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Using therapeutic toy for administering by inhalation in pre-schools

O uso do brinquedo terapêutico na administração por inalação em pré-escolares

El uso de juguete terapéutico para administración por inhalación en preescolares

Maria Paula Custódio Silva[I], Mariane Santos Belisário[II], Nylze Helena Guillarducci Rocha[III], Mariana Torreglosa Ruiz[IV], Jesislei Bonolo do Amaral Rocha[V], Divanice Contim[VI]

ABSTRACT

Objective: to compare the behavior of preschoolers during inhalation therapy, before and after a Therapeutic Play session. **Method:** quasi-experimental, quantitative study using pre- and post-intervention observation with an intentional sample recruited at an Emergency Care Unit in Minas Gerais. Data were collected from November 2017 to April 2018 and analyzed by descriptive and inferential statistics. **Results: t**wenty-five behaviors of 99 preschoolers were evaluated during inhalation administration. After the session, 73.7% were relaxed in posture and facial expression, 76.8% were comfortable, 19.2% interrupted the procedure, and 38.4% requested the mother or companion to be present. **Conclusion:** the use of toys favored greater acceptance and adaptation by preschoolers undergoing inhalation therapy, evidencing the importance of implementing this strategy in pediatric emergency services.

Descriptors: Child, Preschool; Play and Playthings; Administration, Inhalation; Nursing Care**.**

RESUMO

Objetivo: comparar o comportamento de pré-escolares durante o uso de administração por inalação, antes e após sessão de Brinquedo Terapêutico. **Método:** estudo quase-experimental de abordagem quantitativa, com a técnica de observação antes e após a intervenção, realizado por meio de amostra intencional, recrutadas em uma Unidade de Pronto Atendimento no interior de Minas Gerais. Os dados foram analisados por estatística descritiva e inferencial, coletados entre os meses de novembro de 2017 a abril de 2018. **Resultados:** foram avaliados 25 comportamentos de 99 pré-escolares durante a administração por inalação. Após a sessão, 73,7% estavam com a postura e expressão facial relaxada, 76,8% estavam à vontade, 19,2% interromperam o procedimento e 38,4 % solicitaram a presença da mãe ou acompanhante. **Conclusão: o** uso do brinquedo, favoreceu maior aceitação e adaptação de pré-escolares submetidos à administração por inalação, evidenciado a importância em implementar essa estratégia em serviços de pronto atendimento pediátrico.

Descritores: Pré-Escolar; Jogos e Brinquedos; Administração por Inalação; Cuidados de Enfermagem**.**

RESUMEN

Objetivo: comparar el comportamiento de los preescolares durante la terapia de inhalación, antes y después de una sesión de Juego Terapéutico. **Método:** estudio cuantitativo cuasi-experimental utilizando observación previa y posterior a la intervención con una muestra intencional reclutada en una Unidad de Atención de Emergencia en Minas Gerais. Los datos se recopilaron de noviembre de 2017 a abril de 2018 y se analizaron mediante estadísticas descriptivas e inferenciales. **Resultados:** se evaluaron veinticinco comportamientos de 99 niños en edad preescolar durante la administración por inhalación. Después de la sesión, el 73.7% se relajó en la postura y la expresión facial, el 76.8% se sintió cómodo, el 19.2% interrumpió el procedimiento y el 38.4% solicitó que la madre o la acompañante estuvieran presentes. **Conclusión:** el uso de juguetes favoreció una mayor aceptación y adaptación por parte de los preescolares sometidos a terapia de inhalación, lo que evidencia la importancia de implementar esta estrategia en los servicios de emergencia pediátricos.

Descriptores: Preescolar; Juego e Implementos de Juego; Administración por Inhalación. Atención de Enfermería**.**

INTRODUCTION

The word playing demonstrates how essential playful activities are for children's development, that is to say, it is by playing that, from an early age, children integrate with themselves, with other people, and with the environment. It is the most genuine form used in different assistance contexts that are able to mitigate the expression of feelings, such as anxieties and frustrations coming from unpleasant and painful procedures or situations, which, in another way, would not be possible, due to their emotional immaturity[1,2]

