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Effectiveness of Therapeutic Play in Minimizing Anxiety and Negative Emotions of Hong Kong Chinese Hospitalized Children

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Final Report

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Project Summary

Objective: To test the effectiveness of a therapeutic play intervention in minimizing the anxiety levels and negative emotions of hospitalized Hong Kong Chinese children.

Methods: A non-equivalent control group pretest–posttest, between subjects design was conducted in the two largest acute-care public hospitals in Hong Kong. Chinese children (3-12 years of age; $n = 304$) admitted for treatment in these two hospitals were invited to participate in the study. Of the 304 subjects, 154 received the therapeutic play intervention and 150 received usual care.

Results: Children who received the therapeutic play intervention reported less negative emotional behaviour and lower levels of anxiety compared to those who received usual care only during hospitalization.

Conclusion: The study provides empirical evidence to support the effectiveness of therapeutic play interventions in minimizing the anxiety and negative emotions of hospitalized children.

Practice implications: The findings heighten the awareness of the importance of integrating therapeutic play as an essential component of holistic and high-quality care to ease the psychological burden of hospitalized children. It is crucial to have more hospital play specialists to facilitate the integration of therapeutic play into routine care for hospitalized children.

Introduction

Hospitalization can be a stressful and threatening experience for everyone, especially for children [1]. The physiological and psychological health needs of children are typically different from those of adults. Children are more vulnerable to the stress of hospitalization because of their cognitive limitations, lack of self-control, dependence on others, and limited experience and knowledge of the healthcare system [2]. A lack of understanding about the upcoming procedures, unfamiliarity with the hospital environment, and failure to understand the reasons for hospitalization can add to their anxiety, fear, anger, uncertainty, and feelings of helplessness [3]. Among these negative responses, anxiety is the most commonly reported. Excessive anxiety can be detrimental to children's physical and psychological health. Anxiety also hinders children's ability to cope with medical treatment, and encourages negative and uncooperative behaviour toward healthcare [2]. The link between anxiety and negative outcomes suggests that reducing children's anxiety during periods of hospitalization could promote better recovery.

Play has been widely used in many Western countries to alleviate the stress experienced by paediatric patients and their families during hospitalization [4]. Erikson [5] and Piaget [6] observed that play is essential for children's normal growth and development, as it provides an expression of their understanding about the world and an opportunity for them to develop mastery of self and the environment. Indeed, play has long been recognized as a vital element of psychological interventions to help children withstand the stress of hospitalization [2]. Florence Erickson, a pioneer in the study of play for hospitalized children, emphasized that

play is an integral part of children's lives. Erickson [7] conducted a study to explore the reactions of children to hospital experience and confirmed that children who were given an opportunity to play with clinical equipment were better able to express their feelings about their hospital experiences. She demonstrated the benefits of using play interviews and dolls to prepare hospitalized children for intrusive medical procedures.

Play Therapy and Therapeutic Play

According to psychoanalytic theory, play therapy is part of child psychiatry and is similar in nature to psychotherapy for adults [5, 8]. Erikson [5] described how play therapy benefited children who had experienced trauma or who had behavioural disorders. Over the past decades, play therapy has been widely used by psychotherapists to help children work through their problems during psychotherapy.

Therapeutic play, in contrast, is a set of structured activities appropriately designed for children's levels of psychosocial and cognitive development and health-related issues to psychologically prepare them for hospitalization [4].

The past decade has seen an increase in the use of therapeutic play interventions to help children cope with the stress of hospitalization. Regrettably, the majority of studies that have studied activities for hospitalized children have been in the form of case studies based on theories and clinical observations [2]. There is a lack of empirical evidence to accurately determine the clinical effectiveness of therapeutic play. The results of a randomized controlled trial to examine the effects of a therapeutic play intervention on the outcomes of children undergoing day surgery [1] showed that those who received the intervention reported lower

state anxiety scores and exhibited fewer instances of negative emotional behaviour in pre- and postoperative periods. Nevertheless, the implications of this study were limited because the children only received minor elective surgeries and did not stay in hospital overnight. Therefore, more empirical evidence is needed to determine the effectiveness of therapeutic play in reducing the anxiety levels and negative emotions of hospitalized children.

It is well documented that Hong Kong Chinese people are influenced by the philosophy of Confucianism, which emphasizes balance and harmony achieved through the concepts of *chung* and *yung* in everyday life [9-11]. Under the influence of this philosophy, disease is regarded as arising from “bad spirits,” and it is believed that exercise will only aggravate the disease and violate the rule of harmony [11]. In this cultural context, hospitalized children are often advised by their parents or even healthcare professionals to take more rest and not to engage in any energy-consuming activities, including play activities. Furthermore, as many Chinese parents and some healthcare staff traditionally view play as less important than physiological care or medical treatment [12], it is not clear whether therapeutic play is an appropriate and feasible psychological intervention for hospitalized children in the Hong Kong Chinese context. Given these issues, this study aimed to test the effectiveness of a therapeutic play intervention in minimizing the anxiety and negative emotions of hospitalized Hong Kong Chinese children. Specifically, the focus was on assessing the potential of implementing the therapeutic play intervention for hospitalized children in Hong Kong clinical settings.

Theoretical framework

This study was guided by Lazarus and Folkman's [13] theory of cognitive appraisal, stress and coping, which is one of the most commonly applied theoretical perspectives on how people cope with stress. This transactional model is also the most frequently applied model in research on children [2, 12, 14]. According to Lazarus and Folkman [13], stress is defined as a dynamic ongoing relationship between a person and his or her environment, and cognitive appraisal is the process by which an individual evaluates or judges the meaning of a potentially stressful event and its significance to his or her well-being.

It is well documented that hospitalization can be a highly stressful and anxiety-provoking experience for children and can have profound effects on them [12, 15]. Lazarus and Folkman [13] postulated that individuals' evaluations are influenced by their perceptions of control over a potential threat. Previous studies have shown that a lack of control over the physical setting of the hospital and upcoming medical procedures is a major source of stress, which may cause considerable anxiety for hospitalized children [12]. We reasoned that if children believe they have adequate control over a potential threat, they will experience less anxiety and report fewer negative emotions. Therefore, a primary goal of the therapeutic play intervention was to assist children in regaining a sense of self-control. We anticipated that conducting the intervention in the hospital would increase children's familiarity with the hospital environment and thereby enhance their sense of personal control. We also surmised that through participating in play activities, children would develop their interpersonal and communication skills, self-care and social and creative abilities. Children were not only encouraged to have fun, but were also taught to desensitize potentially stressful situations and to instill a sense of control over the

situation in which they were involved. The intervention gave the children an opportunity to practise medical or nursing routines through play and to interact with the environment in an active and non-threatening rather than a passive way.

