

Practical applicability of a booklet on peripheral venipuncture: a study with relatives of hospitalized children*

Aplicabilidade prática de uma cartilha sobre punção venosa periférica: estudo com familiares de crianças hospitalizadas

Aplicabilidad práctica de un folleto sobre punción venosa periférica: un estudio con familiares de niños hospitalizados

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Abstract: Objective: to verify the practical applicability of the booklet “Peripheral venipuncture for family” with the accompanying relatives of children hospitalized in a pediatric hospital in the interior of Bahia. **Method:** prospective study conducted with 44 family members, from July to October 2016. Twenty-three items were evaluated, categorized into language, illustration, layout and motivation. For data analysis, absolute and relative frequencies were performed, adopting as a desirable consensus the values above 70% of agreement. Also, the Flesch Readability Test was applied to verify the comprehension of the text of the booklet. **Results:** the booklet presented practical applicability with satisfactory evaluation of the participants, obtaining more than 70% of approval in all variables evaluated and reaching a level of readability of 70%. **Conclusion:** the booklet can be used as a tool to promote care for family members of children undergoing peripheral intravenous catheterization.

Descriptors: Family; Pediatric nursing; Child, hospitalized; Educational technology; Catheterization, peripheral

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Resumo: Objetivo: verificar a aplicabilidade prática da cartilha “Punção venosa periférica para família” junto aos familiares acompanhantes de crianças hospitalizadas em um hospital pediátrico do interior da Bahia. **Método:** estudo prospectivo realizado com 44 familiares, no período de julho a outubro de 2016. Foram avaliados 23 itens, categorizados em linguagem, ilustração, *layout* e motivação. Para a análise dos dados foram realizadas as frequências absolutas e relativas, adotando como consenso desejável os valores superiores a 70% de concordância. Também, aplicou-se o Teste de Legibilidade de *Flesch* para verificar a compreensão do texto da cartilha. **Resultados:** a cartilha apresentou aplicabilidade prática com avaliação satisfatória dos participantes, obtendo mais de 70% de aprovação em todas as variáveis avaliadas e alcançando nível de legibilidade de 70%. **Conclusão:** a cartilha pode ser utilizada como uma ferramenta na promoção de cuidado aos familiares de crianças submetidas à cateterização intravenosa periférica.

Descritores: Família; Enfermagem pediátrica; Criança hospitalizada; Tecnologia educacional; Cateterismo periférico

Resumen: Objetivo: verificar la aplicabilidad práctica del folleto “Cateterismo venoso periférico para familia” con los familiares acompañantes de niños hospitalizados en un hospital pediátrico en el interior de Bahía. **Método:** estudio prospectivo realizado con 44 familiares, de julio a octubre de 2016. Se evaluaron 23 elementos, categorizados en lenguaje, ilustración, plano y motivación. Para el análisis de datos, se realizaron frecuencias absolutas y relativas, adoptando como consenso deseable los valores superiores al 70% del acuerdo. Además, se aplicó la prueba de legibilidad de *Flesch* para verificar la comprensión del texto del folleto. **Resultados:** el folleto presentaba aplicabilidad práctica con una evaluación satisfactoria de los participantes, obteniendo más del 70% de aprobación en todas las variables evaluadas y alcanzando un nivel de legibilidad del 70%. **Conclusión:** el folleto se puede utilizar como una herramienta para promover el cuidado a los familiares de niños sometidos a cateterismo intravenoso periférico.

Descriptor: Familia; Enfermería pediátrica; Niño hospitalizado; Tecnología educacional; Cateterismo periférico

Introduction

During peripheral intravascular catheterization (PIC), children manifest reactions that characterize suffering, such as tightening lips, screaming, crying, muscle tensions, restrained posture, closing eyes and frowning, in addition to requesting maternal presence.¹ Moreover, accompanying family members point to this procedure as extremely stressful, both for them and for children.² A study conducted in a Pediatric Intensive Care Unit indicated that family members are afraid of invasive procedures performed in children.³

Upon living negative experiences through these procedures, family members need to receive information about the PIC to clarify their doubts in a way that facilitates their

understanding.⁴ A study indicates that parents involved in the care process of their children feel that their needs are being met as well.⁵

Thus, it is perceived the importance of developing health education for family members, which is a means of promoting care with sharing knowledge and narrowing the bond between the professional and the users of the health service.⁶ The provision of information to family members is one of the development measures for the “Patient for Patient Safety” strategy of the World Health Organization.⁷

Thus, communication is one of the methods of promoting patient safety. However, studies indicate weaknesses in the relationship between professionals and family members accompanying hospitalized children in the provision of information regarding treatment and protocols adopted, besides not valuing qualified listening concerning the needs of the child reported by the family member.⁸ Furthermore, health professionals do not pay attention to the demands of family members.⁹

