

Effects of instructional therapeutic play in the behavior of children during the first attempt at intravenous catheterization

Efeito do brinquedo terapêutico instrucional no comportamento de crianças na primeira tentativa de cateterização intravenosa

Efecto del juguete terapéutico instructivo sobre la conducta de los niños en el primer intento de cateterismo intravenoso

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ABSTRACT

Objective: To verify the effects of instructional therapeutic play on the behavior of children during the first attempt at peripheral intravenous catheterization.

Method: This is a quasi-experimental *post hoc* analysis with a non-equivalent control group, secondary to a randomized clinical trial. The convenience sample comprised 193 children, allocated for convenience into an intervention group (preparation for catheterization with a therapeutic play; n=101 children) and a control group (preparation with structured conversation supported by the use of a booklet; n=92 children). The *Observation Scale of Behavior Distress* was used to evaluate opposing behavior (attacking the professional, whining, crying, getting nervous, screaming, moving until being immobilized, and protesting) and non-opposing behavior (helping and asking for information). We conducted descriptive and inferential analyses of the data.

Results: Statistically significant differences were observed between the intervention and control groups in the variables: nervousness, moving to immobilization, protest and assistance during venipuncture. The use of therapeutic play reduced the risk of being nervous during the procedure by 43%, the risk of moving did so by 51%, and the risk of not protesting by 51%. Furthermore, assistive behavior during the procedure increased by 27%.

Conclusion: The instructional therapeutic play was effective in reducing behaviors competing with intravenous catheterization and favored the child's collaboration in their first attempt.

Descriptors: Peripheral Catheterization; Play and Playthings; Pediatric Nursing.

RESUMO

Objetivo: Verificar o efeito do brinquedo terapêutico instrucional no comportamento de crianças durante a primeira tentativa de cateterização intravenosa periférica.

Método: Trata-se de uma análise *post hoc* do tipo quase experimental com grupo controle não equivalente, secundária a ensaio clínico randômico. A amostra foi composta por 193 crianças da unidade de pronto atendimento, alocadas por conveniência em grupo intervenção (preparo para a cateterização com o brinquedo terapêutico; n=101 crianças) e grupo controle (preparo com conversa estruturada apoiada com o uso de cartilha; n=92 crianças). A escala *Observation Scale of Behavior Distress* foi utilizada para avaliar comportamentos concorrentes das crianças (agredir o profissional, choramingar, chorar, estar nervoso, gritar, movimentar-se até a imobilização e protestar) e não concorrentes (auxiliar e solicitar informação). Os dados foram analisados de forma descritiva e inferencial.

Resultados: Foram observadas diferenças estatisticamente significantes entre os grupos intervenção e controle nas variáveis: nervosismo, movimentar-se até a imobilização, protesto e auxílio durante a punção venosa. O uso do brinquedo terapêutico reduziu em 43% o risco de estar nervoso durante o procedimento, 51% de movimentar-se e 51% de não protestar. Ainda, aumentou em 27% o comportamento de auxiliar durante o procedimento.

Conclusão: O brinquedo terapêutico instrucional reduziu comportamentos concorrentes com a cateterização intravenosa e favoreceu a colaboração da criança, em sua primeira tentativa.

Descritores: Cateterismo Periférico; Jogos e Brinquedos; Enfermagem Pediátrica.

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RESUMEN

Objetivo: Verificar el efecto de juguetes terapéuticos instructivos sobre el comportamiento de los niños durante el primer intento de cateterismo intravenoso periférico.

Método: Se trata de un análisis *post hoc* de tipo cuasi experimental con un grupo control no equivalente, secundaria a un ensayo clínico aleatorizado. La muestra estuvo compuesta por 193 niños del servicio de urgencias, elegidos por conveniencia en un grupo de intervención (preparación para el cateterismo con un juguete terapéutico; n=101 niños) y un grupo de control (preparación con conversación estructurada apoyada en el uso de un folleto; n=92 niños). Se utilizó la escala *Observation Scale of Behavior Distress* para evaluar las conductas competitivas (atacar al profesional, lloriquear, llorar, estar nervioso, gritar, inmovilizarse y protestar) y conductas no competitivas de los niños (ayudar y solicitar información). Los datos fueron analizados de forma descriptiva e inferencial.

