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Pain in child undergoing venipuncture: effects of an anesthetic cream

Dor na criança submetida à punção venosa periférica: efeito de um creme anestésico

El dolor en niños sometidos a punción venosa: efecto de una crema anestésica

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Abstract

Objective: The goal that we draw for this study was to evaluate the effect of applying a anesthetic cream, to relief pain, in children undergoing venipuncture. **Methods:** It is a quasi-experimental study, the sample consists of 80 children, from 5 to 10 years, to which was applied a form. The data were processed using the SPSS (version 18.0). **Results:** The statistical test carried out shows that there is a significant interaction (F (2.156) = 45.436, $p = 0.000$; $\eta^2p = 0.368$; Power = 1.000) between the mean pain intensity at the three evaluative moments of the experimental group and the control group. The pain intensity scores are always lower in the experimental group. **Conclusion:** Study results appear to demonstrate that the anesthetic cream applied before venipuncture procedure, reduces the intensity of pain in children undergoing venipuncture, making it less traumatic.

Keywords: Pain; Child; Nursing; Therapeutics; Primary effect.

Resumo

Objetivo: O objetivo deste estudo foi avaliar o efeito da aplicação de um creme anestésico, no alívio da dor, em crianças submetidas à punção venosa periférica. **Métodos:** Trata-se de um estudo quase-experimental, sendo a amostra constituída por 80 crianças, de 5 aos 10 anos, às quais foi aplicado um formulário. Os dados foram tratados com o software SPSS (Versão 18.0). **Resultados:** O teste estatístico realizado demonstra que existe uma interação significativa (F (2,156) = 45,436; $p = 0,000$; $\eta^2p = 0,368$; Potência = 1,000), entre a média da intensidade da dor nos três momentos avaliativos do grupo experimental e do grupo de controle. Os scores da intensidade da dor foram sempre inferiores no grupo experimental. **Conclusão:** Os resultados da pesquisa parecem demonstrar que o creme anestésico, aplicado antes do procedimento de punção venosa periférica, diminui a intensidade da dor, nas crianças submetidas à punção venosa periférica, tornando-o menos traumático.

Palavras-chave: Dor; Criança; Enfermagem; Terapêutica; Efeito primário.

Resumen

Objetivo: El propósito que diseñamos para este estudio fue evaluar el efecto de una crema anestésica para alivio del dolor en niños sometidos a la punción venosa periférica. **Métodos:** Se realizó un estudio cuasi-experimental, con una muestra de 80 niños de 5 a 10 años, a los que se aplicó un formulario. Los datos fueron procesados con el programa SPSS. **Resultados:** El test estadístico realizado mostró que existe una interacción significativa (F (2,156) = 45,436; $p = 0,000$; $\eta^2p = 0,368$; Potencia = 1,000) entre la intensidad media de dolor en los tres momentos de evaluación del grupo experimental y del grupo de control. Las puntuaciones de intensidad del dolor son siempre menores en el grupo experimental. **Conclusión:** Los resultados de la encuesta demostraron que la crema anestésica aplicada antes de la punción venosa reduce la intensidad del dolor en niños sometidos al procedimiento, por lo que es menos traumático.

Palabras-clave: Dolor; Niño; Enfermería; Terapéutica; Efecto primário.

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INTRODUCTION

The pain is linked to human being since the origin of mankind. The interpretation which has been attributed varies with the beliefs and values of each people, but it is unquestionably a major cause of suffering for whom that experience them[1]. Pain relief is therefore an absolute requirement and determines a priority of action of health professionals.

There are many definitions of pain, which include those used in computerized documentation systems in virtually all health facilities in Portugal, which states that pain is a:

> Uncomfortable bodily sensation, subjective distress reference, characteristic facial expression, altered muscle tone, self-protective behavior, limiting the focus of attention, altered perception of time, escape from social contact, distraction behavior, restlessness and loss of appetite, commitment of the thinking process[2:210].

The health governing body in Portugal, after hearing the Monitoring Committee of the National Plan to Combat Pain, established through a regulatory loop (14/06/2003) pain as the 5th vital sign. Thus, from this point, the pain and its effects should become more valued, systematically diagnosed, evaluated and registered[3].

