ARTIGO ORIGINAL
Revista de Enfermagem do Centro-Oeste Mineiro
2022; 12/4258
DOI: http://doi.org/10.19175/recom.v12i0.4258
www.ufsj.edu.br/recom

Behavioral reactions of preschool children prepared for vaccination using a therapeutic toy

Reações comportamentais de crianças pré-escolares preparadas para a vacinação com a utilização do brinquedo terapêutico

Reacciones conductuales de niños preescolares preparados para la vacunación utilizando un juguete terapéutico

ABSTRACT

Objective: to determine the behavioral reactions of preschool children during vaccination using an instructional therapeutic toy. **Method:** descriptive, cross-sectional and quantitative study. The participants were 12 children aged three to six years, who were vaccinated at a private immunization clinic in the State of Santa Catarina, Brazil. Data were collected in three stages: preparing the children for vaccination, using the instructional therapeutic toy during vaccination and after vaccination. **Results:** among the behavioral reactions of the children, nine exhibited significant associations with Fisher's exact test: they easily approached the researcher (0.045); exhibited fear of toys (0.018); played interactively expressing their emotions (0.045); assumed and exhibited leadership (0.045); exhibited self-confidence (0.045); exhibited happiness (0.045); verbalized attitudes (0.045); hugged the caregivers (0.045); and pretended not to hear what the researcher was saying (0.018). **Conclusion:** positive behavioral reactions were observed in children prepared for vaccination using the instructional therapeutic toy.
Keywords: Children; Vaccination; Games and Toys; Nursing Care.

RESUMO

Objetivo: identificar as reações comportamentais de crianças pré-escolares durante a vacinação com a utilização do brinquedo terapêutico instrucional. **Método:** estudo descritivo, transversal e quantitativo. Participaram 12 crianças de 3 a 6 anos, que foram vacinadas em uma clínica de imunização privada em Santa Catarina. Os dados foram coletados em três etapas: no preparo da criança para a vacinação, utilizando o brinquedo terapêutico instrucional durante a vacinação e após a vacinação. **Resultados:** das reações comportamentais na criança 9 obtiveram associações significativas com o teste Exato de Fischer: aproxima-se com facilidade do pesquisador (0,045); demonstra-se com medo dos brinquedos (0,018); brinca interativamente expressando suas emoções (0,045); assume e demonstra liderança (0,045); mostra-se seguro (0,045); demonstra alegria (0,045); atitudes verbalizadas (0,045); agarra-se ao cuidador (0,045); finge não ouvir o que o pesquisador está dizendo (0,018). **Conclusão**: as reações comportamentais positivas foram identificadas em crianças preparadas com o brinquedo terapêutico instrucional para a vacinação.
Descritores: Criança; Vacinação; Jogos e Brinquedos; Cuidados de Enfermagem.

RESUMEN

Objetivo: identificar las reacciones comportamentales de niños preescolares durante la vacunación usando un juguete terapéutico instructivo. **Método:** estudio descriptivo, transversal y cuantitativo. Los participantes fueron 12 niños de tres a seis años de edad, vacunados en una clínica privada de inmunización en el Estado de Santa Catarina, Brasil. Los datos se recopilaron en tres etapas: preparación de los niños para la vacunación, usando el juguete terapéutico instructivo durante la vacunación y después de la vacunación. **Resultados:** de las reacciones comportamentales de los niños, nueve obtuvieron asociaciones significativas con la prueba exacta de Fisher: se acercaron fácilmente al investigador (0,045); mostraron miedo a los juguetes (0,018); jugaron de forma interactiva expresando sus emociones (0,045); asumieron y demostraron liderazgo (0,045); demostraron ser seguros (0,045); mostraron felicidad (0,045); actitudes verbalizadas (0,045); se aferraron a los cuidadores (0,045); y fingieron no escuchar lo que decía el investigador (0,018). **Conclusión:** se identificaron reacciones comportamentales positivas en niños preparados para la vacunación con el juguete terapéutico instructivo.
Descriptores: Niño; Vacunación; Juegos y Juguetes; Cuidado de Enfermería.