Methods

Design and sample

To examine the effects of the therapeutic play intervention, we used a non-equivalent control group pretest–posttest, between subjects design. The study was carried out in the two largest acute-care public hospitals in Hong Kong, with one hospital assigned as the “control” and the other as the “experimental” hospital. The two hospitals have similar paediatric specialties, settings, and medical and nursing care. Chinese children admitted for treatment in these two acute public hospitals and who met the inclusion criteria were invited to participate in the study. The inclusion criteria for eligible children were (1) aged between 3 and 12 years, (2) able to speak Cantonese, and (3) required to stay in hospital for at least 3 consecutive days. Children with cognitive and learning difficulties identified from their medical records were excluded.

The sample size was calculated to ensure sufficient power to detect differences between the groups. With reference to the previous study that examined the effects of therapeutic play intervention on the outcomes of children undergoing day surgery [1], we predicted a medium effect size for the differences between the two groups. To predict this effect size at a 5% significance level ($p < 0.05$) and power of 0.80, we calculated that 64 subjects would be required in each group [16]. We allowed for a potential attrition rate of 15%, which is common in experimental designs. Accordingly, 11 additional participants per group were needed to

cover the attrition, giving a total sample size of 150. However, according to Piaget [6], children aged between 3-7 and 8-12 are at the preoperational and concrete operational stages of development, respectively. Because children's cognitive development is linked to their age, different methods of assessment were used for the two age groups. Therefore, the data analyses were performed separately for the two age groups, 3-7 and 8-12 years. Hence, we aimed to recruit at least 300 (150 in each age group) subjects in this study.

Intervention

The control group participants received usual medical and nursing care while the experimental group participants received around 30 minutes of therapeutic play intervention, which was conducted by hospital play specialists on each weekday. The content of the therapeutic play included a variety of structured and non-structured activities. The hospital play specialists selected suitable activities in accordance with the children's sex, age, ability, type of illness, and general condition. The children were also given a choice of play activities. The hospital play specialist documented the timing, duration, and nature of play for each child in a log book. Some examples of the therapeutic play intervention are provided in Table 1.

Measures

Demographic data sheet

A demographic data sheet constructed for this study was used to record the children's demographic and clinical characteristics, including their age, gender, diagnosis, and number of hospital admissions.

Anxiety levels of children aged between 3 and 7 years

The visual analogue scale (VAS) was used to assess children's anxiety levels. The VAS consists of a 10 cm horizontal line on a piece of paper, with different facial expressions supplemented by the words 'not worried' at one end and 'very worried' at the other. Higher scores indicate higher levels of anxiety. Children aged between 5 and 7 used a movable indicator to show their levels of anxiety. However, as children aged 3-4 might have limited verbal expression and cognitive capacities and could be confused by the scale, this age group was assessed by asking the parents to rate their child's anxiety level. The VAS is one of the most widely used measurement tools because it is easy to administer, simple for children to understand, and is a valid method for measuring subjective feelings [17]. One of the biggest advantages of using the VAS is that it is not affected by the limited test-taking ability of younger children. Previous studies have found the VAS to be a reliable, valid, and sensitive measure of individual subjective feelings [17-19].

Anxiety levels of children aged between 8 and 12 years

The anxiety levels of children in this age group were measured using the short form of the Chinese version of the State Anxiety Scale for Children (CSAS-C). The short form of the CSAS-C consists of 10 items scored from 1 to 3, with total possible scores ranging from 10 to 30. Higher scores indicate greater anxiety. The psychometric properties of the short form of the CSAS-C have been empirically tested [20] and show adequate internal consistency reliability, good concurrent validity, and excellent construct validity. The results of a confirmatory factor analysis added further evidence of the construct validity of the short form of the CSAS-C [21].

Children's Emotional Manifestation Scale (CEMS)

The emotional responses of the hospitalized children were documented using the CEMS. The CEMS score is obtained by reviewing the descriptions of behaviour in each category and selecting the number that most closely represents the child's observed behaviour. Each category is scored from 1 to 5, with summed scores between 5 and 25. Higher scores indicate more negative emotional behaviour. The psychometric properties of the CEMS have been empirically tested [22] and show adequate internal consistency reliability, good inter-rater reliability, and excellent construct validity.

Process evaluation

To assess the implementation potential of the therapeutic play intervention, a short one-to-one semi-structured interview was conducted with five children aged between 8 and 12 and with the parents of five children aged between 3 and 12, randomly selected from the experimental group. Children and parents were interviewed separately. They were asked to express their views on the acceptability and suitability of the therapeutic play intervention. In addition, to examine whether it is feasible to implement the therapeutic play intervention in clinical settings and whether it is acceptable to healthcare providers, five nurses working in the paediatric units delivering the therapeutic play intervention were randomly invited for a short interview at the end of the study. All of the interviews were conducted by a full-time research assistant with considerable experience of conducting qualitative interviews. The interviews were taped-recorded.

Data collection procedures

Approval for the study was obtained from the hospital ethics committees. Written consent was obtained from the parents after they were told the purpose of the study. The children and their parents were informed that they had the right to withdraw from the study at any time and were assured of the confidentiality of their data.

After signing the consent form, a research assistant collected the demographic data from the parents and from the children's medical records. The children's baseline anxiety levels were also assessed and documented. For the experimental group, the therapeutic play intervention started after the baseline data had been collected. The emotional behaviour of each child was observed by a research assistant for two consecutive days (4 hours consecutively per day). At the end of the two days' observation, a research assistant documented the child's overall emotional behaviour using the CEMS. The child's anxiety levels were reassessed and documented. Semi-structured interviews were conducted with selected children and their parents. Once the data collection for all participants was completed, a short interview was conducted with selected nurses working in the paediatric units where the therapeutic play intervention was implemented

Data analysis

The Statistical Package for Social Science (SPSS: Version 19; SPSS Inc., Chicago, IL, USA) for Windows was used for the data analysis. Descriptive statistics were used to calculate the means, standard deviations, and ranges of the scores on the various scales. The homogeneity of the experimental and control groups was assessed using inferential statistics (independent *t*-test and χ^2). The interrelationships among the scores on the different scales and the demographic

variables were investigated using the Pearson product-moment correlation coefficient. Differences in the mean scores on the CEMS and the children's anxiety levels between the two intervention groups were assessed by an independent *t*-test and mixed between-within subjects ANOVA, respectively. Multiple regression analysis was performed to examine the effects of participants' demographic and clinical characteristics on the outcome measures.