The pain is always subjective by definition and unique experience for each child. It's different for each child not just a function of age, gender or cognitive level, but also their understanding of the painful stimulus, the diversity and intensity of different previous pains, their attitudes and expectations, family and cultural experiences[4].

Although the experiences of pain are imminently idiosyncratic and variable, the definition of different types of pain or experience has guided the systematization of intervention methodologies. Thus, the most widely used classification discriminates acute pain from chronic pain and functional pain.

Acute pain by far the most frequent, can also be divided in injury and pain caused by injury or associated with post-operative positions and which is connected to medical diagnostic or treatment procedures. In the latter case, it is generally invasive, diagnostic techniques or treatment involving the use of tools and requiring tissue penetration or invasion of a body orifice, such as intravenous administration, suppositories, up to very painful bone marrow aspiration procedures or treatment of burns and peripheral venipuncture (PVP), the object of our study[5].

The measures used to relieve pain involve not only pharmacological methods, but also the use of non-pharmacological methods. The approach to pain should be taken individually for each patient based on the score obtained by the application of appropriate scale. Interventions should be linked to this review and, where possible, be initiated by non-pharmacological methods.

In non-pharmacological methods protrude behavioral methods (desensitization, positive reinforcement and relaxation), cognitive methods (preparatory information, memory change and distraction), physical methods (application of heat and cold, massage and positioning), emotional support (presence of significant person, therapeutic or emotional comfort and touch) and environmental support (minimizing unpleasant stimuli-noise, light and odors).

Pharmacological treatment for pediatric patients underwent tremendous development in recent years, with health professionals prevention of pain as a therapeutic purpose. In the control of pain, drugs used are not opioids, opioids and local anesthetics, adjuvants, such as anesthetic cream used in this study[6].

The pharmacological orientation with respect to children has in practice variations and dilemmas. Although data on the use of analgesics in children are scarce, the literature states that children sub medication is a common fact[5-7].

The route of administration is important and the oral route is the most acceptable and effective. It is known that most children fear injectables for being painful. Proper local analgesia is essential in the treatment of pain, especially with regard to invasive procedures. There is on the market a mixture of 5 mg/g prilocaine + 5 mg/g of lidocaine which can be applied as a cream and/or occlusive dressing on the skin, approximately 45 to 60 minutes before procedures such as PVP, lumbar punctures, thoracic, bone marrow and other. This form of anesthesia is not recommended in mucous and very extensive areas of skin, due to the risk of emergence of methemoglobinemia, especially when combined with other drugs that also induce this disorder[6].

The relief of pain in children requires a team effort. The nurse, because it has greater contact with the child and family, plays a key role in improving the quality of life of children suffering[8].

The PVP procedure is very common in children. There are some researches about the pain relief associated with this procedure involving the application of anesthetic cream. However most of them have only one evaluation of pain after PVP. This study enabled the assessment of pain before, during and after PVP. It was possible to find two articles on this theme[9,10], a quasi-experimental one and another cross, but with only one review, which emphasizes the importance of this research.

Currently there are still professionals who assess the pain phenomenon empirically, which has an effect on the care provided to children. This finding justifies the need to invest in studies on the management of pain in this group. In order to test the application of anesthetic cream for pain relief, children undergoing PVP and introduce its use in the service, we carried out this study whose objective was to evaluate the effect of the application of anesthetic cream for pain relief in children undergoing venepuncture.

The following hypotheses were formulated: i) children in the experimental group, whom the anesthetic cream was applied,

obtains a lower score on the pain scale than children in the control group; ii) there is a relationship between the pain score reported by the participating children and the gender, age group, reason for admission, site of PVP and previous experience of pain variables.

METHOD

Based on the outlined objectives, we chose a quasi-experimental one, before-during-after with control group(CG) not equivalent because the two groups of participants were divided non-randomly. The control group was made up of only the children in which the application of anesthetic cream was contraindicated or were not able to wait 1 hour so that the cream could take effect. In another group, designated experimental group (EG), the anesthetic cream was applied prior to PVP. In the CG the anesthetic cream was not applied. Measurements were taken before, during and after treatment[11].