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How to cite this article:

Mariano MR, Schultz LF, Turmina J. Behavioral reactios of preschool children during vaccination with the use of te therapeutic toy. Revista de Enfermagem do Centro-Oeste Mineiro. 2022;12:e4258. [Access_____]; Available in:_____. DOI: http://doi.org/10.19175/recom.v12i0.4258

INTRODUCTION

Immunization is an important way to prevent diseases. It is essential for the maintenance of health, growth and development of children, as well as for the eradication of multiple diseases[1]. Vaccination of minors is mandatory, either through the public health system or private institutions[2]. This right is guaranteed by the Brazilian Statute of Children and Adolescents (ECA in Portuguese)[3].

Another right guaranteed by the same legal provision is playing (art. 16, item IV). Playing is a basic need of extreme significance and plays an important role in children's adaptation to new situations and in their physical, emotional, cognitive and social development processes[4]. It is by playing that infants learn how to relate to the individuals around them and to the environment, in a natural and continuous way[4]. Playing in healthcare provided to chilren favors knowing and understanding the children and their families, helping to create and strengthen affective bonds[5]. As a result, playing with a therapeutic function is essential for health professionals working in pediatrics. In Brazil, the use of a therapeutic toy (TT) is recommended and regulated by the Federal Nursing Council, through Resolution 546/2017[6]. The TT is a structured technique that has been used since 1958. It is classified into three types, namely: (1) dramatic, which aims at children's emotional discharge and catharsis; (2) instructional, which prepares the children for the procedures; and (3) the physiological functions enabler, which aims to enhance the use of the children's physiological functions according to their conditions[7].

National and international studies on the instructional therapeutic toy (ITT) point to multiple benefits of its use by nurses with children, adolescents and family members. In addition to preparation for procedures, these studies have highlighted the strengthening of children's potential and skills, the reduction of stress and pain, and the decrease in the need for sedation. It is also worth mentioning the improvement obtained in heart rate and blood pressure[5,8-12]. Some studies have already been conducted with the main theme being the use of TT with children in emergency care, schools, basic health units, neonatal care units, intensive care units, and inpatient units[5,8-10,12]. However, a limited number of studies has been conducted with children at the time of immunization and the use of the ITT modality.

Therefore, the main research question of the present study was: "What are the behavioral reactions of children aged between three and six years when the ITT is used in the preparation for vaccination?". The goal of the present study was to determine behavioral reactions of preschool children during vaccination with the use of the ITT.

METHOD

The present study was conducted in a private immunization clinic, in the State of Santa Catarina, Brazil, between June and September 2020. Twelve preschool children participated in the study. The inclusion criteria were: children aged three to six years, of both sexes, who would be vaccinated, accompanied by their legal guardians. The exclusion criteria were: children with severe neurological disorders and those with cognitive difficulties associated with some special health need that made it impossible to use the ITT technique and/or made it difficult to determine their behavioral reactions.

All ethical precepts were met in accordance with Resolution 466/2012 of the National Health Council[13]. The project was approved by the Research Ethics Committee of Bom Jesus Lutheran Educational Association (IELUSC), under Opinion CAAE: 30675220.0.0000.5365. The informed consent forms were signed by the children's legal guardians, and the agreement forms were prepared in a playful and appropriate way for the children's understanding so that they could sign them, this signatures being made using fingerprints or writing of the first names. During the entire data collection, the researcher and the children's legal guardians were together with the children. At no time the children were left alone or unsupervised.

The materials used during the ITT technique were: disposable syringes; cotton; stoppers; Picluk and Buzzy devices; disposable gloves; alcohol gel; and male or female puppets. These materials were chosen due to this technique, according to which the materials should be the closest or the same as those that will be used on the children during the procedure to be performed.

The variables analyzed in the present study were: children's age; sex; amount of vaccine; type of vaccine; whether it was children's first time at the clinic; whether they attended school; whether they received emotional preparation; whether they had already used the ITT in previous vaccinations; and assessments of pain and

behavioral reactions exhibited by the children before, during, and after vaccination.

Data collection was performed in three moments.