Content analysis was adopted to analyze the semi-structured interviews. According to Weber (1990), it is one of the most objective and systematic approaches used for qualitative data analysis. With reference to the study protocol, the recordings were fully transcribed in verbatim immediately after the interviews. Two research students who were not involved in data collection helped to identify different themes through examining the transcriptions line by line. All these identified themes would be further summarized as codes according to their similarities and differences. Any dialogue relevant to the codes was translated into English for reporting. Disagreements of analysis were resolved by the research team members during their meetings.

Results

A total of 393 patients were recruited from November 2012 to October 2013. However, 89 questionnaires were found to be largely incomplete as a result of unanticipated early discharge or intra-hospital transfer. Therefore, 304 questionnaires from a total eligible pool of 393 patients were used for the analysis. Of the 304 patients, 154 received the therapeutic play intervention and 150 received usual care.

Demographic characteristics of the participants

(1) Gender distribution

Figure 1 and 2 present the gender distribution of children who were 3-7 years old and 8-12 years old respectively. As shown, the experimental and control groups in the two age groups contained similar numbers of boys and girls.

Figure 1. The Gender Distribution of Children Aged 3-7 in the Experimental and Control Groups (n=182)

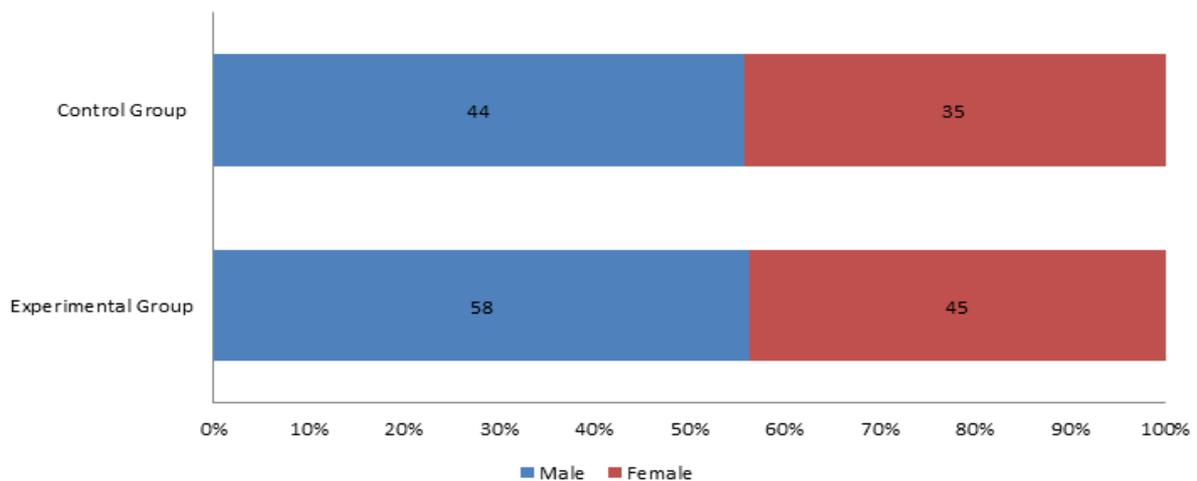
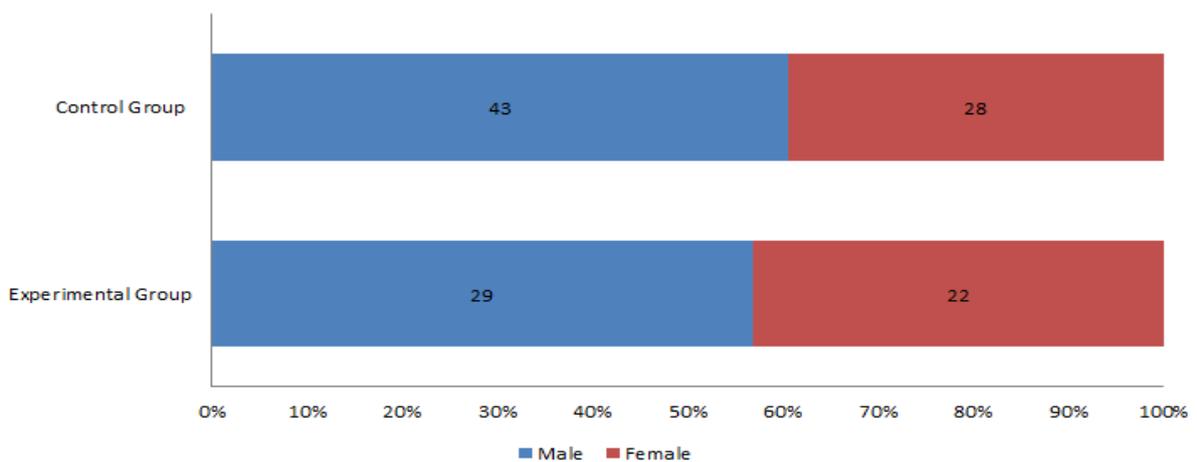


Figure 2. The Gender Distribution of Children Aged 8-12 in the Experimental and Control Groups (n=122)



(2) Diagnoses of children

Figure 3 and 4 indicate the diagnoses of children aged between 3-7 and 8-12 respectively. As noted, more than 1/3 of the children in the experimental and control groups for the two age groups were admitted to the hospitals as a result of respiratory problems.