The target population for this survey was made up of 1334 children from 5 to 10 years, who had used the Pediatric Emergency and Inpatient Pediatrics, of Tras-os-Montes and Alto Douro Hospital Center (CHTMAD EPE), January-June 2011, 80 children in this age group (40 in the EG and 40 in the CG), about 5.99% of the universe, participated in the study. Children presenting conditions for application of anesthetic cream made up the EG, while children for whom the application of the anesthetic cream was contraindicated or had no basis for its application, were selected for the CG, to complete the 40 children in each group. Statistical analysis was performed to ensure homogeneity between the experimental and control group, and there was no significant difference (χ^2: $p > 0.05$) in respect to gender, age group, reason for admission, place and purpose of PVP and previous experience pain.

The established inclusion criteria was to be children of both sexes, aged between 5 and 10 years and the exclusion criteria to be less than 5 years and over 10 years and have no medical indication for doing PVP.

After informed consent, the procedure of PVP was explained to the companion and to the child and requested their cooperation. The procedure was the same for all children involved in the study. The anesthetic cream, as already mentioned consists of 5mg/g of prilocaine + 5 mg/g of lidocaine, applied by massage and put waterproof adhesive in the area in which would be performed PVP services by nurses, previously training by the researchers. After placement of impervious think, waited 1 hour and then proceeded to the punch.

Given the objectives of the study, the characteristics of the various instruments to collect data and study population, we chose to use as an instrument of data collection the form, currently designated as questionnaire interview[11,12].

The interview questionnaire used in this study was developed and implemented by the researchers and is organized into two parts: the first part consists of questions regarding sociodemographics related to the child, the companion, and information to the parents/guardians; the second part includes questions regarding PVP, characterizing the type and reason for admission of the child, place and purpose of venipuncture, verbalization of feelings and reactions of the child, application of anesthetic cream, pain assessment, information given to the child, the parents collaboration and previous experience of pain. The instrument was subjected to a pilot test, with children from the same institution not participating in this study, having not undergone substantial changes.

In the assessment of pain intensity was used the Numerical Scale option based on indication of the General Directorate of Health, which recommends the use of this scale from 6 years of age, based on the assumption that the child at this age, knows how to count and has the notion of numerical quantity. In the present study were included children from 5 years, who attended the pre-school and already knew how to count and had this notion[13]. The children reported how much pain they felt, having been guided to choose the number that best represented their pain before the PVP procedure. Data were recorded by the investigators.

Any research conducted with humans raises ethical and moral questions and there are certain boundaries that should not be exceeded as respect for human dignity and the protection of their right to live in freedom and dignity. Our concern was to respect ethical principles related to the research and it was necessary to perform a set of procedures for formalizing and enforcing the requirements underlying it and which comprises several distinct phases[11].

Initially, we requested authorization to the Chairman of the Board of Directors of CHTMAD, EPE, for the application of the instrument for data collection. Was also requested authorization to the Ethics Committee of the institution (Assent of 07/02/2011, number 7/2011/CE), by filling in a specific form.

In a second phase, respect for voluntary participation was guaranteed by signing the informed consent for accompanying children, after writing about the objectives, ensuring data confidentiality and anonymity of participants information.

Data collection was processed during the period between January and June 2011, having been made by the researchers themselves. After admission of the child in services, the age verification, and medical indication for PVP, the procedures for the application of anesthetic cream and data collection were explained to the children and the parents, as the answer to the numerical rating scale of pain.

The stages of pain assessment in children in the experimental group were three, the first being 1 hour after local application of the anesthetic cream to identify if the child felt pain at the site where the cream was applied. The second evaluation was made soon after the completion of PVP, and reported to the pain felt during PVP, also evaluating the child's reactions during the procedure. The third evaluation occurred around 5-10 minutes after the puncture. At all stages we used the numerical pain scale.

The data were processed using the Statistical Package for Social Sciences (SPSS) version 18.0, Windows environment, in which was built a base and edited data. In this study, we used the descriptive analysis and inferential analysis.