The first moment consisted of four stages:

1. Information was collected from the family members that were responsible for the children, including age, sex, whether it was the first time at the clinic, whether they attended school, whether they received emotional preparation, and had used the ITT in previous vaccinations. In addition, the assessment of the children's vaccination documents allowed determining the amount and the types of vaccines to be used.
2. The children were invited to play;
3. The materials were presented to the children and a story was told by dramatizing it while the simulation of the vaccination procedure on the puppets was being performed. The ITT technique used was that proposed by Green[14].
4. Afterwards, the children were invited and encouraged to repeat the game with the puppets, without being forced to take any initiative.

The time for this stage of data collection was ten to fifteen minutes. The place for performing this first moment was chosen by the children, who could choose the waiting room of the clinic, the ludic space or the vaccination room.

The second moment of data collection was performed in the vaccination room, during the procedure performed in the children. The present study did not aim to assess the preparation, administration, and nursing care during vaccination, but rather to record the children's behavioral reactions.

The third moment occurred after the end of the vaccinations and after leaving the vaccination room, when the children's pain was measured. To that end, a faces scale[15], composed of five figures with different facial expressions, ranging from a painless expression to unbearable pain, was used. The children's behavioral reactions continued to be assessed even after using the faces scale. This stage lasted five minutes.

Data were collected by observing the children's behavioral reactions before, during and after vaccination, and recorded in the data collection instrument developed for the present study. The types of behavioral reactions observed were adapted from other studies[8,23]. Subsequently, they were tabulated and organized with the support of Microsoft© Excel 2007. For data analysis, a descriptive analysis was initially performed, with calculation of frequencies, means, and standard deviations. Fischer's exact test was used to determine the association between sex and the other variables assessed. There were 51 variables assessed, which were composed of three moments: before the procedure (Moment 1), during the procedure (Moment 2) and after the procedure (Moment 3). Cochran Q test was also used to assess the frequency in the responses of the children's behavioral reactions. This test was chosen with the aim of determining whether there were significant differences between the frequencies of the responses obtained, in the three moments arising from the 51 questions proposed by the present study.

The confidence interval was 95% and the significance level adopted was $p \leq 0.050$. Data processing and the statistical analysis were performed using the Statistical Package for the Social Sciences (SPSS) version 17.0. The results obtained were discussed from the theoretical framework of the National Humanization Policy, which aims to use humanized practices, giving autonomy to health professionals and including different processes in care management[16].

RESULTS

Twelve preschool children participated in the present study. There was a predominance of females, representing 75% of the children who participated. Only one child was not attending school. No children had previously been prepared for vaccination with a TT. Of the 12 children, 17% had not attended the vaccination clinic, and three were seen at their homes.

According to the findings of the present study obtained from the 51 variables assessed, it was observed that nine had a significant association between behavioral reactions of preschool children, prior to vaccination, with the use of the TT (Moment 1), according to sex, as illustrated in Table 1.

Table 1 – Association of behavioral reactions of preschool children, prior to vaccination, with the use of the therapeutic toy (Moment 1), according to sex. Joinville, State of Santa Catarina, Brazil- 2020.

Variables	Female No. (%)	Male No. (%)	Fischer *p*
1-Approaches the researcher easily			0.045
Yes	7 (100)	0 (0)	
No	2 (40)	3 (60)	
2-Chooses the place in which to play			0.127
Yes	8 (88.8)	1 (11.1)	
No	1 (33.3)	2 (66.6)	
3-Gives the hand to the family member during the game			0.182
Yes	3 (50)	3 (50)	
No	6 (100)	0 (0)	
4-Gives the hand to the researcher until the beginning of the game			0.491
Yes	4 (100,0)	0 (0)	
No	5 (62.5)	3 (37.5)	
5-Manipulates the exposed toys			0.236
Yes	7 (87.5)	1 (12.5)	
No	2 (50)	2 (50)	
6- Exhibits fear of the toys			0.018
Yes	1 (25)	3 (75)	
No	8 (100)	0 (0)	
7- Exhibits fear when approaching the researcher			0.455
Yes	1 (50)	1 (50)	
No	8 (80)	2 (20)	
8- Plays interactively expressing emotions			0.045
Yes	7 (100)	0 (0)	
No	2 (40)	3 (60)	
9- Performs the interventions in the toy			0.236
Yes	7 (87.5)	1 (12.5)	
No	2 (50)	2 (50)	
10- Uses make-believe activities			0.0205
Yes	5 (100)	0 (0)	
No	4 (57.1)	3 (42.8)	
11- Assumes and exhibits leadership			0.045
Yes	7 (100)	0 (0)	
No	2 (40)	3 (60)	
12- Exhibits self-confidence			0.045
Yes	7 (100)	0 (0)	
No	2 (40)	3 (60)	