Figure 3. Diagnoses of Children Aged 3 to 7 of the Experimental and Control Groups (n=182)

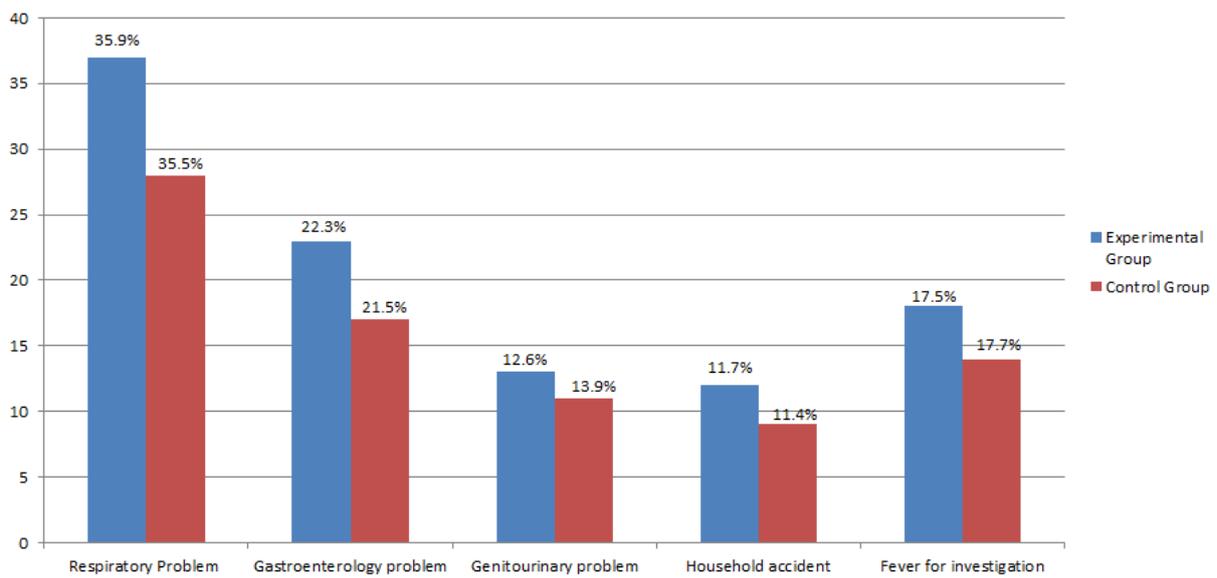
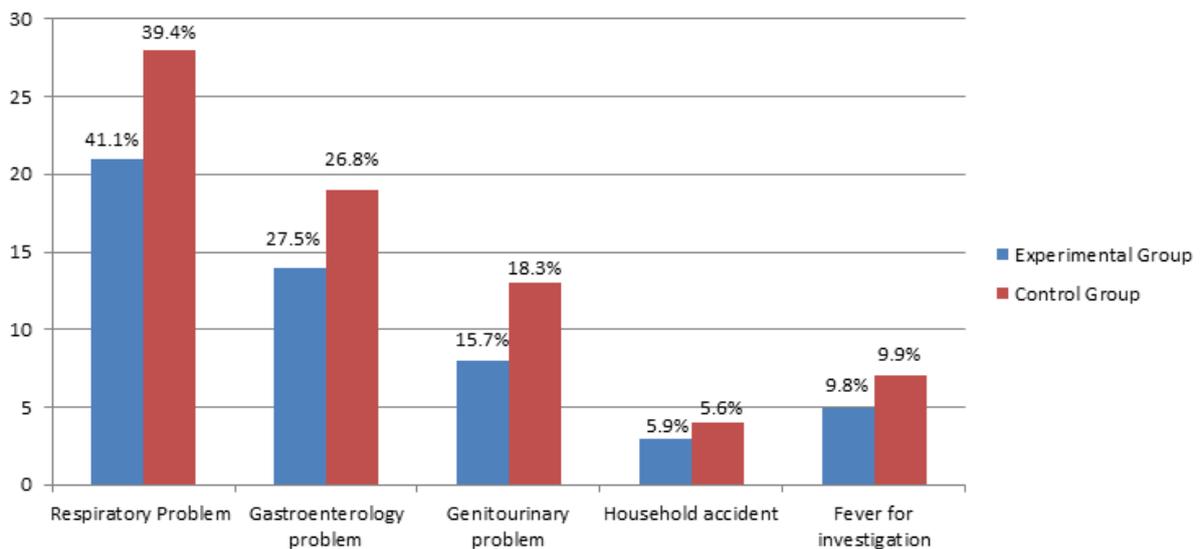


Figure 4. Diagnoses of Children Aged 8 to 12 of the Experimental and Control Groups

(n=122)



(3) Number of hospital admissions

Figure 5 and 6 illustrate the numbers of hospital admission of children aged between 3-7 and 8-12 respectively. As shown, about 50% of the children in the experimental and control groups for the two age groups reported that this was their first time of hospitalization.

Figure 5. Number of Hospital Admissions of Children Aged 3 to 7 of the Experimental and Control Groups (n=182)

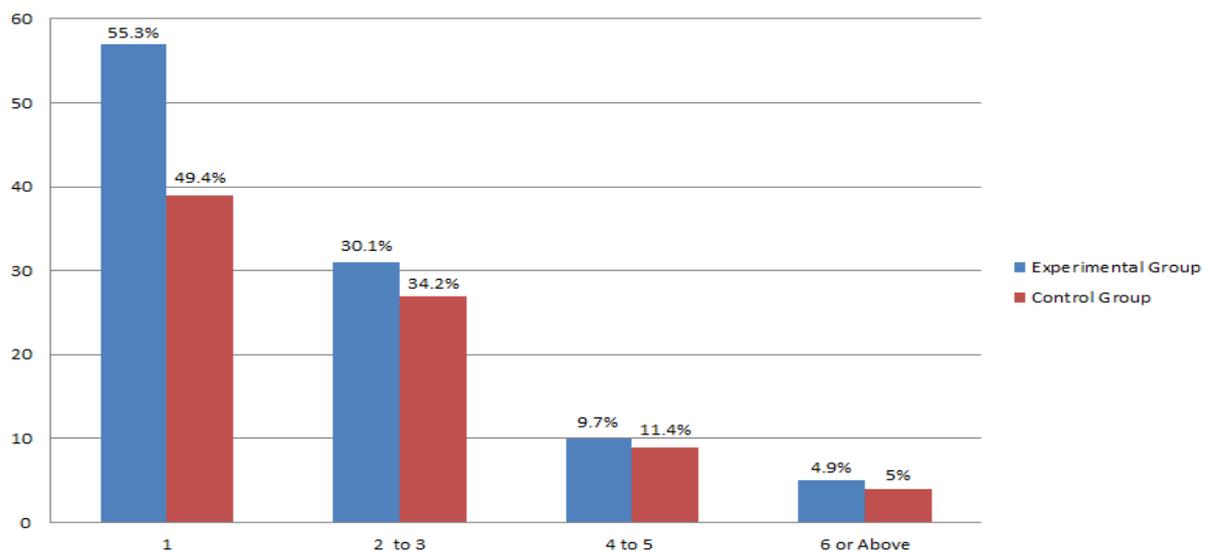
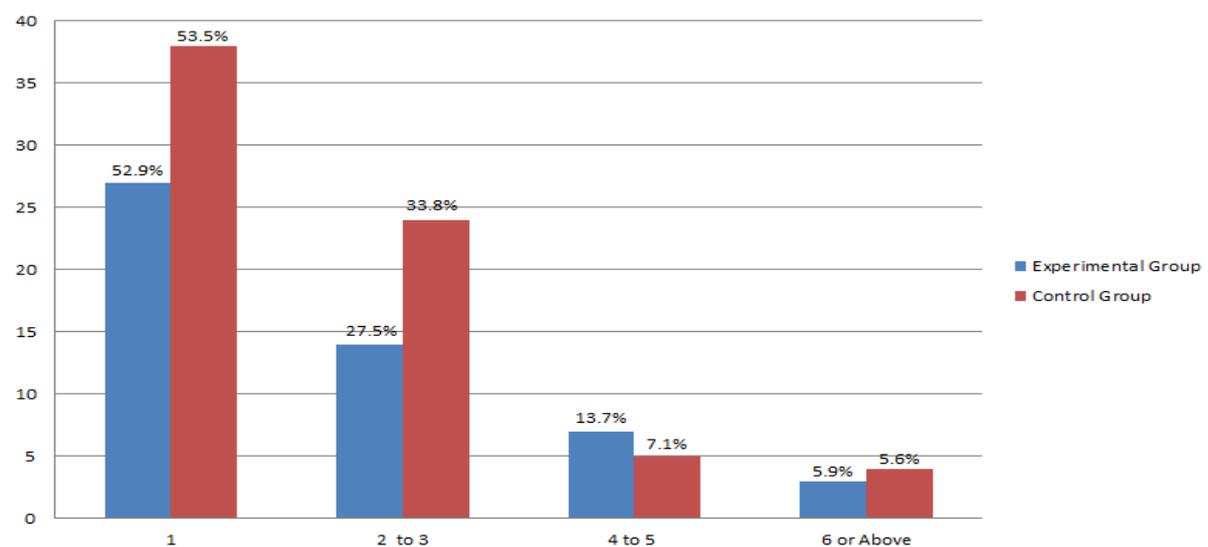