In terms of descriptive statistics, we obtained the absolute and relative frequencies for all variables, always depending on the experimental and control groups and measures of central tendency (mean, mode and median) and (standard deviation) measures of dispersion in the case of quantitative level variables ratio measurement.

Regarding the inferential analysis and aiming to test the hypotheses formulated statistical test Multivariate Analysis of Variance (MANOVA) was applied to the three assessments of pain, according to the two groups, the two fixed factors, one of them when applying the anesthetic cream and the other in which successively tested the gender, age group, reason for admission, site of PVP and previous experience of pain in children. Then the significance of the effectiveness of the application of anesthetic cream for pain relief child underwent PVP and evolution at the three moments in the two study groups was evaluated with Analysis of Variance (ANOVA) for mixed repeated measures. To identify which pairs of means that differed for the interaction between factors and evaluative moments, we proceeded to the multiple comparison of means with Tukey correction according to the procedure described in Pestana and Gageiro[14]. The level significance was set to 5%[14,15].

RESULTS

At first, we proceeded to the sociodemographic characterization of the children participating in the study and secondly, the data related to the admission of children in services were presented, which are the contexts of this study. We will characterize aspects relating to PVP and data related to the intensity of pain in children undergoing PVP, resulting from the application of the numerical scale before, during and after this intervention.

Socio-demographic characterization of the sample

The sociodemographic characteristics of the sample included the variables gender, age group and education level, listed in Table 1.

A sample of 80 children who constitute the total sample. The mean age was 7.18 years, median 7.0 years, mode 6 years, minimum 5 years and maximum 10 years, and the standard deviation (SD) of 1.712 years. There were no statistically significant differences between the proportions of the two groups regarding the gender of the child, age group and education level (χ^2: $p > 0.05$).

Pain in children undergoing venepuncture

The vast majority of children participating in this study (75.0%) was admitted by the Pediatric Emergency CHTMAD, EPE, with the largest proportion (45.0%) belonging to the CG. In Inpatient Pediatrics were admitted only 25% of children, but the largest group (20.0%) framed in the EG (Table 2).

Table 1. Sociodemographic characterization (%) of Sample and probability of χ^2 test. N = 80

Variables	CG	EG	Total	*p*
Gender				
Female	20.0	22.5	42.5	0.821
Male	30.0	27.5	57.5	
Age group				
5-6 Years	22.5	20.0	42.5	0.585
7-8 Years	17.5	15.0	32.5	
9-10 Years	10.0	15.0	25.0	
Education				
Kindergarten	10.0	15.0	25.0	0.075
1st Year	15.0	7.5	22.5	
2nd Year	8.7	8.8	17.5	
3rd Year	7.5	6.2	13.7	
4th Year	2.5	11.3	13.8	
5th Year	6.3	1.2	7.5	

CG: Control group; EG: Experimental Group; *p*: Probability.

With regard to the reasons why children were admitted in two contexts in which the study has developed, Pediatric Emergency and Inpatient Pediatrics, it appears that slightly more than half (51.3%) were admitted due to symptoms and ill-defined signals, of which the largest proportion (27.5%) belonged to EG. There is a group of children of 7.4%, which was admitted due to respiratory diseases in which the greater proportion (6.2%) framed into the CG. However, in the case of respiratory diseases, the proportion of both the EG or CG are all smaller (Table 2).

The vast majority of children (87.6%) was punctured in the dorsal part of the hand, with an equivalence between the proportions of children (43.8%) of the EG and CG. Only 12.4% of children was punctured elsewhere, including the arm flexure, and in this case also the ratios of the two groups were the same (6.2%), although lower (Table 2).

Regarding the goal of PVP, it is observed that the highest proportion of children (42.6%) was punctured to undertake the blood collection, having been verified equal proportions (21.3%) between CG and EG. In turn, a lower proportion of children (3.7%) was punctured, only for administration of therapy, with EG, which has the highest proportion (2.5%). Also in this case it is of the least proportions of the two groups (Table 2).