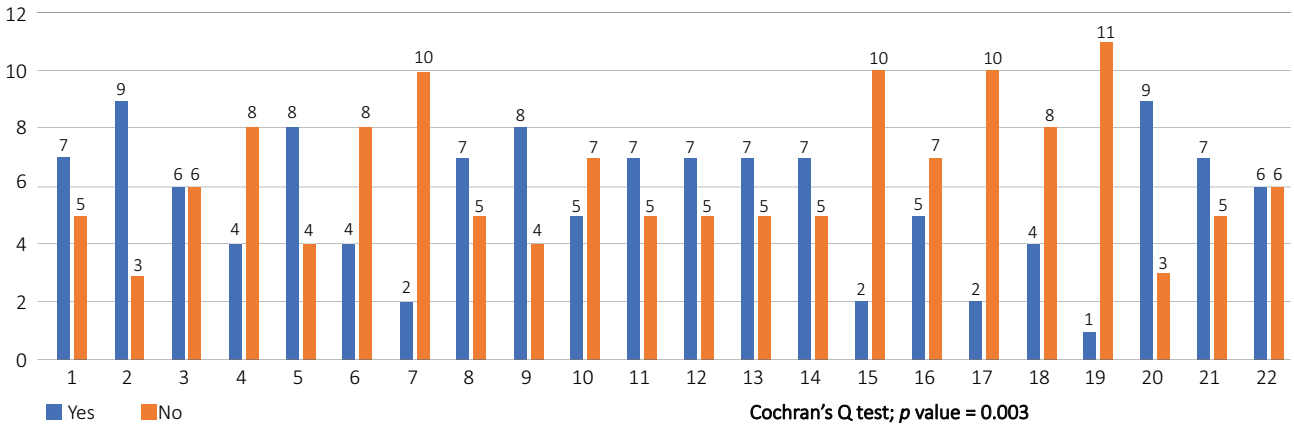
(continue)

Variables	Female No. (%)	Male No. (%)	Fischer *p*
13- Exhibits happiness			0.045
Yes	7 (100)	0 (0)	
No	2 (40)	3 (60)	
14- Verbalized behaviors			0.045
Yes	7 (100)	0 (0)	
No	2 (40)	3 (60)	
15- Cries when the playful procedure with the toy is performed			0.455
Yes	1 (50)	1 (50)	
No	8 (80)	2 (20)	
16- Hugs the caregiver			0.045
Yes	2 (40)	3 (60)	
No	7 (100)	0 (0)	
17- Exhibits restlessness during the use of the ITT			0.455
Yes	1 (50)	1 (50)	
No	8 (80)	2 (20)	
18- Pretends not to hear what the researcher says			0.018
Yes	1 (25)	3 (75)	
No	8 (100)	0 (0)	
19- Exhibits mood swings			0.25
Yes	0 (0)	1 (100)	
No	9 (81.8)	2 (18.1)	
20- Exhibits verbal behavior			0.127
Yes	8 (88.8)	1 (11.1)	
No	1 (25)	2 (75)	
21- Exhibits non-verbal behavior			0.523
Yes	6 (85.7)	1 (14.2)	
No	3 (60)	2 (40)	
22- Is a questioner			0.182
Yes	6 (100)	0 (0)	
No	3 (50)	3 (50)	

Source: prepared by the authors (2020).

Cochran's Q test indicated that there were differences in the distributions of 'Yes' and 'No' answers in the 22 variables assessed, referring to the children's behavioral reactions, prior to vaccination ($X^2 = 43.56$; $p < 0.005$) with p value of 0.003. The numbers in the horizontal line of Table 1 are distributed in the same sequence as the variables in the graph below (Figure 1).

Figure 1 – Frequency of behavioral reactions in preschool children prior to vaccination with the use of a therapeutic toy (Moment 1). Joinville, State of Santa Catarina, Brazil- 2020.