Figure 6. Number of Hospital Admissions of Children Aged 8 to 12 of the Experimental and Control Groups (n=122)



The demographic and baseline anxiety scores for the experimental and control groups for the 3 to 7 and 8 to 12 year-old age groups are further summarized in Table 2. The results show that the experimental and control groups in the two age groups were similar with respect to the children's ages, sex, diagnoses, number of hospital admissions, and baseline anxiety scores, suggesting a high level of comparability of variance between the experimental and control groups.

Factors contributing to children's negative emotions and anxiety

The relationships among the scores on the different scales and the demographic variables were investigated. With reference to Cohen [23], correlation coefficients of 0.10 to 0.29, 0.30 to 0.49, and 0.50 to 1.0 were interpreted as small, medium, and large, respectively. The results indicated that there were statistically significant high positive correlations between the anxiety and CEMS scores of children aged 3-7 ($r = .62, n = 182, p = .01$) and 8-12 ($r = .70, n = 122, p = .01$). Furthermore, small negative correlations were found between the time of hospital admission and anxiety scores for children aged 3-7 ($r = -0.26, n = 182, p < .01$) and 8-12 ($r = -0.28, n = 122, p < .01$). The results of the multiple regression analyses indicated that demographic and clinical factors, including the children's age and gender, diagnosis and time of hospital admission, did not make a statistically significant contribution to the prediction of anxiety and CEMS scores.

Negative emotions of children between the experimental and control groups

An independent *t*-test showed statistically significant differences between the mean CEMS scores of children aged 3-7 in the experimental ($M = 9.4, S.D. = 1.9$) and control groups [$M =$

12.6, S.D. =3.4; $t(180) = -7.3, p < .001$], and of children aged 8-12 in the experimental ($M = 10.8, S.D. = 2.7$) and control groups [$M = 13.7, S.D. = 3.8; t(120) = -8.1, p < .001$]. Children who received the therapeutic play intervention reported less negative emotional behaviour during hospitalization.

Anxiety level of children between the experimental and control groups

The mean anxiety levels of children aged 3-7 in the experimental and control groups are illustrated in Figure 7. As shown in the figure, the mean anxiety levels of children in the experimental and control groups were more or less the same at T1. However, there was a substantial decline [2.8 points] in the mean anxiety level in the experimental group at T2, whereas the mean anxiety level of control group only slightly decreased by 0.6 points at T2.

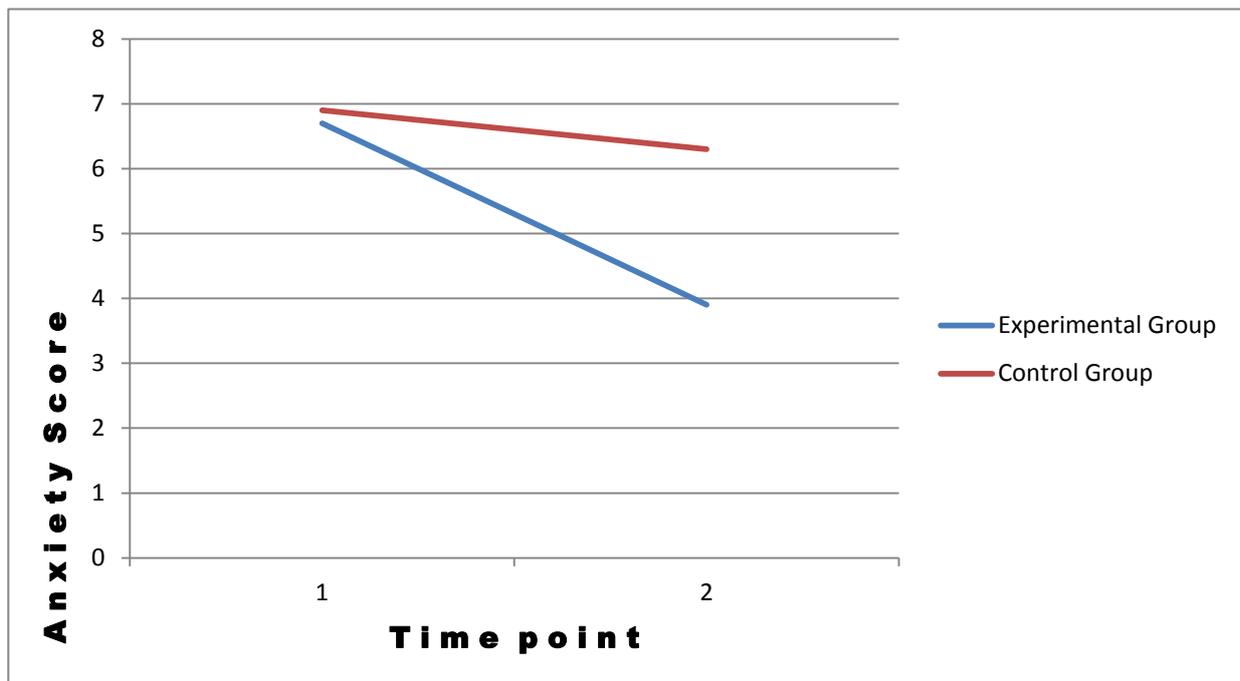


Figure7. Anxiety Scores of Children Aged 3 to 7 Years before and after the Therapeutic Play Intervention