Moreover, there is a low participation of professionals in the use of playful resources for the provision of comfort to children and their families during the PIC, besides not considering previous experiences. However, they highlight interest in training that focus on the development of continuing education about the offer of comforting actions to family members and children during this procedure.⁹

Among health professionals in the hospital environment, the nursing team is the closest to children and family members, due to the numerous procedures performed by these professionals during the hospitalization period.¹⁰ In view of these considerations, pediatric nurses in their clinical practice need to use educational technologies capable of offering information related to PIC, such as the purpose of promoting the safety of the child and his/her accompanying family member in hospital spaces.

A study conducted by nurses on the influence of family members in the production of patient safety in the Neonatal Intensive Care Unit found that they perceive as important the provision of

simple and accessible information to family members, besides highlighting as essential the clarification of doubts about the care provided to the newborn and the equipment being used.¹¹

One of the instructional resources that can be adopted for the development of health education are educational materials such as handbooks and booklets. However, there is incipient scientific production of teaching and instructional materials related to PIC in children, and three publications have been found in the past ten years (2009-2019).^{4,12-13}

Therefore, the booklet “Peripheral venipuncture for the family” was elaborated, according to scientific literature related to the theme and data related to the experience of 13 family members accompanying hospitalized children submitted to PIC in a surgical clinic unit of a pediatric hospital in inland Bahia.¹³ This material was developed in a historical plot character with the narrative illustrated with characters created exclusively for the booklet and dialogue balloons to give an idea of interaction between the characters and the reader of the material. The booklet is composed of the following sessions: experiences of family members during the procedure, concepts associated with PIC (such as the concept of vein and catheter), reasons why the procedure is done and step by step of how it happens, besides pointing out the strategies that can be adopted before, during and after PIC in the child, contributing to reducing stress.¹³

The booklet “Peripheral venipuncture for family” has content validity according to the evaluation of 7 experts¹³, as well as appearance validation judged by 10 family members accompanying hospitalized children.¹⁴ However, it is necessary to verify the practical applicability of the material, together with the companions of hospitalized children, in order to verify the possibility of its use in daily clinical practice as an instrument for care production.

In view of this, the research question is: does the booklet “Peripheral venipuncture for the family” have practical applicability? Thus, the objective was to verify the practical applicability of the booklet “Peripheral venipuncture for family” with the accompanying relatives of hospitalized children in a pediatric hospital in inland Bahia.

Method

This is a prospective research conducted at the State Children's Hospital in Feira de Santana, Bahia, between July and October 2016, in the emergency, medical clinic, surgical and oncology units, with a non-probabilistic intentional sample of 44 family members, each of which was accompanying different children.

These participants were selected using the following inclusion criteria: having previously followed a PIC performed in the 10-year-old child who was in need of peripheral intravenous therapy.

The companions of children in isolation or palliative care and those who were unable to read the booklet were not included because they could not read or did not wish to perform it. No family members refused to participate in the research.

Data collection occurred in the morning and early shifts during the week by a team of five previously trained collaborating researchers. Initially, these researchers read the medical records of the children hospitalized in the units surveyed in order to identify those who were using some intravenous peripheral therapy. Next, the relatives of the children who could possibly be eligible for the study received information about the content of the booklet, objective and method of the research.

By agreeing to participate, the family member received the printed booklet with 19 pages and had the time desired to read this material. After reading the booklet, the researchers applied the data collection instrument, between 24 and 48 hours, which contained demographic data of the interviewees and 23 items, related to content, language, appearance and motivation for evaluating the practical applicability of the booklet.¹⁵ For each item evaluated, the interviewees could answer agree, disagree or do not know.¹⁶

The collected data were entered in the Statistical Package for Social Science (SPSS) version 22.0 and analyzed using descriptive statistics. In the description of categorical variables, absolute and relative frequencies were used, and in the numerical variables, the Shapiro-Wilk

test was applied to verify the normality of its distribution. The variable age adhered to the normal distribution, being written as mean and standard deviation, while the variables time of hospitalization of the child and number of puncture, as median and interquartile range. For the evaluation of the agreement between the participants for each item characteristic of practical applicability, the value of 70% was established as a consensus level.

After the adjustments indicated by the participants related to language and content of the booklet, the ease of reading was verified through the Flesch Readability Test, classifying the comprehension of the text as: very easy (75% - 100%), easy (50% - 74%), difficult (49% - 25%) and very difficult (24% - 0%).¹⁷ This analysis was performed by a software and graphic review tool of Microsoft Word version 2007, through the formula for the calculation of the Flesch Readability Index, being $206.835 - (1.015 \times \text{ASL}) - (0.846 \times \text{ASW})$, in which, ASL = average sentence length and ASW = average amount of syllables per word.