There is an equivalence between the proportions of children (50%) who have had previous experience of pain and those

Table 2. Distribution (%) of the sample as the independent variables and probability of the χ^2 test. N = 80

Variables	CG	EG	Total	*p*
Place of Admission				
Pediatric emergency	45.0	30.0	75.0	0.054
Internment	5.0	20.0	25.0	
Reason for admission				
Symptoms/ill defined signals	23.8	27.5	51.3	0.295
Abdominal pain	12.5	10.0	22.5	
Respiratory diseases	6.2	1.2	7.4	
Other	7.5	11.3	18.8	
Local of PVP				
Hand	43.8	43.8	87.6	0.287
Other	6.2	6.2	12.4	
Goal of PVP				
Blood collection (1)	21.3	21.3	42.6	0.587
1 + Fluid therapy	13.8	11.2	25.0	
Fluid therapy(2)	10.0	6.2	16.2	
2 + Therapy	3.7	8.8	12.5	
Therapy	1.2	2.5	3.7	
Previous experience of pain				
No	26.3	23.7	50.0	0.823
Yes	23.7	26.3	50.0	

CG: Control group; EG: Experimental Group; *p*: Probability.

who had not had so far. The group who had already had this experience not fit slightly more in EG (26.3%), reversing this position in the group who had not had previous experience of pain. There were no statistically significant differences between the proportions of the two groups as to the place and reason for admission, place and purpose of PVP and previous experience of pain (χ^2: $p > 0.05$) (Table 2).

In Table 3, it appears that prior to the PVP procedure, 63.8% of children had no pain, belonging mostly to the EG (38.8%). Only 36.2% of children had low pain intensity, verifying that mostly fell within the CG (25%). The vast majority of children who reported pain had a clinical picture of pain due to symptoms and ill-defined signals and abdominal pain, not being related to the PVP.

During PVP, 36.2% of children had low pain intensity and 32.5% of moderate intensity, of which the largest proportion belonged to EG (21.2%), reversing the position in moderate intensity the highest proportion belong to CG (27.5%). Only 7.5% of children reported having severe pain, and all of these children fell within the CG.

Table 3. Distribution (%) of the sample and the intensity of pain recoded in three stages in the study. N = 80

Variable	CG	EG	Total
Pain intensity			
Before			
No pain	25.0	38.8	63.8
Weak	25.0	11.2	36.2
During			
No pain	0.0	23.8	23.8
Weak	15.0	21.2	36.2
Moderate	27.5	5.0	32.5
Strong	7.5	0.0	7.5
After			
No pain	13.8	40.0	53.8
Weak	36.2	10.0	46.2

CG: Control group; EG: Experimental Group.

Finally, after completion of PVP, the largest group of children (53.8%) reported no pain, belonging mostly to the EG (40%), while the group indicated having low pain (46.2%) the majority (36.2%), framed in the CG (Table 3).

The MANOVA between mean pain intensity of the EG and CG, the two fixed factors, they were placed successively as factors, the application of anesthetic cream (group) and another factor (independent variable), including gender, age group, reason for admission, place of PVP and previous experience of pain, not having any of these factors originated statistically significant differences, except the group (CG/EG) and age group, so we resorted to ANOVA with repeated measurements. The results of the MANOVA regarding the factors without significant effects were, respectively: gender (Pillai's Trace = 0.036; F [3.74] = 0.911; p = 0.440; Power = 0.241), reason for admission (Pillai's Trace = 0.224; F [9.216] = 1.937; p = 0.048; Power = 0.832), site of PVP (Pillai's Trace = 0.068; F [3.74] = 1.803; p = 0.154; Power = 0.451) and previous experience pain (Pillai's Trace = 0.040; F [3.74] = 1.02; p = 0.387; Power = 0.267). In the case of factor reason for admission with a marginal significance, the Tukey post hoc revealed no significant differences ($p > 0.05$).