The mean anxiety levels of children aged 8-12 in the experimental and control groups are shown in Figure 8. Similar findings were obtained. As shown in the figure, the mean anxiety levels of children in the experimental and control groups were more or less the same at T1. However, only a small decrease in mean anxiety level (0.4 points) was noted in the control group at T2, whereas it was drastically declined by 3.2 points in the experimental group at T2.

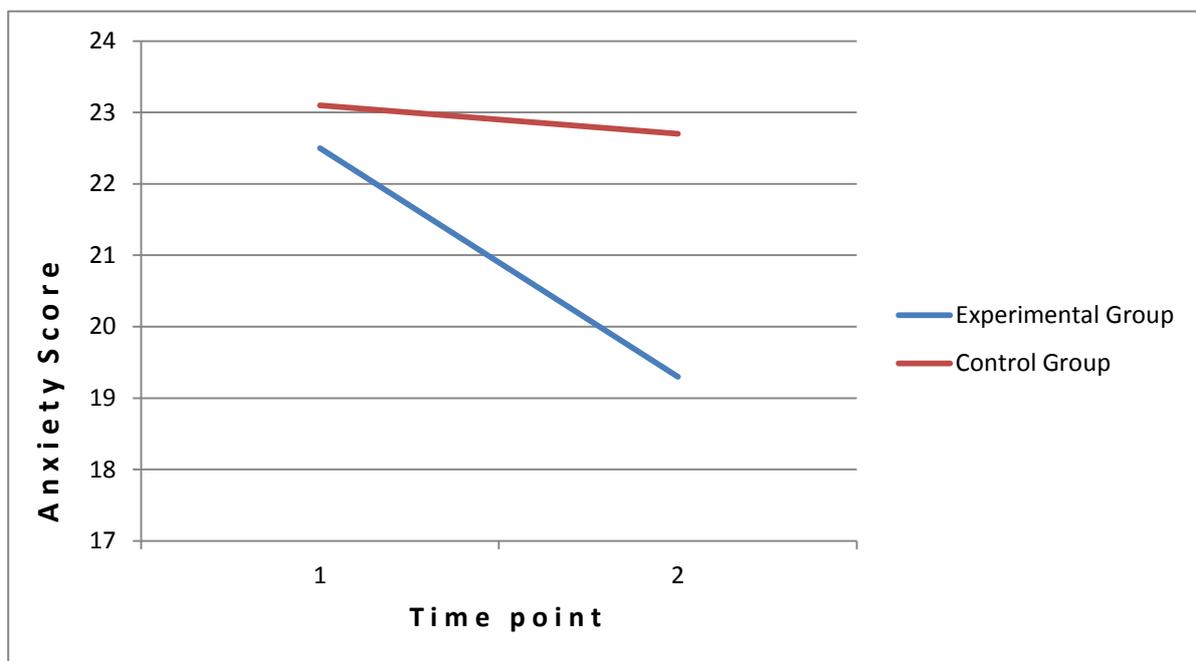


Figure 8. Anxiety scores of children aged 8 to 12 years before and after the therapeutic play intervention

A mixed between-within-subjects ANOVA was performed on the anxiety scores. The results (Table 3 and 4) showed that hospitalized children (both the 3-7 and 8-12 age groups) who participated in the therapeutic play intervention reported significantly lower levels of anxiety compared to those who received usual care only. According to the guidelines proposed by Cohen (1992), the eta squared indicates a moderate effect size for the interventions on the children's levels of anxiety in both age groups.

Qualitative interview results

Children and their parents' perceptions of the play intervention

When the children were asked to comment on their perceptions of receiving the therapeutic play intervention in the hospital, many of them stated that it helped them to know more about medical procedures. With such an understanding, the children said they no longer felt anxious and stressed before their medical procedures. Some examples of the children's responses are given below.

"I was not going to worry about venipuncture after the therapeutic play intervention. The play specialist explained the procedures to me during the intervention. I don't get scared of syringes anymore. They can be fun, like a toy. I also made a syringe doll by myself with the help of the play specialist."

Similar thoughts were shared by the parents. Many of them stated that their children became much more settled after the intervention and some said that their children were much more courageous about having medical procedures. Some examples of their responses are given below.

"My son became much more settled after the therapeutic play intervention. He felt much happier after playing with the play specialist."

"I've never seen my son so brave when facing medical procedures. I would like to thank the play specialist for her therapeutic play intervention."

Both the children and their parents reported that their impressions of the hospital changed after the intervention. Before the intervention, many of them perceived that healthcare professionals,

particularly doctors and nurses, were apathetic and not sensitive enough to patients' psychological needs. As such, they did not feel able to ask questions during the medical procedure or the consultation. After the intervention, the majority of them had changed their mind and said that they felt the hospital did care about their psychological needs. They generally thought that the hospital play specialists were members of the hospital staff, and their good performance had a direct positive effect on the image of all healthcare professionals, thus helping to build trusting relationships between the medical staff and patients. Some examples of their responses are given below.

“I am not afraid to see doctors now. I am able to express my feelings and ask them questions. I was startled by my last experience in another hospital because they (healthcare professionals) didn't care what I thought. However, I wasn't stressed this time because they (the play specialists) have been helping me to cope with the pain (caused by medical procedures).”

“It is awesome to have emotional support from the play specialist. I feel that I am respected and cared for by the hospital.”

Suitability of the therapeutic play intervention

Many of the children and their parents said they were happy to receive the therapeutic play intervention because the activities were fun and interesting. Some examples of their responses are given below.

“I like having the therapeutic play intervention – it's fun. I no longer feel bored and lonely after such an intervention.”