Resultados: Se observaron diferencias estadísticamente significativas entre los grupos de intervención y control en las variables: nerviosismo, movimiento a la inmovilización, protestas y asistencia durante la punción venosa. El uso del juguete terapéutico redujo el riesgo de estar nervioso durante el procedimiento en un 43%, el riesgo de moverse en un 51% y el riesgo de no protestar en un 51%. Además, la conducta de asistencia durante el procedimiento aumentó en un 27%.

Conclusión: El juguete terapéutico instruccional redujo conductas competitivas con el cateterismo intravenoso y favoreció la colaboración del niño en su primer intento.

Descriptores: Cateterismo Periférico; Juegos y Juguetes; Enfermería Pediátrica.

■ INTRODUCTION

Children are taken into emergency rooms by their guardians due to conditions that affect their vital signs, hydration, and respiratory state⁽¹⁾. When neurologically conscious, they are usually attended in these services due to hyperthermia⁽¹⁻³⁾, cough⁽¹⁻³⁾, vomiting⁽²⁻³⁾, and diarrhea and abdominal pain⁽⁴⁾. This requires peripheral intravenous catheterization (PIC) so fluids can be administered and medications provided for clinical recovery.

Pediatric nurses and other members of the nursing team aim to provide care that ensures the success of PIC in the first attempt, which is conditioned by the availability of visible and palpable veins⁽⁴⁾. However, this procedure is technically harder in pediatric emergency units, since the clinical conditions that lead people to seek these services make it difficult to visualize and palpate the peripheral venous network of the child, which may lead to several attempts at catheterization. This, in turn, delays the establishment of an intravenous access⁽⁵⁾.

Multiple PIC attempts cause significant suffering⁽⁶⁻⁸⁾ and pain⁽⁶⁻⁷⁾ to the child, especially in their first attempt, with these two outcomes being strongly correlated⁽⁹⁾. This can lead to rejection of treatment⁽⁸⁾, complications, and delays in pediatric care⁽¹⁰⁾, in addition to having negative repercussions on the guardian that is with the hospitalized child⁽⁸⁾.

Most parents consider that witnessing multiple PIC attempts is distressing and profoundly traumatic. This anguish is made worse when the team asks the parents to hold the child during the procedure, which can generate painful memories about previous catheterization attempts⁽⁸⁾.

Children submitted to PIC often are not previously prepared. This can lead to insecurity, increasing suffering and pain, since procedures involving needles are the first cause of fear in these patients⁽¹¹⁾.

In order to improve the experience of the child during the PIC, playful communication strategies are necessary in clinical practice. This research highlights the use of Therapeutic Play

(TP), which, in accordance with Resolution No. 546/2017 from the National Council of Nursing is the responsibility of pediatric nurses⁽¹²⁾.

TP is a structured form of play used by nurses as a resource for communication in situations where the child will be submitted to experiences that are not typical of their age, and can be perceived by them as threatening, thus requiring them to understand and learn about the procedure, so they can deal with the experience in a positive manner. This resource is classified as dramatic, training them for physiological function, and instructional, meaning it prepares the child for hospitalization and procedures⁽¹⁾.

In Brazil, research using Instructional Therapeutic Play (ITP) as a resource to prepare children for PIC or intravenous therapy is still scarce, and most of it was published since 2013⁽¹⁴⁻¹⁹⁾, with a qualitative and descriptive quantitative design. These researches were carried out in medical units⁽¹⁴⁻¹⁹⁾, as well as in surgical units and pediatric intensive care⁽¹⁸⁾.

According to research⁽¹⁴⁻¹⁹⁾, the ITP improved the behavior of children, which in turn increased the adaptation to the procedure. Another possibility to improve the experience of the child during the PIC is the use of distractions as non-pharmacological measures to manage pain. This is suggested as an easy-to-use method in emergency rooms, while being effective in the reduction of the pain and anxiety associated with invasive procedures⁽²⁰⁾. This can have positive repercussions on the behavior of the child during catheterization.

The ITP is recommended for children from 3 to 10 years old⁽²¹⁾, since their growth and development allow reaching the goals of the structured play session. Nonetheless, there are few randomized and quasi-experimental clinical trials that can demonstrate the effect of ITP in invasive procedures involving children⁽²²⁾, highlighting the PIC in emergency care units.