The same test revealed that the age group factor had a large and significant effect on the composite scale (intensity of pain in the three moments) multivariate (Roy Largest Root = 0.140, F [3.73] = 3.400; p = 0.022; Power = 0.745). Having observed the significance of this factor, the univariate ANOVA was undertaken for each of the dependent variables, followed by post hoc Tukey test, having obtained the following results: the severity of pain before PVP there are no significant statistical differences ($p > 0.05$); in pain intensity during PVP there are significant differences between the age group of 5-6 years and 7-8 years (p = 0.040), with

the highest average in the class of 5-6 years; in pain intensity after PVP there are significant differences between the age group of 5-6 years and 7-8 years ($p = 0.043$) and between the class of 5-6 years and 9-10 years ($p = 0.003$), the average being always higher in the class of 5-6 years.

Taking into account the results of ANOVA for repeated measurements, which compares the average pain scores among the three evaluation moments in the two study groups, the intensity of pain in EG, which was taken in the application of anesthetic cream to children before PVP (M = 0.633; SEM = 0.138; n = 40) was significantly different from the intensity of pain in the CG, wherein said cream was not applied (M = 2.142; SEM = 0.138; n = 40) (F [1.78] = 60.112; $p = 0.000$; Power = 1.000). The effect size is moderate ($\eta^2p = 0.435$), with a confidence interval of 95% for the difference of the mean score of pain intensity in both groups [1.121; 1.896] and it is expected that in 95% of cases, the CG children have on average more 1-2 scores than children of EG. Regarding the evolution of the intensity of pain assessed, there were differences of moderate and statistically significant among the three moments (F [2.156] = 152.138; $p = 0.000$; $\eta^2p = 0.435$; power = 1.000). Whereas the children of the total sample, the score of pain intensity was higher in the second evaluation time (During PVP: M = 2.900; SEM = 0.186; n = 80), rising sharply from the first (M = 0.513; SEM = 0.083; n = 80) for the second time and decreasing the second to the third stage, although less sharply (M = 0.750; SEM = 0.097; n = 80) (Table 4).

Table 4. Descriptive statistics of pain intensity in the 3 evaluation times. N = 80

Variables Applying cream/ Moment	n	Average pain intensity	Standard error
No	40	2.142	0.138
Before PVP		0.750	
During		4.475	
After		1.200	
Yes	40	0.633	0.138
Before PVP		0.275	
During		1.325	
Após		0.300	

n: Number of cases.

Finally, the application of anesthetic cream is effective in pain intensity, as shown by the significant interaction (F [2.156] = 45.436; $p = 0.000$; $\eta^2p = 0.368$; Power = 1.000). The pain intensity scores were consistently lower than in EG, in the three evaluation moments. The effect of anesthetic cream is therefore visible at all times, when we compare the EG with CG, being more pronounced in the second moment (During PVP). In the EG, according to the multiple comparisons, significant differences occur between the first and second and second and third time point ($p = 0.000$ and $p = 0.000$ respectively), but do not occur between the first and third moment ($p = 1.000$). In turn, in the CG there are statistical differences between all times (first and second $p = 0.000$, first and third $p = 0.023$, second and third $p = 0.000$).

DISCUSSION

The most significant results obtained in this study relate to the effect of the factor age group (age) on pain intensity scores, which were higher in the class of 5-6 years, youngest, as well as a statistically significant difference between the mean scores of pain intensity of the EG and CG, which was always higher in the CG.

In a study conducted in the framework of a dissertation, in the University of Coimbra (Portugal)[16], with a sample of 60 children, of Coimbra Hospital Center, which aimed to evaluate the relationship between anxiety and pain in PVP, in children with and without problems of development, the majority was female (55%), the minimum age 5 years and maximum 12 years, while in this study, the most represented sex is male and the maximum age was 10 years.

In the present study only half of the participanting children (50%) had had previous experience of pain, while in a study with a sample of 12 children held in Pediatric Day Hospital, of the *Rio de Janeiro Hospital Servidores do Estado* (Brazil)[17], all children had had more than one previous experience of pain, but had never been subjected to the application of anesthetic cream, a condition also found in our research.