Source: prepared by the authors (2020).

No significant association values were found in the second moment of the present study, as illustrated in Table 2. At the time of vaccination, none of the children asked the family for help, and did not push the hand nor did they exhibit aggressive reactions against the nursing professional.

Table 2 – Association of behavioral reactions of preschool children, during vaccination, after using the therapeutic toy (Moment 2), according to sex. Joinville, State of Santa Catarina, Brazil- 2020.

Variables	Female No. (%)	Male No. (%)	Fischer *p*
23- Asks the nursing professional to wait a few times before being vaccinated			0.491
Yes	4 (100)	0 (0)	
No	5 (62.5)	3 (37.5)	
24- Moves arms and legs making vaccination difficult			1
Yes	4 (66.7)	2 (33.3)	
No	5 (83.3)	1 (16.6)	
25- Exhibits irritation and nervousness			1
Yes	3 (60)	2 (40)	
No	6 (85.7)	1 (14.2)	
26- Bargains with the family			0.523
Yes	3 (60)	2 (40)	
No	6 (85.7)	1 (14.2)	
27- Asks to leave the vaccination for another day			0.509
Yes	3 (100)	0 (0)	
No	6 (66.7)	3 (33.3)	
28- Tries to run out of the room			1
Yes	1 (100)	0 (0)	
No	8 (72.7)	3 (27.2)	
29- Aggressive reactions against the professional			0
Yes	0 (0)	0 (0)	
No	9 (75)	3 (25)	

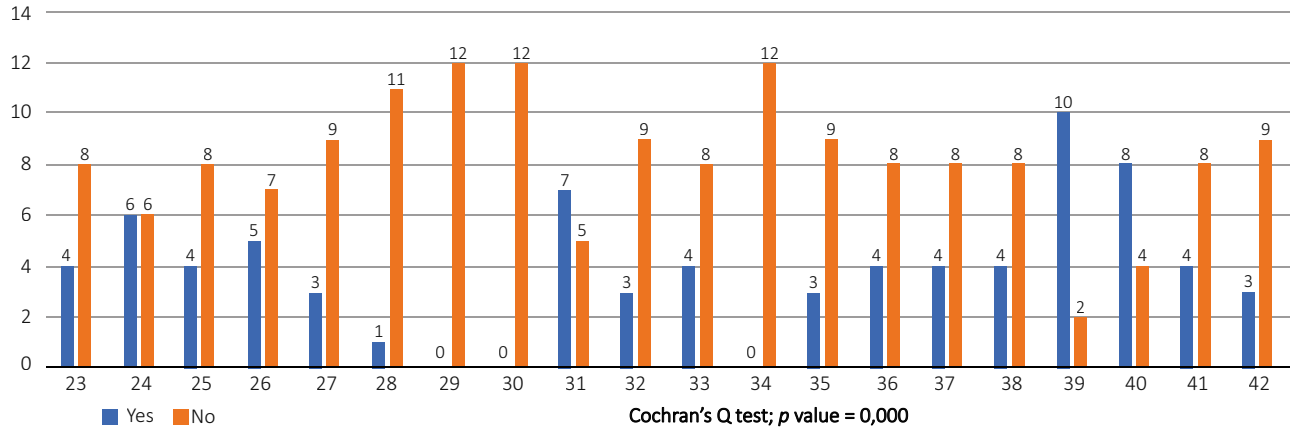
(continue)