[I]Nurse. MS. PhD student. Federal University of Triângulo Mineiro. Uberaba, Brazil. E-mail: maria_paulacs@hotmail.com. ORCID: https://orcid.org/0000-0001-8694-1589.
[II]Nurse. Specialist. Federal University of Triângulo Mineiro. Uberaba, Brazil. E-mail: mariane.belisario@yahoo.com.br. ORCID: https://orcid.org/0000-0003-3566-6171.
[III] Nurse. Specialist. Master's Degree course student Federal University of Triângulo Mineiro. Uberaba, Brazil. E-mail: nylze@hotmail.com. ORCID: https://orcid.org/0000-0002-6615-1667.
[IV]Nurse. PhD. Adjunct professor. Federal University of Triângulo Mineiro. Uberaba, Brazil. E-mail: marianatorreglosa@hotmail.com. ORCID: https://orcid.org/0000-0002-5199-7328.
[V]Nurse. PhD. Adjunct professor. Federal University of Triângulo Mineiro. Uberaba, Brazil. E-mail: jesisleiamaralrocha@gmail.com. ORCID: https://orcid.org/0000-0002-0591-7972.
[VI]Nurse. PhD. Associate professor. Federal University of Triângulo Mineiro. Uberaba, Brazil. E-mail: d.contim@uol.com.br. ORCID: https://orcid.org/0000-0001-5213-1465.

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The Therapeutic Toy (TT) is a structured activity applied by a trained professional, whose aim is to promote the emotional and physical well-being of a child by experiencing a situation that is little familiar to their age, like understanding a hospitalization moment and their disease at that moment[3]. This activity facilitates a professional-child interaction, favoring the procedures to be carried is a lesser painful and more humanized manner, thus calming down feelings of anger, depression, and sadness coming from the association that the kid makes of hospitalization as a punishment[4].

By incorporating the TT in the care procedure, the nurse seeks to establish communication and a relationship with the kid; this playful strategy facilitates the interaction and improves care quality. It is the nurse's competence to apply the TT in the care context, but nurses still find difficulties to do so, and they highlight the following as the main reasons: lack of time, unpreparedness, and lack of resources[6,7].

The choice for acute respiratory diseases is due to the fact that they are an important group among the child population, and they are described as the most frequent cause of infant mortality in developing countries, affecting mainly children under five years of age, and the Emergency Service Units (*Unidades Pronto Atendimentos*, UPAS) are the gateway for this diseases into the Unified Health System. Among acute respiratory diseases, Acute Respiratory Infections (ARIs) are the most common causes of morbidity and mortality in childhood[8,9]. The main form of treatment for ARIs is inhalation administration, the proper use of the technique has been a factor responsible for controlling the disease[10,11]. The method has several disadvantages that increase anxiety and discomfort in the child, such as the use of the mask and the device's noise, or even the oxygen network noise[12].

LITERATURE REVIEW

A number of studies on the application of the TT by nurses with the child population have stood out[13-18]. They evidence the use of playful activities to minimize the wear provoked by diseases like cancer, diabetes, and other chronic diseases[13-15], and in preparation for procedures such as venipuncture, drug administration, vaccines, and surgical procedures[16-18]. Thus, it became an innovative strategy in the family/child/health professional triad during nursing care[1,2].

In the pediatric emergency spaces, the TT has promoted benefits in terms of the completeness of care to the health condition and better acceptance of the procedures needed for diagnosis and treatment[2,19]. A study on the use of the TT in preschooler children during inhalation administration indicated that they completed treatment, increasing satisfaction[12].

Thus, the need for new research studies is highlighted, so that the nursing team's perception becomes evident in this and in other contexts. In view of this, it was sought to compare the preschooler behavior during the inhalation administration before and after a TT session.

METHOD

This is a quasi-experimental study of a quantitative approach, with the before-and-after the intervention observation technique. The quasi-experiments lack random distribution as a manipulation of an independent variable, but have the features of randomization and/or control group[20]. In this study, we considered as an independent variable the manipulation of the toy in the preparation before the procedure and, as the dependent one, the reactions after the use of the TT by preschool children. The scenario of the study was a UPA located in the inland of the state of Minas Gerais. Data collection was carried out between November 2017 and April 2018.

The research population was selected based on the calculation of preschoolers' admissions into the study scenario in need of inhalation administration, between the months of January and June 2017. During this period, 888 consultations occurred. Thus, the intention was to conduct the study with 10% of the population served, resulting in a sample number of approximately 88 children.

The included children were in the preschool age range (three to five years and 11 months old), according to the Brazilian Ministry of Health[2]; they were not cognitively impaired, underwent two sessions of inhalation administration in the same appointment, and were able to play, that is, did not present a severe general state and were conscious and interacting with the environment. It was decided to exclude those who were not accompanied by their parents at the procedure moment.

Data collection was carried out in four stages. In the first one, the selection of the preschoolers took place, it was intentional and with the UPA's health team help that indicated possible participants according to the inclusion criteria. In the medical chart, the age, name of the parents, and general condition of the child were searched. The preschoolers'

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parents were addressed and invited to participate in the study, by signing the Free and Informed Consent Form, while retaining the right to deny participation in the study. All those approached agreed to participate.