The fact that in the present study were younger children, the age group of 5-6 years, who reported greater pain intensity (MANOVA test), the results are in agreement with literature consulted[18]. In the study in a public hospital in the city of São Paulo (Brazil)[9], which involved 31 children between 6 and 12 years old, were the youngest children of the age group of 6-7 years, who reported greater pain intensity. The same happened in the survey conducted in Coimbra[16], comparing the average pain intensity and degree of anxiety in response to PVP, which proved to be higher in the group of children aged 5-8 years than in children aged 9-12 years, as the study in Viseu (Portugal)[10].

However, the study conducted in São Paulo[9], the authors used the same categorization of pain intensity as for the present study, except for the last category, designated by unbearable pain (scores 7-10 numerical scale), while in our study this category was divided into severe pain (scores 7-9) and unbearable pain (score 10). The above mentioned studies show only results for the time during PVP and, therefore, the discussion is limited to the moment concerned.

If we compare the proportions of the total sample of this study, with that study[9], we observed that in our study the proportion of children who did not mention any pain (23.8%) is far higher then to that study (9.67%) while the category of mild pain is lower

in our study (36.2%) then in the comparison study (48.39%). With regard to the category pain of moderate intensity, the results are very similar (32.5% in this study *versus* 32.27% as compared to that study). Regarding category sharp pain in the present study, the proportion was slightly lower (7.5%), and no child who has referred to unbearable pain, while in the comparison study the proportion of category unbearable pain intensity, in parallel with the category sharp pain in our study, was slightly higher (9.67%), but includes the score 10.

The difference in the first two categories can be explained by the increased application of anesthetic cream, in the group that reported absence of pain in the present study, in which all children said cream was applied. If the proportion of children to which was applied the cream had been lower, would certainly reduce the proportion of category no pain and increase the proportion of the category of mild pain. These results are corroborated by the study cited above[9], in which the authors claim that the analgesia obtained from anesthetic cream was effective, although the pre and trans puncture periods had yet been traumatic for children. Also in the survey conducted in Rio de Janeiro[17], applying the same anesthetic cream used in our research has shown to be effective (100%), since in PVP post evaluation no children reported any pain, having also been proven to be effective in the study of Viseu[10].

The main limitation of this study relates to the sample size, since it is a small sample.

CONCLUSION

After analyzing and discussing the results, it becomes essential to highlight the most important and relevant aspects of this study, taking into account the initially set objectives and hypotheses.

Because it is one of the most common experiences, following vaccination, the PVP procedure that many children experience, unfortunately, causes pain and discomfort and constitutes a traumatic event, having a significant impact on children's lives. This study sought to evaluate the effect of anesthetic cream to relieve pain caused by PVP in children from 5 to 10 years, in the hospitalization or emergency care.

The study results appear to demonstrate that the anesthetic cream applied to the PVP procedure, reduces pain intensity, at all evaluation times, since the ratio of the EG typed children categories in the absence of dull pain and pain is always higher on the CG. On the other hand, children who did not report any pain were more susceptible to the action of anesthetic cream, that is, the proportion of children in the anesthetic cream was applied is always greater than the proportion that said cream was not applied in category no pain. The mean pain intensity in EG, which was taken in applying the cream was significantly different in pain intensity in the CG, being always higher in this group, in the three evaluation moments, indicating that the anesthetic cream has a noticeable effect on pain relief. The variables gender, reason for admission, site of PVP and previous experience of pain in children were not discriminating as to the intensity of pain. For its part, the age group variable seems to have a significant effect on the intensity of pain at the time during and after PVP, and the younger children (5-6 years old) had higher mean pain intensity, and therefore more sensitive procedure.

Health professionals, particularly doctors and nurses, have a crucial role in pain control. To accomplish this task, they need to be sensitized to the problem, increase their knowledge, use appropriate tools and techniques and a multimodal therapeutic strategy. Despite the limitation of the study on account of its small sample size, the research contributed to promote the use of anesthetic cream as an alternative therapeutic measure for pain relief in children that underwent PVP.

We stress the importance of this study for Pediatrics Service of CHTMAD, EPE, Vila Real Unit, because it showed a gain in awareness of health professionals regarding pain relief in children admitted to the service. After informal and formal conversations with the Director of the Service, a protocol pointing to the use of anesthetic cream in children undergoing PVP is being established.

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