Considering that both disease and hospitalization have negative effects on the life of children, regardless of their age⁽¹¹⁾, pediatric nurses are responsible for conducting and implementing innovative clinical research to analyze the

effects of therapeutic play in the promotion of health and in the minimization of behaviors attributed to stress⁽²³⁾ which aggravates this already traumatic experience of the child.

In national research on ITP, the behavior of the child was evaluated by indicators found in publications in this field of knowledge, not by using a specific instrument^(14–15). In literature, we find the Observation Scale of Behavior Distress (OSBD), which was adapted for use in Brazilian children and evaluates behaviors such as verbal, vocal, and motor responses of children in painful contexts⁽²⁴⁾, as is the case of PIC.

That said, in order to analyze the statistical significance of the null hypothesis according to which the ITP does not affect the behavior of children in their first intravenous catheterization, this research aimed to ascertain the effect of ITP in the behavior of children in the first attempt of PIC.

■ METHOD

This is a *post hoc*, quasi-experimental analysis with a non-equivalent control group, secondary to a randomized clinical trial⁽²⁵⁾. It was carried out in the urgency, medical, and surgical units of a pediatric hospital in Bahia, Brazil.

This hospital is a private organization that provides medium-complexity care. It has 42 beds, 12 of which are for first-aid care and 2 for emergency care. This hospital receives children with clinical and surgical issues.

Children were recruited for the clinical trial from February to June 2021. They were prepared for the PIC by the main researcher according to their age: from 3 to 5 years old, the ITP was used following the steps of a protocol created for this goal⁽²⁵⁾; for children from 6 to 10, the child was prepared either with the ITP or a structured conversation that followed a guidebook^(25–27). Children from both age groups who did not want to participate in the structured play were prepared for the PIC through a conversation and a reading of the guidebook.

The protocol for ITP use was organized, for educational purposes, in nine stages: presentation, approximation, guidance, negotiation, preparing the environment, dramatization of the procedure by the nurse, dramatization of the procedure by the child, evaluation, and conclusion. In each part, the nurse carried out several actions to guide the child regarding the PIC. This technology was organized so it could be applied from 15 to 45 minutes before the procedure⁽²⁵⁾, and the session took place in the child's hospital bed.

During the structured conversation, the child received brief explanation on the PIC (step-by-step for the procedure and how they could get calmer) for 10 to 15 minutes. A guidebook with orientations regarding indication, step-by-step procedure, and strategies for the child to accept

catheterization were used to reduce the discomfort and stress caused in this population by the use of needles^(25–26).

For the *post-hoc* analysis, we used information from the children recruited in the first-aid unit. Data was collected directly from the clinical trial database matrix, after the researcher responsible for record keeping authorized it.

The sample was selected by convenience. Inclusion criteria comprised children from 3 to 10 years old, clinically stable, whose intravenous access was successfully implemented in the first catheterization attempt.

This procedure was carried out by a team comprising four nurses and four nursing technicians, who were adequately trained to select the vein and apply the DIVA (Difficult Intravenous Access) score⁽⁶⁾. This score includes five predictor variables: visibility of the vein, palpability of the vein, child age, prematurity, and skin color. The score of each variable will be added up after application, with scores of 4 or more indicating that the odds of success in the first PIC attempt are below 50%⁽⁶⁾.

The team was also trained to use a catheter on a needle with a 22 and a 24 Gauge (G) caliber polyurethane tube*, stabilization, and to cover the catheter.

In each data collection turn, two members of the team were present. One was responsible for the PIC and the other gave them support, helping stabilize the limb of the child for the PIC or conducting the procedure in case a third and fourth attempt of catheterization were needed. The main researcher of the clinical trial observed the PIC, but did not interfere.

Information of children who were prepared for PIC with both ITP and structured conversations was discarded. The same was true for children who had only a structured conversation due to some condition that prevented the use of ITP (pain, fever, vomiting, drowsiness, need for suturing open lesions, dizziness, and intense hives). This analysis did not consider post-hoc exclusion criteria.

The sample was characterized using demographic data (sex, age in months, ethnicity/skin color, and dominant hand side), history of previous punctures for blood sample, PIC, and difficulties with catheterization, in addition to clinical data (nutritional condition, and difficult intravenous care according to the DIVA score⁽⁶⁾).

The variable named intervention refers to the preparing of the child for the PIC using ITP, while the control variable refers to the preparing of the child using a structured conversation, supported by the use of a guidebook^(25–26).

