

Research Article

The Misdirection as Anxiety Reduction in Children from Venipuncture Procedure: A Randomized Study

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Abstract

The current literature show several distraction approaches to reduce anxiety in children during the painful procedure, as the venipuncture. This work explored the magician intervention effects in anxiety and in pain reduction among children who underwent the venipuncture procedure. Our results showed that the magician approach among nurses could effectively influence the children compliance who underwent a venipuncture without any particular cost for the healthcare system.

VENIPUNCTURE AS A STRESSFULL PROCEDURE FOR HOSPITALIZED CHILDREN

Venipuncture is a daily procedure in all healthcare settings. This practice, used for different aims, is perceived with tension and worry by younger patients and usually feed discomfort and tension also in successive venipuncture experiences [1-3].

Literature suggested that pain correlated with venipuncture procedure is consequentially only to the sickness itself [4-6] and often the enhancement of pain provoked by worry and discomfort in children may suffer a higher level of pain and anxiety [7,8].

In fact, about 83% of children aged 2.5-6 years, 51% of children aged 7-12 years and 28% of adolescents who experienced venipuncture reported high grades of pain during the technique. However, less than 10% of venipuncture operations are accompanied with pain control procedures [9]. So, insufficient pain management can negatively influence pediatric patients, their families and healthcare organizations and at the same time, can be associated with the arising stress and worry during painful techniques provoking needle phobias that could continue into adulthood [9].

Pain reduction corresponds to an international standard of care in pediatric patients. Very often nurses apply a topical anesthetic to probable venipuncture areas to decrease both stress and tension of this painful procedure. However, topical anesthetic preparations generally require 30 to 60 minutes after their application and before venipuncture procedure and the vasoconstrictive consequences differ between formulations applied [10]. Although, in children with an acute disease who requires impellent venipuncture, 30 minutes can be an unacceptable waiting time. Thus, clinical guidelines emphasize the important function of non-pharmacological involvement as unique and sufficient intervention in pain management in stressful procedures [11].

Several researches have suggested non-pharmacological techniques to manage pain and stress experiences in pediatric patients during venipuncture procedures [12,13].

Entertainment is the most successful non-pharmacological performance to reduce the venipuncture discomfort experiences in pediatric patients. In literature entertainment approaches differ such as listening to music, watching cartoons, playing with

toys [14,15].

Moreover, studies demonstrated that recreations with child decidedness and without adult participation decrease adequately self-reported pain [16,17] that distraction performances correlated with venipuncture procedural information induces significant goals [18,19]. On the other hand, the nurses' workload may increase by performing age-appropriate entertainment interventions [20].

This work aims to explore the effectiveness of prestige interventions as a distraction technique during venipuncture procedure in children. To this end we compared data and to evaluate statistically significant differences in children who received the magician approach (intervention group) compared to children who did not receive any distraction approach (control group) before and after venipuncture procedure. Variables considered in both groups were: systolic and diastolic blood pressure, heart rate, respiratory acts, and anxiety values, assessed with the Children's Manifestation Emotional Scale analogue scale (CEMS).

MATERIALS AND METHODS

This study was conducted at the pediatric ward in the Saint Giovanni Evangelista Hospital, Tivoli, Rome, Italy. A formal request was asked for and then obtained in order to proceed to collect data. Data was collected from January 2019 to May 2019.

Children between 6 and 12 years old admitted to the pediatric ward and today hospital service was considered eligible participants for this study. However, pediatric patients who assumed analgesic therapy up to 6 hours before the venipuncture procedure were excluded.

Subjects were randomly divided into two groups: the experimental group and the control group.

In the experimental group children who underwent a venipuncture procedure received standard nursing care and prestige interventions before and during venipuncture operation thanks to a "nurse-magician". In the control group children who underwent venipuncture procedure met only nurses without any distraction interventions.

Parents of children belonging to the experimental group were informed of the research work without the pediatric patients being able to hear. Once they agreed to participate in the study, the nurse-magician interviewed participants accompanied by their parents and invited parents to attend as assistant to magician interventions, and when it is possible he asked to patient-spectator to collaborate as an assistant, in order to increase attention on its magician intervention.

So, data were collected before the venipuncture procedure, as baseline (T0) and after the venipuncture procedure (T1). Data assessed included: systolic and diastolic blood pressure, heart rate, respiratory acts, and CEMS values, which allowed performing the percentage of crying in pediatric participants at T0 and T1, respectively.

The CEMS scale is the Children's Emotion Management Scale that was developed to produce an easy, objective and

coherent instrument for quantify children's sensation during worry health-related procedures. It embraces stress government scale that was improved to lead the anger and sadness scores. Items varied on a 5-point Linker-type measuring system. For each items a numerical value was attributed rating from 1 to 5 for 5 total variables. In this way total CEMS value vary from 5 to 25. Variables considered were: facial expression, vocalization, activity, interaction, cooperation.

t-Student test was performed between the control group and in the experimental group at T0 and at T1 to verify statistical significant differences between the two groups.