“It (the therapeutic play intervention) is a wonderful service for my child; I am satisfied with the activities and games because they are fun and interesting.”

Some parents also said the methods of teaching were interactive, which helped to draw children’s attention to the information about standard medical procedures, which are normally regarded as boring topics. An example of their responses is given below.

“My son had more medical knowledge after the therapeutic play.”

Some parents mentioned that the therapeutic play intervention provided an opportunity for their children to socialize with others. During the intervention, they could make friends with other children on the ward so that they felt less lonely. An example of their responses is given below.

“Since the therapeutic play intervention, my daughter does not mind having to stay longer in the hospital. She made friends with the girl who was next to her and the play specialist during the intervention.”

Nurses’ perceptions of the play intervention

Many nurses reported that the psychological needs of hospitalized children were fulfilled after receiving hospital play intervention.

“It is easily observed that those children who received therapeutic play intervention exhibited fewer negative emotions, such as crying during hospitalization. Most importantly, I found that children were easily calmed down and became more cooperative during medical procedures. It’s really unbelievable!”

Notwithstanding the fact that many nurses found hospital play intervention was effective to reduce anxiety and negative emotions for hospitalized children, some of them thought it was not possible for them to implement it because of tight schedule. They hoped that more resources could be allocated by the government in future so as to sustain this intervention.

“I do support having therapeutic play intervention within the hospital as it can improve the quality of care delivery and create a positive image of the hospital. Given that our workload is extremely heavy, insufficient manpower is the major obstacle for the implementation of therapeutic play in the hospital. It would be perfect if more resources, in particular manpower, can be allocated to the pediatric units for such activity.”

Discussion

The findings of this study suggest that the Hong Kong Chinese children experienced considerable anxiety on admission to hospital. The results are consistent with previous studies that found that hospitalized children experienced different degrees of sadness, unhappiness and worry [12, 15]. In comparison with previous studies that have used the same scale to measure the anxiety of Hong Kong Chinese children of a similar age, the anxiety scores of children on admission to hospital in this study were similar to those of children immediately before undergoing surgery [24], but higher than those of school children in the pre-academic examination period [2]. The results also showed a high positive correlation between the CSAS-C and CEMS. The findings concur with those of a previous study [2], in which children with high anxiety levels in the immediate pre-operative period had more negative emotional responses during the procedure for anesthesia induction. The findings provide further evidence

that anxiety hinders children's ability to cope with hospitalization and medical treatment, and increases negative and uncooperative behaviour toward healthcare.

There is an assumption that the number of hospital admissions a child experiences strongly affects his or her anxiety levels and emotional responses. Nevertheless, the results of the multiple regression analysis did not find statistically significant effects for the number of hospital admissions on children's outcomes in this study. The findings suggest that hospitalization is a stressful and threatening experience for children, regardless of whether they have had previous hospital admission experience.

The overall results support the effectiveness of therapeutic play in minimizing the anxiety levels and negative emotions of Hong Kong Chinese children who have been hospitalized. Indeed, providing therapeutic play for children during hospitalization has particular advantages because illness and its accompanying stress and physical restriction interrupt natural play and socialization, which are essential for children's normal growth and development. Most importantly, involvement in play activities during hospitalization can improve children's coping skills and decrease their stress, eventually leading to better psychosocial adjustment to their illness and hospitalization.

Implementation potential of therapeutic play in clinical settings

Although the overall results provide evidence that the therapeutic play intervention was effective in minimizing children's anxiety and negative emotions during hospitalization, it is crucial to ensure that the intervention can be implemented in clinical practice. To ensure the children were able to engage in play activities, the time of implementation was flexible and the

sessions were repeated at different times of the day. Participants were invited to join the play activities when they were not occupied by any medical treatments or physiological care. Therefore, it would be feasible for the healthcare system to consider incorporating therapeutic play as a routine psychological preparation for children undergoing hospitalization.

Most of the interviewed children reported that the therapeutic play intervention helped to relieve their anxiety because they had a better understanding of their illness and the medical procedures. Most of the children were pleased to know that most of the medical or nursing procedures would not cause them any pain, and that any pain would be well controlled. Most importantly, the children enjoyed the therapeutic play in the hospital and found the activities fun and interesting.

Although Chinese parents have traditionally viewed play as less important for hospitalized children than physiological care or medical treatment, most of the parents in the experimental group appreciated the availability of play activities within the hospital. Indeed, a previous study conducted in Hong Kong showed that parents were reassured by watching their children participate in play activities and interacting with children [1].

All of the nurses in the interview commented that the therapeutic play was very effective in reducing the children's negative emotions during hospitalization, which gave them time to calm the children down and meant that the medical or nursing procedures could be administered more smoothly. Most of them agreed that therapeutic play should be implemented within the hospital. Most importantly, nurses believe that it creates a more positive image of hospital and staff as a result of implementing therapeutic play interventions

for hospitalized children. Nevertheless, they expressed strong concern about the extra manpower required, which needs more support from the hospital organization. However, the shortage of nurses in Hong Kong hospitals is not just a local situation, but a global problem. Although most nurses believe that therapeutic play can be an effective intervention for promoting the psychological well-being of hospitalized children, it is not feasible for them to spend half an hour providing play activities for each child. Nevertheless, supporting the children to adapt to the life in hospital and face the stress of treatments is crucial. It is essential to have Hospital Play Service in paediatric wards. Using hospital play specialists (HPS) to implement therapeutic play may be one of the best solutions to the shortage of nurses. Most hospitals in Australia, the United States, and other Western countries employ HPS, who play an important role in promoting psychological care for hospitalized children through the provision of play activities. Although it may require some extra resources in the short term, it would certainly enhance hospitals' capacity to promote better health in the long run. Indeed, it only takes about half an hour a day to provide a creative recreational and psychosocial intervention to make a child's hospitalization less difficult. Clearly, it would be economically feasible for the healthcare system to consider and implement this intervention as a routine practice for hospitalized children.

Limitations

There are some limitations of this study. First, although a randomized controlled trial is the most powerful approach for testing cause-and-effect relationships between independent and dependent variables, we could not randomize individual patients within a paediatric unit in a

hospital because there was a possibility of contamination between different treatment groups within the setting, and because some children and their parents might have been concerned if they were aware that they were experiencing a different form of intervention. Therefore, a non-equivalent control group design was used. Second, the use of convenience sampling and therapeutic play intervention was only implemented in one setting, thus limiting the generalizability of the results. Third, this study only observed children's anxiety levels and emotional responses on two consecutive days, which may not have been long enough to fully assess the effect of hospitalization on the psychological well-being of the children. Nevertheless, as short-stay hospitalization is recommended in today's healthcare policy, many hospitalized children will be discharged home after 1 to 3 days.