Variables	Female No. (%)	Male No. (%)	Fischer *p*
30- Pushes the professional's hand			0
Yes	0 (0)	0 (0)	
No	9 (75)	3 (25)	
31- Has muscle stiffness			1
Yes	5 (71.4)	2 (28.6)	
No	4 (80)	1 (20)	
32-Screams or cries very loudly			1
Yes	2 (66.7)	1 (33.3)	
No	7 (77.8)	2 (22.2)	
33- Asks the family for help			1
Yes	3 (75)	1 (25)	
No	6 (75)	2 (25)	
34- Asks the nursing professional for help			0
Yes	0 (0)	0 (0)	
No	9 (75)	3 (25)	
35- Smiles			0.509
Yes	3 (100)	0 (0)	
No	6 (66.7)	3 (33.3)	
36- Exhibits tranquility			0.491
Yes	4 (100)	0 (0)	
No	5 (62.5)	3 (37.5)	
37- Looks collaborative			0.491
Yes	4 (100)	0 (0)	
No	5 (62.5)	3 (37.5)	
38- Exhibits self-confidence			0.491
Yes	4 (100)	0 (0)	
No	5 (62.5)	3 (37.5)	
39- Cries			1
Yes	7 (70)	3 (30)	
No	2 (100)	0 (0)	
40- Blushes easily			0.491
Yes	5 (62,5)	3 (37,5)	
No	4 (100)	0 (0)	
41- Exhibits perspiration			0.236
Yes	2 (50)	2 (50)	
No	7 (87.5)	1 (12.5)	
42- Asks to end the procedure immediately			0.509
Yes	3 (100)	0 (0)	
No	6 (66.7)	3 (33.3)	

Source: prepared by the authors (2020).

Cochran's Q test indicated that there were differences in the distributions of 'Yes' and 'No' answers in the 20 variables assessed, referring to the children's behavioral reactions during vaccination (X^2 = 48.82; p <0.005) with a p value of 0.000. The numbers represented in the horizontal line of Table 2 correspond to the second moment of data collection, being described in the same sequence as the variables in Graphic 2 below (Figure 2).

Figure 2 – Frequency of behavioral reactions in preschool children, during vaccination, after using the therapeutic toy (Moment 2). Joinville, State of Santa Catarina, Brazil- 2020.



Source: prepared by the authors (2020).

No significant association values were found in the third moment of the present study. However, it was found that, after the procedure, behavioral reactions indicative of greater acceptance and adaptation to the procedure were more frequent (Table 3).

Table 3 – Association of behavioral reactions of preschool children after vaccination according to sex. Joinville, State of Santa Catarina, Brazil- 2020.

Variables	Female No. (%)	Male No. (%)	Fischer *p*
43- Accepts the invitation to play with the toy again after vaccination			0.205
Yes	5 (100)	0 (0)	
No	4 (57.1)	3 (42.9)	
44- Cries non-stop and without consolation			1
Yes	1 (100)	0 (0)	
No	8 (72.7)	3 (27.2)	
45- Exhibits reactions such as tremor and pallor			0
Yes	0 (0)	0 (0)	
No	9 (75)	3 (25)	
46- Stays on the family member's lap			0.205
Yes	4 (57.1)	3 (42.9)	
No	5 (100)	0 (0)	
47- Seeks protection from the family			0.182
Yes	3 (50)	3 (50)	
No	6 (100)	0 (0)	

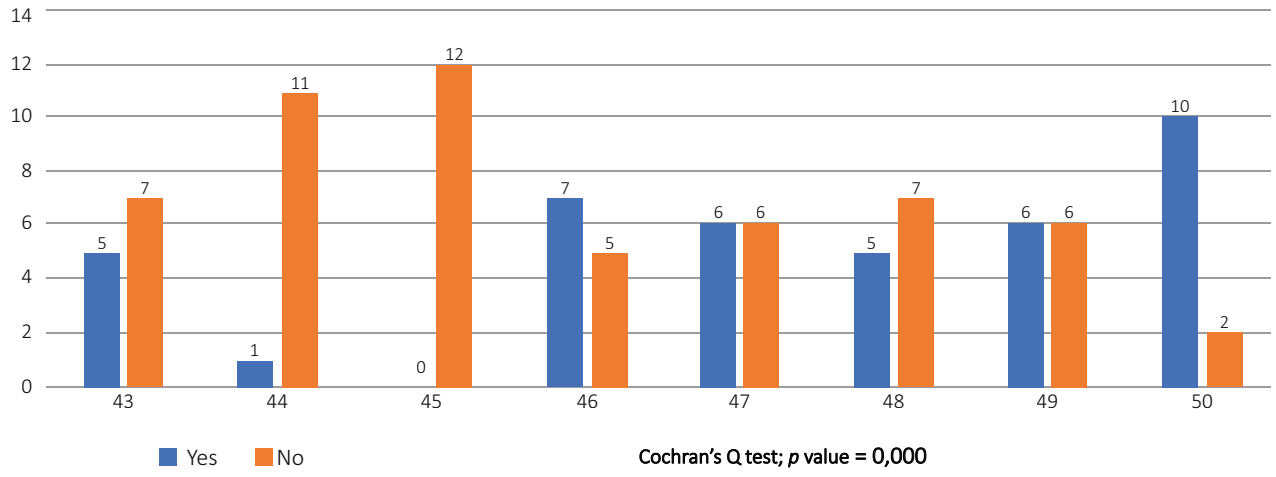
(continue)

