduate student previously involved in child life study and research. This study further highlights the importance of collaboration across academic and clinical settings, not only to ensure best practices, but also to provide optimal training for emerging professionals.

Conclusion

The results of this study highlight the feasibility and utility of a group medical play intervention for supporting children awaiting surgical procedures. Through informal feedback and observation, children and parents positively responded to the intervention, and some children's behavior (e.g., asking age appropriate questions, recounting events, and sharing personal medical experiences) demonstrated a sense of mastery and control when engaged in the medical play opportunity. Therefore, a group medical play intervention may serve children awaiting a surgical procedure well, even in the busy environment of the pre-operative waiting room, perhaps helping them to prepare for and adjust to their upcoming procedure.

In terms of feasibility, this study revealed opportunities for some logistical modifications and considerations. A longer timeframe for the medical play session could allow for increased participation and peer interaction. Additionally, an assessment utilizing the m-YPAS scale prior to play and at the conclusion of play (in a pre-post-test format) could increase accuracy and effectiveness of data, thus further optimize the intervention. These changes would allow for a greater number of children to participate and an opportunity to explore potential causal links between the group medical play session and children's fear and anxiety in the pre-operative setting. Further research is needed to better understand the potential impacts of a group medical play intervention, perhaps utilizing a matched control group and additional empirically validated measurement tools to capture anxiety, pain, and other distress-related variables.

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Appendix A: Modified-Yale Preoperative Anxiety Scale (Kain et al., 1997)

Activity (Circle One)

1. Looking around, curious, playing with toys, reading (or other age-appropriate behavior); moves around waiting room to get toys or go to parent
2. Not exploring or playing, may look down, may fidget with hands or suck thumb (blanket); may sit close to parents while waiting
3. Moving from toy to parent in unfocused manner, non-activity-derived movements; frenetic or frenzied movement or play
4. Actively trying to get away, pushes with feet and arms, may move whole body; in waiting room, running around unfocused, not looking at toys or will not separate from parent

Vocalizations (Circle One)

1. Reading, asking questions, making comments or babbling, laughing, readily answers questions but may be generally quiet.
2. Responding to adults but whispers, "baby talk," only head nodding
3. Quiet, no sounds or responses to adults
4. Whimpering, moaning, groaning, silently crying
5. Crying or may be screaming "no"
6. Crying, screaming loudly, sustained

Emotional Expressivity (Circle One)

1. Manifestly happy, smiling, or concentrating on play
2. Neutral, no visible expression on face
3. Worried (sad) to frightened, sad, worried, or tearful eyes
4. Distressed, crying, extreme upset, may have wide eyes

State of Apparent Arousal (Circle One)

1. Alert, looks around occasionally, notices/watches staff (could be relaxed)
2. Withdrawn child sitting still and quiet, may be sucking on thumb, or face turned in to adult
3. Vigilant, looking quickly all around, may startle to sounds, eyes wide, body tense
4. Panicked whimpering, may be crying or pushing others away, turns away

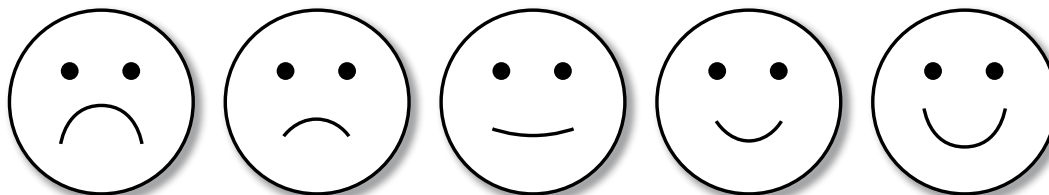
Use of Parents (Circle One)

1. Busy playing, sitting idle, or engaged in age appropriate behavior and does not need parent; may interact with parent if parent initiates the interaction
2. Reaches out to parent (approaches parent and speaks to otherwise silent parent), seeks and accepts comfort, may lean against parent
3. Looks to parents quietly, apparently watches actions, does not seek contact or comfort, accepts it if offered or clings to parent
4. Keeps parent at distance or may actively withdraw from parent, may push parent away or desperately clinging to parent and will not let parent go

Appendix B: Post-Intervention Fear Assessment

Pictorial Fear Assessment

1. Which of these faces shows how afraid you felt before we played today?



Very Afraid

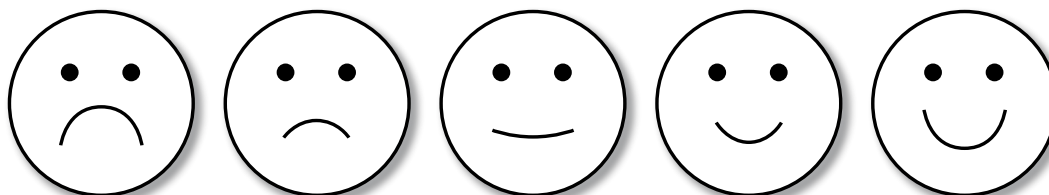
A little afraid

Not sure

Not afraid

Happy

2. Which of these faces shows how afraid you feel now that we have played together?



Very Afraid

A little afraid

Not sure

Not afraid

Happy