The following outcome variables were considered: the behavior of the child during the PIC, according to the OSBD⁽²⁴⁾ scale, with yes-or-no questions and described as opposed or non-opposed.

Opposing behavior is the one that makes the procedure more challenging, delay it, or prevent it; for this research, this type of behavior included attacking the professional, whining, crying, being nervous, screaming, keep moving until immobilization becomes necessary, and protesting. Non-opposing movements are the ones that help execute the procedure, including child actions such as helping the professional during the PIC or asking for information⁽²⁴⁾.

The behavior of these children was immediately evaluated after the procedure was carried out by the main researcher in the clinical trial, who is responsible for the PIC, and by the second member of the team, who provided support. The behavior observed in the child was discussed in the nursing station, in accordance with OSBD⁽²⁴⁾ indicators in the data collection instrument. There were no disagreements concerning the observations.

Data was analyzed using the Statistical Package for the Social Sciences (SPSS), version 22.0. In the characterization of the sample, qualitative variables were described in absolute and relative frequencies. To evaluate the relationship between the use of ITP and the behavior of the children, the chi-squared test was employed to calculate relative risks with a confidence interval of 95% and a 5% confidence interval.

This research respected all ethical aspects of Resolution 466/12 from the National Council of Health and was approved by the Research Ethics Committee of the participating institution under protocol 3.234.517 and Certificate of Submission to Ethical Appreciation (CAAE) 08110318.5.0000.5505. This post-hoc analysis was secondary to the clinical trial that is registered in the Brazilian Registry of Clinical Trials under No. RBR-838r987.

■ RESULTS

In this research, 101 children participated in the intervention group (preparation for PIC with the ITP) and 92 in the control group (preparation with structured conversation and support from the booklet). Regarding demographic characteristics, children differed radically regarding their sex (Table 1).

Most children prepared for the PIC using ITP were females, while those who were prepared using a structured conversation with the guidebook were mostly male. The other demographic and clinical characteristics, as well as those related to previous or current PIC, did not vary between the groups (Table 1).

Table 1 - Demographic and clinical variables, and variables related to previous and current peripheral venous catheterization of children prepared using an instructional therapeutic play and a conversation/guidebook (n=193). Feira de Santana, Bahia, Brazil, 2021.

Characteristics	Instructional Therapeutic play n (%)	Conversation and guidebook n (%)	p-value [†]
Age			
36 to 71 months (3 to 5 years)	43 (42.6)	49 (53.3)	0.138
≥ than 72 months (6 to 10 years)	58 (57.4)	43 (46.7)	-
Sex			
Female	69 (68.3)	31 (33.7)	<0.001
Male	32 (31.7)	61 (66.3)	-
Skin color			
White	14 (13.9)	20 (21.7)	0.151

Table 1 - Cont.

Characteristics	Instructional Therapeutic play n (%)	Conversation and guidebook n (%)	p-value [†]
Non-white	87 (86.1)	72 (78.3)	-
Nutritional condition			
Adequate	51 (50.5)	47 (51.1)	0.934
Inadequate	50 (49.5)	45 (48.9)	-
Intravenous puncture for blood collection before current hospitalization			
Yes	84 (83.2)	82 (89.1)	0.234
No	17 (16.8)	10 (10.9)	-
Prior PIC			
Yes	70 (69.3)	62 (67.4)	0.775
No	31 (30.7)	30 (32.6)	-
History of difficult intravenous access			
Yes	18 (17.8)	20 (21.7)	0.494
No	83 (82.2)	72 (78.1)	-
DIVA score in the first attempt			
Easy venous network	87 (86.1)	78 (84.8)	0.789
Easy venous network	14 (13.9)	14 (15.2)	-

Caption: [†]Pearson's chi-squared

Regarding the behavior of these children, there were statistically significant differences between the intervention and control groups regarding the variables nervousness, moving until being immobilized, protesting, and helping during PIC. The use of ITP reduced in 45% the risk of nervousness, in

52% that of moving, and in 51% that of not protesting. ITP increased by 27% the occurrence of helpful behavior during PIC. There were no statistically significant differences in the other behaviors (Table 2).