Variables	Female No. (%)	Male No. (%)	Fischer *p*
48- Accepts the invitation to play			0.205
Yes	5 (100)	0 (0)	
No	4 (66.7)	3 (33.3)	
49- Represents the vaccination procedure on the toy			1
Yes	5 (83.3)	1 (16.6)	
No	4 (66.7)	2 (33.3)	
50- Sais goodbye to the researcher and the vaccination clinic team			1
Yes	7 (70)	3 (30)	
No	2 (100)	0 (0)	

Source: prepared by the authors (2020).

Cochran's Q test indicated that there were differences in the distributions of 'Yes' and 'No' answers in the eight variables assessed, referring to the children's behavioral reactions after vaccination (X^2 = 48.82; p <0.005) with a p value of 0.000. The numbers represented in the horizontal line of Table 3 correspond to the behavioral reactions assessed in the third moment of data collection, being described in the same sequence as the variables in Graphic 3 below (Figure 3).

Figure 3 – Frequency of behavioral reactions in preschool children after vaccination. Joinville, State of Santa Catarina, Brazil- 2020.



Source: prepared by the authors (2020).

After completion of vaccination, the children's pain intensity was measured using the faces scale[15], considering: 1, 2, and 3 as pain of low to medium intensity; and 4 and 5 as severe pain. There was no statistically significant association between the assessment of pain and sex in the children, with p = 0.545. There was greater prevalence of children with the result of severe pain related to the procedure, being 58.3% female and 25% male. On the other hand, 16.6% of the children reported low to medium pain.

DISCUSSION

Playing is one of the most important aspects in children's lives. It constitutes one of the most effective tools to control stress, making children feel safer in an unknown environment[9,10]. In the present study, there was greater prevalence of children who did not exhibit fear when approaching the researcher and who also did not cry during the procedure, i.e., while the researcher performed it on the puppet. During the game, in the first moment of the present study, the girls

represented the highest proportion of the sample for the variables, taking the lead. They felt safe and exhibited happiness. Findings from a study[8] indicated that the main behavioral reactions indicative of greater acceptance of the procedure were: keeping quiet (25.8%) and spontaneous collaboration (24.8%). Another study[9] reported that children aged between four and six years had greater difficulty in accepting the procedure; however, during the TT session, they exhibited much more involvement and spontaneity.

With respect to pediatric care, it is necessary to prioritize comprehensive care, not limiting it only to procedures, medications and techniques, but also focusing on biopsychosocial care, in order to make the children feel comfortable and encouraged, even in illness situations or invasive procedures such as vaccination[17].

Emphasizing these precepts, the World Health Organization published new guidelines to increase the quality of healthcare provided to children and adolescents in healthcare services[18]. The recommendations suggest the effective participation of the families in caring for the children, adequate communication, and educational, emotional and psychosocial support, always guided by effective healthcare based on humanized practices[18]. In the present study, 88.8% of the female children and 11.1% of the male children chose the place in which they wanted to play. Among these children, seven girls played interactively expressing their emotions.

In situations of invasive procedures, children can experience feelings of fear, anxiety and insecurity, as these procedures are not part of their daily lives[19]. However, in the present study, during vaccination, 66.7% of the girls and 33.3% of the boys did not ask to leave the vaccination for another day, and 72.7% of the girls and 27.2% of the boys did not try to run out of the room. After all the stages of the present study, 70% of the girls and 30% of the boys said goodbye to the clinic staff.

In the first moment of the present study, there was greater prevalence of female children, who listened to what the researcher said and exhibited verbal behavior. These findings indicate that there was good communication and interest on the part of the children regarding the procedure. A survey addressed the variable "Observes the Professional" and determined substantial changes during TT sessions[20].