In the second stage, the preschoolers' behaviors were observed during the first session of inhalation administration. This stage served to sort them according to established inclusion criteria.

For the third stage, an interview was carried with one of the parents in order to get the child's characterization data about gender and age, if they go to daycare, their origin, who cares for the kid at home, the disease that led them to the UPA, and whether the child had already been hospitalized, thus complementing the data from the chart. In this stage, the child was addressed and invited to participate in a TT session and one of the researchers demonstrated the procedure on a doll, requesting the child to participate and, when the role-play was over, the child was invited to repeat it; 12 of them refused to participate and 15 started to play and did not finish it, because they did not want to or due to any worsening of their clinical conditions, with 23 exclusions. In the fourth stage, the child underwent a second inhalation administration and their behaviors were observed again.

To evaluate the reaction of the preschoolers, a checklist was created based on studies focused on venipuncture, vaccine administration, and surgical preparation for behavior evaluation by means of a TT[18,19,20]. The face and content of this instrument were validated by three judges with experience in child care. The initial instrument had 20 behaviors and, with the evaluation by the judges, four questions were complemented and five added in relation to inhalation administration.

The checklist was composed of two columns: the first one for transcriptions of the behaviors seen during the first inhalation administration, and the second one for taking note of the behaviors identified after the TT intervention. 25 behaviors associated with the acceptance of the procedure were included. In the TT session, we used dolls and an inhaler, made of scrap metal and 500 ml transparent PET bottles, decorated with children's motives (Figure 1). It should be noted that the two researchers independently observed the behaviors presented in order to assess differences, and that the mean time for each session was 20 minutes.

FIGURE 1: Therapeutic toy used in inhalation administration, Uberaba, MG, Brazil, 2020.

The data were inserted and stored in a *Microsoft Office Excel*® electronic spreadsheet and imported into the *Statistical Package for Social Sciences* (SPSS), version 21.0, for processing and analysis, with the sue of inferential and descriptive statistics. To evaluate the variations in behavior before and after the TT sessions, the McNemar test was used, considering a 5% rejection level ($p<0.005$).

The study was registered with the Research Ethics Committee of the Federal University of the Triângulo Mineiro, ensuring compliance with the recommendations of Resolution CNS/MS No. 466/12, approved under opinion No. 1,547,451, CAAE identifier: 51995315.8.0000.5154.

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RESULTS

Data from 99 preschoolers with a mean age of 38 months was analyzed; 51% were male, 86% were in kindergarten, and 90% were accompanied by their mother and had her as their main caregiver. As for health problems, 74% had been previously hospitalized and, among the causes, 28% were related to respiratory problems. All of them were due to respiratory causes and 74% came from the city where the studied UPA is located.

The behaviors presented in Table 1 are the signs observed in children who have gone through processes of trauma and pain, representing a crisis situation. Of the 25 behaviors evaluated before and after the use of the TT during inhalation administration, three were not statistically significant ($p<0.05$): “Protective behavior”, “Does not respond to stimuli, demonstrating indifference”, and “Hiccup”. However, it is noted that physical signs such as “crying”, “screaming”, “facial expression of fear”, and “muscle tension” have been significantly reduced, as shown in Table 1.

TABLE 1: Frequency distribution of observation of preschoolers' behaviors undergoing inhalation administration, before and after the use of the TT. Uberaba, MG, 2020*.

Behaviors	Before the TTI		After the TTI		p
	N	Y (%)	N	Y (%)	
Collaborates passively	18	18.2	76	76.8	< 0.001*
Protective behavior	21	21.2	68	68.7	< 0.001*
Remains silent	63	63.6	21	21.2	< 0.001*
Facial expression of fear	78	78.8	38	38.4	< 0.001*
Muscle tension	95	96.0	11	11.1	< 0.001*
Even with the difficulty of breathing, does not accept the inhaler	97	97.9	5	5.1	<0.001
Disapproves by shaking the head negatively wishing to get rid of the inhaler	92	92.9	7	7.1	<0.001
Calls for the presence of the mother	98	99.0	38	38.4	< 0.001*
Requests the mother to remove the inhaler	98	99.0	24	24.2	<0.001
Avoids looking at the professional and at the incision	56	56.6	35	35.4	<0.005
Answers with monosyllables	96	97.0	9	9.1	< 0.001*
Cries	65	65.7	10	10.1	< 0.001*
Grabs the inhaler over his/her face when noticing improvement in breathing pattern	24	24.2	88	88.8	<0.001
Screams	81	81.8	5	5.1	< 0.001*
Asks to stop the procedure no matter what	71	71.7	19	19.2	< 0.001*
Does not respond to stimuli, demonstrating indifference	48	48.5	61	61.6	0.111
Closely observes the professional who is installing the inhalation	49	49.5	79	79.8	< 0.001*
Verbalizes the improvement in the respiratory pattern at the end of inhalation therapy	95	96.0	77	77.8	< 0.001*
Relaxed posture - Relaxed facial expression	35	35.4	73	73.7	< 0.001*
Plays with the inhaler	24	24.2	76	76.8	< 0.001*
Asks questions to the mother about the inhalation therapy	48	48.5	90	99.9	<0.001
Asks questions to the professional about the inhalation therapy	50	50.5	80	80.8	< 0.001*
Hiccup	26	26.3	10	10.1	0.007
Helps the professional spontaneously	31	31.3	74	74.7	< 0.001*
Closes his/her eyes	74	74.7	63	63.6	< 0.001*