Practice implications

The findings of the study generate new knowledge and evidence about therapeutic play, with major clinical implications. The results emphasize the importance of integrating therapeutic play as an essential component of holistic and high-quality care to ease the psychological burden of hospitalized children. It also promotes the awareness in healthcare professionals and parents that play is a very important part of children's life, and that they need play even when they are ill. Indeed, play is instinctive, voluntary, and spontaneous; children play just as birds fly and fish swim [25]. We believe that the therapeutic play intervention can be applied to all children regardless of their different cultural backgrounds or settings. Given the importance of play to children's psychological health, it is recommended that the hospital authority should advocate the importance of play for hospitalized children by providing more resources to

establish more space and facilitates for children to play. Most importantly, it is crucial to employ hospital play specialists to facilitate the integration of therapeutic play into routine care for hospitalized children.

Conclusion

Notwithstanding the potential limitations, this study has addressed a gap in the literature by examining the effects of a therapeutic play intervention on the outcomes of hospitalized children. The most important contribution of this study is the empirical evidence it provides to support the effectiveness of therapeutic play intervention in minimizing the anxiety and negative emotions of hospitalized children.

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Table 1. Examples of the Therapeutic Play Intervention

Type of Play	Objectives	Activities
Preparation Play	<ul style="list-style-type: none"> To increase children’s understanding of medical procedures To give children a sense of control over threatening events and help to clarify their misconceptions 	<p>Go through every step of a medical procedure using different instruments, such as tailor-made pretend medical dolls, procedural orientation books, real medical equipment, and miniature medical equipment</p> 
Medical Play	<ul style="list-style-type: none"> To facilitate children’s expression of their concerns and feelings related to hospitalization To familiarize children with the hospital environment and routine medical procedures To facilitate children’s expression of their feelings and emotions related to hospitalization 	<ul style="list-style-type: none"> Provide various real and/or toy medical equipment (e.g. stethoscope, syringe without needles, bandages, medical cup, gloves, mask, nurse’s cap, dressing pack, etc.) during children’s hospitalization Get children involved in different kinds of expressive play activities (e.g. painting, singing, dancing, journaling, sand play, puppets, etc.), and encourage them to share or express their feelings 
Distraction Play	<ul style="list-style-type: none"> To reduce the anxiety of children undergoing medical procedures 	<p>Provide interesting games and toys (e.g. blowing bubbles, pop-up books, puppets, computer games, music, video, sensory toys, relaxation techniques, etc.) to distract children’s attention from medical procedures</p> 
Developmental Play	<ul style="list-style-type: none"> To promote optimum psychosocial development and prevent regression among hospitalized children 	<p>Involve children in appropriate play activities (e.g. toys, board games, story books, arts and crafts play, etc.) according to their ages and abilities</p> 

* Photos adopted with permission from Playright – Taken from Hospital Play Service pamphlet

Table 2. Demographic and baseline characteristics between the experimental and control groups for the two age groups of 3 to 7 years and 8 to 12 years

	<i>n</i> (%)		χ^2	<i>p</i>	<i>n</i> (%)		χ^2	<i>p</i>
	Ages 3-7				Ages 8-12			
	Experimental (n = 103)	Control (n = 79)			Experimental (n = 51)	Control (n = 71)		
Gender								
Male	58 (56.0)	44 (56.0)	0.02	0.89 ^{ns}	29 (56.9)	43 (60.5)	0.14	0.61 ^{ns}
Female	45 (44.0)	35 (44.0)			22 (43.1)	28 (39.5)		
Diagnosis								
Respiratory problem	37 (35.9)	28 (35.5)	0.08	0.99 ^{ns}	21 (41.1)	28 (39.4)	0.15	0.97 ^{ns}
Gastroenterology problem	23 (22.3)	17 (21.5)			14 (27.5)	19 (26.8)		
Genitourinary problem	13 (12.6)	11 (13.9)			8 (15.7)	13 (18.3)		
Household accident	12 (11.7)	9 (11.4)			3 (5.9)	4 (5.6)		
Fever for investigation	18 (17.5)	14 (17.7)			5 (9.8)	7 (9.9)		
Number of hospital admissions								
1	57 (55.3)	39 (49.4)	0.05	0.86 ^{ns}	27 (52.9)	38 (53.5)	0.03	0.74 ^{ns}
2-3	31 (30.1)	27 (34.2)			14 (27.5)	24 (33.8)		
4-5	10 (9.7)	9 (11.4)			7 (13.7)	5 (7.1)		
6 or above	5 (4.9)	4 (5.0)			3 (5.9)	4 (5.6)		
	<i>M (SD)</i>		<i>t</i>	<i>p</i>	<i>M (SD)</i>		<i>t</i>	<i>p</i>
Age	4.7 (1.4)	4.5 (1.5)	-0.98	0.33 ^{ns}	9.8 (1.3)	10.9 (2.1)	-0.55	0.59 ^{ns}
Mean anxiety scores	6.7 (2.4)	6.9 (2.5)	0.75	0.46 ^{ns}	22.5 (4.3)	23.1 (4.5)	0.30	0.77 ^{ns}

Notes: ^{ns} = Not significant at $p > 0.05$

Table 3. The mean scores and standard deviations for anxiety scores between the experimental and control groups for the two age groups of 3 to 7 years and 8 to 12 years across two time periods (N=304)

	Mean (S.D.)		Mean (S.D.)	
	Ages 3-7		Ages 8-12	
	Experimental (n=103)	Control (n=79)	Experimental (n=51)	Control (n=71)
Anxiety scores				
T1	6.7 (2.4)	6.9 (2.5)	22.5 (4.3)	23.1 (4.5)
T2	3.9(2.5)	6.3(2.8)	19.3(3.9)	22.7(2.8)

Table 4

The results of mixed between-within-subjects ANOVA on the scores for anxiety levels in children ages 3–7 and 8-12

	Ages 3-7			Ages 8-12		
	<i>F</i> -value	<i>P</i> -value	<i>Eta Squared</i>	<i>F</i> -value	<i>P</i> -value	<i>Eta Squared</i>
Main effect for time	63.3	.005	0.12	50.8	.008	0.11
Main interaction effect	1.1	.009	0.16	23.7	.006	0.18
Main effect for intervention	78.7	.03	0.06	6.4	.02	0.17