It should be mentioned that it is the children's right to play during their stay in health units, whether playfully, recreationally or therapeutically[18]. Therefore, this right should also be guaranteed during immunization[21]. The TT is a way to alleviate children's suffering, fear and stress[10,22]. Relating the aforementioned literature with the findings of the present study, it should be noted that none of the children had reactions such as tremor and pallor after vaccination. However, three girls asked to end the procedure immediately, and one girl cried nonstop and without consolation.

Regarding the use of the TT in the application of vaccines, a study assessed the behavioral reactions of two groups, i.e., the control group and the experimental group[8]. The findings indicated that the experimental group was less aggressive towards the health professional, in comparison to the control group, in which the children had exhibited reactions such as pushing and pulling the professional's hand, kicking, hitting or biting[8]. These results are similar to those of the present study, since none of the children exhibited aggressive reactions towards the professional, such as pushing the hand.

When the ITT was used in the administration of intravenous medication, a study found that, after the session, the children also exhibited behavioral reactions of greater acceptance when receiving the medication[9]. Thus, even though vaccination is considered an uncomfortable situation, the procedure adopted functioned as a promoter of development and knowledge, as it is through playing that children can understand the importance of vaccination.

In preschool children, magical and fanciful thinking predominates, and the means of communication are limited; therefore, there may be difficulties in understanding and coping with painful situations[23]. In this age group, children can communicate and express their feelings and thoughts in different ways, which can be verbal and non-verbal, such as crying, speaking, drawing, and through music and writing[23]. Therefore, these feelings, thoughts and behavioral reactions should be perceived and assessed by the caregivers[23].

Regarding pain assessment using the faces scale, in the present study, 83.3% of the children reported severe pain related to the procedure. In discrepancy with these findings, a survey assessed children's pain using the same scale, and only 36.4% of them had reported severe pain during the procedure[24].

The goal of the National Humanization Policy, created in 2003, was to implement the principles

of the Brazilian Unified Health System (SUS) in the daily life of health services, providing changes in the ways of managing and caring, seeking quality healthcare, and guaranteeing all users' appreciation[16]. Some concepts that guide the work of this policy are strongly linked to the present study. User embracement is about recognizing the health needs of the users, offering services suitable to their needs, building a relationship of trust and bond. Ambience is related to creating a favorable environment for the service, which should be welcoming and comfortable. The expanded clinic criteria is a tool that contributes to a clinical approach to suffering, considering its uniqueness, thus using resources that allow user enrichment and autonomy[16].

The use of ITT meets the principles of the National Humanization Policy, providing humanized healthcare to children through a service that goes far beyond the vaccination procedure and reaches a playful dimension in the children's universe. Nursing, in this context, assumes an essential role in the practice and use of ITT, which allows offering quality healthcare, providing good communication, and enabling advances in children's development.

CONCLUSION

The present study made it possible to determine the behavioral reactions of preschool children who were prepared with the use of an ITT for the vaccination procedure, in a private immunization clinic in 2020. The findings indicated the recognition of positive behavioral reactions of the children, such as the ease of interaction with the researcher, playing interactively expressing their emotions, assuming and exhibiting leadership, being confident, exhibiting happiness, and exhibiting verbalized behaviors before, during and after the procedure.

The present study also provided the children with: guarantee of the right to play, in the context of healthcare, and the right to receive information about what to do with vaccination in appropriate language; preparation for the procedure, allowing the dramatization of the technique on the ITT; the experience of catharsis; and the establishment of a relationship of trust between researcher, children and families. Such aspects are strongly related to the principles of the National Humanization Policy, which allowed more humanized and qualified healthcare provided to the children.

Social isolation caused by COVID-19 and the small sample number were limiting factors of the present study, not allowing external comparisons. However, the results contributed to the implementation of the ITT technique at the place where the study was conducted, and the recommendation that pediatric nurses should include such intervention in the nursing process occurring in the vaccination rooms.

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Responsible editors:
Patrícia Pinto Braga
Helisamara Mota Guedes

Note: There was no funding from a development agency.

Received in: 19/03/2021

Approved in: 13/07/2022