The research was approved by the Research Ethics Committee of the State University of Feira de Santana through opinion n. 841612 and Certificate of Presentation of Ethical Appreciation n. 34172014.7.0000.0053, on October 22, 2014. The ethical aspects were respected, regarding the anonymity of the participants, the clarification of the objectives, risks and benefits of the research through the reading of the Informed Consent Form, explanation of the method of collection and voluntary participation.

Results

The research sample consisted mostly of female participants (90.9%), mothers (72.7%), with an average of 31.4 years (+ 7.1 years) and who completed high school (61.4%). The family members were accompanying hospitalized children in the medical clinic (36.4%), surgical (29.5%), emergency (27.3%) and oncologic clinic units (6.8%). The median hospitalization time of

the child was 4 days with an interquartile range of 7 days, while the median puncture was 6 with the interquartile range of 17 punctures.

According to table 1, in the content category, all participants of the research considered that the feelings of sadness, tension, fear, anguish and insecurity because they did not know the procedure presented by the relatives of the booklet were similar to those they experienced during the PIC (100%). Reading the booklet helped understand the concept of vein (97.7%), intravenous catheter (97.7%), peripheral venipuncture (97.7%) and the steps to perform this procedure (97.7%). For them, the tips on what the companion can do during venipuncture would help at the time this procedure was performed on the child (95.5%) and that the booklet addressed issues necessary for the family member (100%).

Regarding language (Table 1), the sentences were considered easy to understand (100%) and with attractive writing (100%). For the appearance, the cover draws the reader's attention (100%) and is clear about the content that will be addressed (72.7%). The size of the content (90.9%) and letters (100%) were considered appropriate.

The participants emphasized the clarity of the illustrations (97.7%), which facilitated the learning of the content (97.7%) and its number was sufficient to promote the understanding of the content of the booklet (95.5%). In the motivation category, family members consider the text of the booklet interesting (97.7%), that another companion who reads the material will understand its content (95.5%), that this educational resource helped them in the development of strategies to reduce stress during venipuncture in the child (93.2%), feeling motivated to read the material until the end (100%) (Table 1). When analyzing Flesch readability index, it was observed that the narrative of the booklet and the strategies that can be adopted by family members during the PIC were considered easy to understand (70%).

Table 1 - Distribution of variables related to the content, language, appearance and motivation of the booklet. Feira de Santana, BA, Brazil, 2016.

Variables	f	%
Content		
The feelings presented by the family members of the booklet are similar to the ones you experienced during the child's PIC*	44	100
The primer helped you understand what an intravenous catheter is	43	97.7
The primer helped you understand what a peripheral venipuncture is	43	97.7
The booklet helped you understand the steps to perform venipuncture	43	97.7
The tips on what the companion can do during venipuncture helped you at the time of venipuncture in the child	42	95.5
The booklet addresses the issues necessary by the family about venipuncture	44	100
Language		
You understood the phrases contained in the booklet	44	100
The writing used in the booklet is attractive	44	100
Appearance		
The cover draws the reader's attention	44	100
The cover makes it clear that the booklet will address venipuncture	32	72.7
The size of the content on each page is adequate	40	90.9
The size of the letters used in the booklet is adequate	44	100
The illustrations are clear	43	97.7
The illustrations facilitated the learning of the contents of the booklet	43	97.7
The number of illustrations facilitated the understanding of the contents of the booklet	42	95.5
Motivation		
The text of the booklet is interesting	43	97.7
Any companion who reads the booklet will understand what it is about	42	95.5
The booklet helped you develop strategies to reduce stress while performing venipuncture	41	93.2
You were motivated to read until the end	44	100

* PIC = Peripheral Intravenous Catheterization

Discussion

Studies have identified that during the PIC performed in children, family members reported manifesting negative feelings, such as fear, sadness, anxiety and stress, in addition to presenting reactions, such as crying, characterizing their suffering with the child.^{2,13} Thus, when verifying the practical applicability of the booklet “Peripheral venipuncture for the family”, it was observed that the participants judged the material as an instrument that prepares family members before the performance of the PIC in the child, besides being able to help them in the development of strategies that alleviate the stress and suffering of the family member and, consequently, of the child.