Table 2 - Behavior of children prepared with an instructional therapeutic play and a structured conversation, versus children prepared with only a structured conversation/guidebook, before and after the first attempt of peripheral intravenous catheterization(n=52). Feira de Santana, Bahia, Brazil, 2021.

Behavior	Instructional Therapeutic play n (%)	Conversation and guidebook n (%)	p-value ⁺	RR ⁺	CI95% [§]
Attacking the professional					
Yes	5 (5.0)	12 (13.0)	0.050	0.38	0.14-1.05
No	96 (95.0)	80 (87.0)	-	1	-
Whining					
Yes	36 (35.6)	38 (41.3)	0.419	0.86	0.60-1.23
No	65 (64.4)	54 (58.7)	-	1	-
Crying					
Yes	28 (27.7)	30 (32.6)	0.460	0.85	0.55-1.31
No	73 (72.3)	62 (67.4)	-	1	-
Nervousness					
Yes	28 (27.7)	45 (48.9)	0.002	0.57	0.40-0.83
No	73 (72.3)	47 (51.1)	-	1	-
Screaming					
Yes	19 (18.8)	26 (28.3)	0.121	0.67	0.40-1.11
No	82 (81.2)	66 (71.7)	-	1	-
Moving until immobilization					
Yes	15 (14.9)	28 (30.4)	0.009	0.49	0.28-0.85
No	86 (85.1)	64 (69.6)	-	1	-
Protests					
Yes	16 (15.8)	30 (32.6)	0.006	0.49	0.28-0.83
No	85 (84.2)	62 (67.4)	-	1	-
Helps in PIC					

Table 2 - Cont.

Behavior	Instructional Therapeutic play n (%)	Conversation and guidebook n (%)	p-value [†]	RR [‡]	CI95% [§]
Yes	82 (81.2)	59 (64.1)	0.008	1.27	1.10-1.50
No	19(18.8)	33 (35.9)	-	1	-
Asks for information					
Yes	57 (56.4)	49 (53.3)	0.658	1.10	0.82-1.37
No	44 (43.6)	43 (46.7)	-	1	-

Caption: [†]Pearson's chi-squared; [‡]Relative risk; [§]95% confidence interval

■ DISCUSSION

This study showed statistically significant differences between children in the intervention group and those in the control group, regarding nervous behavior, moving until being immobilized, protesting, and being helpful during the PIC.

When children are not adequately prepared for the PIC using structured play, their behavior reflects their fear, despair, refusal, and they protest before and after the procedure⁽¹⁴⁾. These feelings are due to the association between PIC, the possibility of multiple attempts, and pain, which mobilizes the child so they can resist the procedure.

Children from three to six years old cry when they feel pain, scream, behave aggressively, and actively and physically resist the discomfort. These reactions stem from the fear of losing body integrity⁽²⁷⁾, and can also take place in older children.

This is why nurses must recognize that this fear is real. That way, non-pharmacological measures that are adequate to the needs of the child can be implemented, since they are low cost, effective, and easy to implement. This can be achieved by ensuring that the child is interested and actively participating in structured play.

Children who participate in this type of play in hospitals present stress behaviors⁽²⁸⁾ from invasive procedures. In the presente research, it was observed that children prepared with the ITP had a lower risk of behaviors competing with the PIC, such as nervousness, movements until immobilization and protest.

The reduction in resistance and protest to the procedure after the ITP starts being used can be associated with the fact that, during play, children have the opportunity to carry out

the procedure on dolls, using hospital materials, becoming familiar with the reality experienced in the hospital and being benefited by their self-control.

TP facilitates the child's emotional and physical wellbeing, helping reduce the intensity of negative feelings from the hospitalization process and allowing a temporary escape from the immediate environment to fantastic, safe, and comfortable places created and controlled by them⁽²³⁾. This is due to improvements in opposite behaviors, the attitude of children regarding the procedures, relieving their fear^(22,29-30), anxiety^(22,29), insecurity⁽²²⁾, and pain⁽³⁰⁾.

Corroborating the findings from this study, although fear, irritability, and anxiety are not entirely eliminated at certain points, TP helps minimizing these conflicting and uncomfortable reactions, providing moments of joy, learning, wellbeing, and relaxation⁽¹⁷⁻¹⁹⁾, while potentiating movements that are not opposed to the PIC.