RESULTS

86 pediatric subjects were enrolled in this study. 46 of them were male and 40 were female.

41 participants were assigned to the control group (n=23 male subjects; n=18 female subjects) and 45 subjects were assigned to the experimental group (n=23 male participants; n=22 female participants). 40% of the total of participants belonged to Day Hospital setting and 60% of the total subjects were admitted in the pediatric ward.

Subjects included in the control group were on average 8 years old, while pediatric participants included in the experimental group were on average 10 years.

Vital parameters, such as: systolic and diastolic blood pressure, heart rate, respiratory acts, and CEMS values and cry expression were collected at baseline (T0) and after the venipuncture procedure (T1), as shown in the Table 1 and in the Table 2, respectively.

Significant differences were shown in systolic pressure values and in the heart rate values, both in the control group and in the experimental group ($p < 0.001$). Also significant differences was shown in respiratory acts only in the control group ($p < 0.001$). At T1, as after the venipuncture procedure, physiological parameters increased both in the control group and in the experimental group. However by considering physiological values at T1, data is lower in the experimental group than in the control group.

As regards CEMS data collection, all pediatric patients both in the control and in the experimental group showed signs of crying or expressions of pain. However, data was higher in the control group than in the experimental group, but not statistical significantly, as the crying expression in the control group was more frequent than in the experimental group.

Moreover, during the data collection moment there were some problems, for example as regards blood pressure collection values as the department used sphygmomanometers not suitable for participant, or as concern respiratory acts data collection since in patients with crying, the detection of respiratory acts became problematic to the presence of hiccups.

DISCUSSION

Entertainment approaches adopted in this study were one of the various techniques mentioned in the scientific literature [21,22] and the results were similar: the reduction of heart rate was recorded in patients who received the magical distraction

Table 1: Vital parameters collected at T0 and T1 in the pediatric participants.

Variable / Group	Control group T0	Control Group T1	Exp. Group T0	Exp. Group T1
Systolic pressure (mmHg)				
Mean value	93.33	113.33*	98.33	101.66*
Max value	100	120	110	105
Min. value	80	100	90	95
Diastolic pressure (mmHg)				
Mean value	61.66	61.66	63.33	70
Max value	80	70	70	75
Min. value	40	50	60	65
Heart rate (bpm)				
Mean value	84.66	113*	85.33	91*
Max value	94	132	100	108
Min. value	61	83	61	83
Respiratory acts (n./min)				
Mean value	18.66	21.66*	18	19.33
Max value	20	26.66	19	20
Min. value	16	17	17	19

*significant data $p < 0.001$ **Table 2:** CEMS values and cry expression at T0 and T1 in the control and experimental groups.

Variable / Group	Control group T0	Control Group T1	Exp. group T0	Exp. Group T1
CEMS values				
Mean value	--	17	--	7.15
Max value	--	21	--	12
Min. value	--	13	--	5
Percentage of crying expression (%)	--	8.33	--	7.15

support which differs from patients who received a standard post-test procedure (-19.46%).

Additionally, the CEMS score showed a decrease in the perception of anxiety and pain in patients who received treatment with the presence of the magician (-57.94%). Although it should be considered that at the baseline data in the two groups were not significantly different.

Furthermore, the experimental group patients showed a reduction in tension and pain perception when they received treatment with the magician present: a percentage heart rate reduction of -25.3% and a percentage CEMS score reduction of -58.22%.

It was not possible to compare children who received for the first time the venipuncture procedure with children who usually received this painful procedure, as the small number of the first group mentioned.

Implicating magician-nursing approaches in a pediatric ward plays an important role with special properties which are more efficient than many other distraction methods [23]. In fact, magician approaches resulted to be economical because the operator can easily find routine resolutions and it had a persuasive effect on a pediatric patients, characterized by an intense human interaction aspect more than video game or other inanimate techniques. Additionally, an inclined magician-nurse can simply perform his distraction techniques by personalizing

them according to patients and their parents.

Clinical guidelines highlight the important role of non-pharmacological methods controlling stressful procedures and confirm that the distraction interventions as playing videogames, watching cartoon movies, and verbal interactions are more useful in decreasing discomfort and pain sensations in children who undergo venipuncture procedure [24].

Despite venipuncture is considered as the most stressful procedure in pediatric patients, its technical stress management continues to be underestimated and undertreated. So, powerful implementation is required to reduce discomfort episodes, enhancing techniques that connect entertainment with the venipuncture procedure can effectively improve pain and distress management in children [11,22].

Our results show that pediatric patients more accept venipuncture procedure with magician intervention than without this distraction approach.

However, future studies could continue in this trend and perform magician intervention and its benefits in nursing performances during venipuncture procedure.

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