Family members consider the text of the booklet as necessary to understand the PIC, because the didactic and instructional material presented attractive language, which helped them understand the concept of vein, intravenous catheter, peripheral venipuncture and how this procedure is performed in the child by health professionals. In a national study that verified the validity of a booklet on self-care of people with intestinal ostomies, the target audience considered the phrases easy to understand and the content clear.¹⁸ Thus, access to the information presented by the booklet provided the family’s learning about the PIC, ratifying the promotion of care for the family and the accompanied child.

The relatives of this research considered the appearance of the booklet as adequate and the illustrations as clear and facilitating the understanding of knowledge. Another study that evaluated the vanity of the booklet “Child care with Gastrostomy”, the family members agreed in 100%, that the illustrations of the educational material were adequate.¹⁹ Thus, the illustrations of the material combined with the content are shown to be important elements for the composition of an educational material, since it promotes the understanding of the proposed theme, besides arousing interest in reading.

Moreover, the performance of painful procedures, such as PIC, in children, generates concerns about how to deal with this situation in the accompanying family members in order to reduce the child’s pain, thus arousing the desire to obtain information.²⁰ According to this perspective, the family

members who evaluated the booklet were motivated to read to obtain knowledge about the theme, considering it necessary for a family member and accessible to any companion, helping them to understand the PIC and develop strategies to reduce stress during the procedure.

This demonstrates the meaning of the preparation and presence of parents during PIC in children, since other studies indicate the benefits of this educational action before performing the procedure in children using materials (handbooks) and methods, such as procedural preparation, procedural coping process, support and education, influencing the behavior of family members in addition to helping children face suffering.^{11,21} In this sense, the evaluation of the use of the “Guidance handbook for the care of children on venipuncture” by accompanying parents demonstrated the positive and ascending effects during three PIC sessions in the child.¹²

A study conducted with children investigated which information they were interested in knowing, before performing hospital procedures (invasive or not), evidencing, in the self-regulation item, the interest in knowing if someone or any family member could be present.²² Another study highlights that children also express a desire for procedural information (characteristics of the procedure), which is extremely influenced by health professionals and family members.²³

It is perceived the importance of the presence of family members during the PIC, ratifying the value given by the children in order to offer emotional support, help face the situation and obtain information about the procedure. For this, there is the need to instruct the accompanying family member on how to deal with this context, in order to execute efficient strategies to reduce his and the child’s physical and emotional tensions.

However, a randomized controlled study, which verified the influence of psychoeducation for parents in pain reduction in children submitted to PIC, obtained as a result the low performance of family members when developing actions that could reduce the child’s pain, despite demonstrating increased knowledge about this item.²⁴

On the other hand, another randomized controlled clinical trial, which applied distraction measures in children, such as books and cartoons, during PIC, presented less distress when compared to children who received only routine information.²⁵ Furthermore, in a systematic review on the efficacy of psychological interventions, such as distraction, hypnosis and specific breathing (inflating a bladder), in children during invasive procedures with the use of a needle to reduce distress and pain, there was considerable influence for the use of these methods in clinical practices.²⁶

Another peculiar highlight of the booklet was the presentation of strategies pointed out by family members accompanying hospitalized children in need of PIC interviewed in the diagnostic phase to elaborate the booklet¹³, such as trying to calm down, breathing deep, clarifying doubts with professionals, trusting the professional, believing that everything will be fine and being close to the child during the procedure, hugging him/her, holding his/her hand or talking.²⁷ In view of this, a study conducted in the United States indicates that the performance of physical contact, such as hugging and touching some part of the body by family members during the PIC, generates comfort for children.²⁸

Therefore, the use of educational materials can be an instrument to promote care to provide information to family members, requiring training them to perform actions that help reduce the child's pain and stress during the PIC, in addition to having emotional support, which encourage them to face their own limitations through their role during the procedure. Thus, the applicability of educational and instructional materials is characterized only as a trigger for developing care in the cognitive domain; however, attention needs to be drawn to the affective and behavioral perspectives of the family and hospitalized children submitted to PIC.

The limits of the study are associated with non-practical applicability in other national pediatric hospitals and the absence of evaluation of the effect of the booklet on the behavior and feeling of family members before, during and after the performance of the PIC in the child.

Conclusion

The didactic and instructional material had practical applicability, reaching satisfactory evaluation among family members. Thus, the booklet “Peripheral venipuncture for the family” can be used in the clinical practice of nursing professionals for preparing accompanying family members of hospitalized children submitted to PIC, because it contains information that may clarify their doubts related to this procedure. Furthermore, it may involve family members in the care of children who demand IVT peripherally, enhancing their role as an adjunct in the orientation of children during hospitalization and promoting their autonomy and protagonism.

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Conception or design of the study/research; analysis and/or interpretation of data, final review with critical and intellectual participation in the manuscript.

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