By using this clinical resource, members of the nursing team can attend to the emotional needs of these children, helping them acquire new abilities and conquest the unknown⁽²³⁾, as they help the child understand the need for invasive procedures in order to help them build correct and clear ideas about them⁽¹⁴⁾.

Children who participate in structured play become more resilient when dealing with the adversities associated with the invasive procedure. Therefore, we can infer that TP is a central component in the provision of high-quality pediatric nursing care⁽²³⁾.

In this research, this playful resource potentiated behaviors that are not opposed to the PIC, helping it when compared to children who were prepared only with structured conversations associated with the guidebook. The use of ITP when preparing the child for PIC favors this type of behavior

and increases acceptance and adaptation considering the procedure⁽¹⁵⁾.

The ITP is an instrument that helps reduce the agitation of children, since after a session they become calmer^(16–19,21), cooperate better with the procedures^(16–19), and see the procedure as beneficial to their health, as opposed to something frightening and painful^(17–19).

Children from 3 to 6 years old participate in the ITP sessions manipulating the material and asking questions before the procedure. They understand better what is about to take place and can relieve the tension generated by the procedure after it is done⁽²¹⁾.

In this age group, the TPT helps develop initiative, self-confidence, and a relationship of trust as they bond with the health team. Visualizing and handling the equipment or mimicking the procedure helps the child learn and, consequently, increases their ability to cope and cooperate⁽²¹⁾.

It is worth reiterating that, in children from 6 to 10 years old, the ITP is effective because the thought of the child is based on what is concretely experienced⁽²¹⁾. An interaction based on play allow them to understand better the procedure, being more receptive to the nursing team and to the new procedures that may be carried out⁽¹⁸⁾. Evidence also shows that this increases the confidence in the relationship between nurse and child⁽¹⁶⁾, improving the understanding that the success of the PIC depends on their help⁽¹⁶⁾.

By dramatizing the procedure using dolls, handling hospital materials, and deducing the final goal, the imaginary world created by the child according to mistaken concepts transforms this into a more positive experience for both child and nurse⁽¹⁸⁾. Furthermore, many of the behaviors presented by the children in this research may have been improved due to the fact that a guardian of the child was always present during PIC. This can be considered as essential to promote a type of care that is focused on the needs of the child and their family in first aid units.

It is worth noting that, although this research highlights benefits such as using ITP to care for children in first aid units, its implementation in clinical practice requires investment from institution managers, so barriers to its utilization can be dealt with. These include the several health care and administrative functions of nursing workers, small personnel sizing, and the needed materials to carry out this session with the child.

Some limitations can be noted in this research. The fact that the relationship between the ITP and the behavior of

the child during the PIC was secondary, that is, evaluated by a *post hoc* analysis, is one of them, since this type of study design increases the odds of selection bias. Many behaviors investigated were not present due to the low number of children in the convenience sample and to the fact that the sample size of the randomized clinical trial was selected considering the percentage of PIC success, and not the variables related to the behavior of the children submitted to the procedure.

The lack of further published clinical studies made it difficult to compare the findings of this research. Therefore, this research should be replicated with larger samples that represent the population better, in different national pediatric units.

Data was collected in a single private hospital, meaning that the characteristics of the children may be different than those of children who receive care in larger public hospitals. Another limitation was the heterogeneity of participants in the groups in regard to sex, which may have interfered in the behavior presented, since some of these behaviors may be caused by this characteristic, and not necessarily to the situation related to the investigated procedure.

However, our results contribute to advance clinical practice by showing the effect of ITP in some opposing behaviors that could be modified when preparing a child for PIC.

■ CONCLUSION

The use of ITP before the first attempt of PIC reduced opposing behavior to this invasive procedure (nervousness, moving until being immobilized, and protests), increasing collaboration from the child. Further randomized clinical trials should be carried out so more robust evidence can be produced to add value to the findings of this research.

This investigation will allow nursing workers to get to know the importance of preparing children for PIC with the support of ITP, since, starting with this intervention, it is possible to reduce nervousness, movement/restlessness, and protests, while improving the collaboration from the child before and during this invasive procedure.

The protocol for ITP that we used when preparing the children in this *post-hoc* analysis can contribute with the clinical practice of pediatric nurses, since it is a soft technology that can guide the actions to be implemented. Furthermore, the protocol may be used for graduation teaching or to train professionals to use the ITP technique, promoting innovations in the care for hospitalized children that require PIC.

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