*McNemar test, significant p-values<0.005

It is possible to observe that, in the second inhalation administration, after the TT session, and as they were visually calmer by their relaxed and collaborative facial expression, the children received the therapy in a better manner, accepting to use the mask, with no shaking of the head to get rid of it but kept it on their face as the respiratory condition was getting better, and they even played with it.

The interaction with the professional was getting more pleasant after the use of the TT, a fact noticed by the child's behavior in spontaneously helping the professional (74.7%) and asking them questions (80.8%). Previously, the same children did not even want to look at them (49.5%) and the toy allowed the child to be more comfortable to observe the attitudes and how the professional performed the procedure (79.8%). The improvement in their communication grew evident when, after the TT, only 9.1% of the preschoolers answered with monosyllables.

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It was perceived that, after the session, the children grew calmer and received correctly the inhalation administration, without spilling or removing it from their face, resulting in a better clinical response.

DISCUSSION

The use of the TT during inhalation administration showed to be efficient in reducing the negative behaviors coming from a therapeutic procedure.

Most of the times, nursing care in emergency units consists in quick procedures and with little interaction, whether due the short stay of the user or to the severity of the situation[7]. For the child, the environment is like being in a disturbing context because for them it is related to the need of invasive procedures and, then, the use of the TT provides security and comfort; after using it, the child starts considering the hospital or the emergency unit as a less cruel place[1].

The behaviors presented in Table 1 were also prevalent in other studies, with crying, screaming, muscle tension, and facial expression of fear being more frequent manifestations during the procedures conducted in children, whether painful or not[1,19,21,22]. A positive outcome was noticed in all the behaviors specific to the inhalation administration, the preschoolers received the medication in a better manner after the TT session as they kept the inhaler properly on their face.

A study analyzing the use of playful activities in aerosol therapy showed that only 38.9% of the preschoolers completed the administration. After the use of a visual playful technique, 92.9% adhered[12]. By demonstrating the importance of playing even in an acute disease situation, playful activities help comprehension within the children's universe, making them not to look at the procedure as something that will harm or cause pain. In inhalation administration, the use of the mask and the noise from the device or from the oxygen network cause fear and anxiety because children think that they will undergo invasive procedures. Associated with the discomfort of the pathology itself, this reduces adherence[10-12].

The interaction and communication with the professionals are impaired in situations of fear and pain, the children communicate through monosyllables not allowing the procedure to take place. By the insertion of the TT, in this and in other studies[1,6,18], it is noticed that the children start to collaborate with the professional, to observe them, ask questions, stop communicating through short answers, and do not disrupt the procedure so frequently.

The presence of the mother brings comfort and safety to the children in unpleasant situations, for most of them request maternal company[1,19,23]. The professionals should see the mother and the family as a source of support for the child, and including them in the care and in the TT sessions calms the children and increases their will to participate[1].

The materials for the construction of the TT are considered low-cost and affordable, easy to apply, and well accepted by children, capable of transforming environments, thus creating a relaxed atmosphere closer to the child's context[2,3]. In the practice, low adherence by the nursing professionals is observed; they report lack of time and professional training as obstacles[24].

Among the limitations of the study, the following are highlighted: the time required to collect data to reach the seasonality of the respiratory disease in the region, and the disclosure of the reality of a single scenario, which, in contrast, is surpassed by the findings converging with diverse publications on the theme.

CONCLUSION

In the preschoolers participating in the study, reactions were documented that optimized their behaviors, showing greater acceptance and adaptation to inhalation administration. The reduced number of behaviors or stress situations among preschoolers, such as crying, shaking, struggling or screaming, indicates the beneficial effects of the TT for this procedure, reinforcing the importance of its application in pediatric nursing care.

Thus, the results signal the importance of implementing the use of a TT within the health units, especially in pediatric emergency services whenever the child shows difficulties in understanding the situation of the inhalation administration.

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