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The Effect of Parental Presence on The Anxiety Level of Nurses During Intravenous Interventions in Children

İlknur Coşgun[1], Selmin Köse[1]

[1]Department of Nursing, Health Sciences Faculty, Biruni University, Istanbul, Turkey

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Corresponding author:
Selmin Köse.
E-mail: selminkose@yahoo.com.
ORCID: 0000-0003-4958-6228.

Abstract

Aim: The present study employed an analytical, cross-sectional, and pretest-posttest design to assess the impact of parental presence on the anxiety levels of nurses during intravenous interventions in pediatric patients.

Methods: The research was conducted in a public hospital in Istanbul between 01 September and 30 December 2021. The population of the research consisted of nurses working in the pediatric clinic of the hospital (N = 70), and the sample consisted of 50 nurses who met the research criteria and agreed to participate in the research. Data were obtained through an information form and a state-trait anxiety inventory. Participants were first asked to fill out the information form and the trait anxiety inventory. The research was carried out in two phases with the same sample group. In the first phase, nurses were asked to fill out the state anxiety inventory immediately after intravenous interventions were administered to children while their parents were with their children. In the second phase, after a period of 15 days, a state anxiety inventory was applied to the nurses with the same sample group immediately after the intravenous interventions, without the participation of the family. The SPSS 26 package statistical program was used to evaluate the data.

Result and Conclusion: It was determined that the mean trait anxiety scores of the participants were at a medium level and that the mean state anxiety scores of the nurses were statistically significantly higher ($p<0.001$) in the interventions in which the parents were included in the process compared to the interventions in which the parents were not included in the process. Continuous in-service training can be recommended for pediatric nurses to adopt family-centered care.

Keywords: Intravenous procedure; child; nurses; anxiety.

Introduction

The process of admission or hospitalization can elicit stress for both the child and their family, regardless of the child's age, when their health and overall well-being deteriorate. Within the hospital setting, children are subjected to several distressing procedures aimed at diagnosis and treatment, including vaccination, intravenous treatments, urine catheterization, and lumbar puncture. In the hospital setting, nurses commonly provide intravenous treatments as a routine practice [1, 2]. Children in hospitals undergo a variety of medical treatments. It is stated that inpatient children get 6.3 unpleasant treatments on average per day [3]. These practices are important causes of anxiety and stress for children. Improper management of this procedure has the potential to result in pre-procedural anxiety, needle phobia, and subsequent healthcare avoidance behaviors [1]. Separation of a child from their parents during hospitalization also causes psychological distress, which is cause for concern. Several variables contribute to the experience of procedural pain, with one such variable being the influence of parents and their parenting habits. It is well acknowledged that there exists a correlation between

anxiety within the family unit and the anxiety levels shown by children [4].

Family-centered care is a care model in which healthcare professionals and families cooperate and best meet the needs and expectations of parents and children [2]. The implementation of nurse-supported family-centered care practices is crucial in the context of pediatric treatment. These practices aim to address various aspects, including anxiety reduction, effective communication, enhanced self-efficacy and care satisfaction, establishment of mutual trust, facilitation of treatment and care compliance, optimization of the healing process, and equipping parents with problem-solving skills through nurse intervention. It is stated that it has positive effects such as improving caregiving capacity, increasing professional satisfaction, and reducing ethical responsibilities [5, 6].

When children are subjected to invasive procedures, parents are often willing to stay with their children to reassure and comfort them. This is beneficial for both parents and healthcare personnel [1, 7]. Minimizing the physical (pain, insomnia, etc.) and psychological (fear of medical procedures, anxiety) problems of children and parents in the health care environment is among the goals of pediatric nurses. Previous studies have demonstrated the importance of parental presence in reducing the anxiety levels of family members during invasive procedures with pediatric patients, reducing anxiety and pain in children undergoing the procedure, and accelerating the healing process [6, 8–10]. However, for a variety of reasons, most healthcare professionals do not favor parental involvement in interventional procedures. There are several factors that contribute to healthcare professionals' reluctance to involve parents in interventional procedures. These include concerns about potential negative psychological effects on parents, ethical dilemmas, psychological pressure on healthcare workers, parents' reactions to the procedures, interference in the work environment, potential negative impact on patient care, infringement upon the privacy of other patients, and the potential exacerbation of a child's attention-seeking behaviors.

There are other factors, including the detrimental effect on technical expertise and the possibility of family members suing in the event of a malfunction [10, 11]. However, there are no studies that look at the anxiety nurses feel while giving children intravenous medication. It is known that the success rate of intravenous catheter insertion in pediatric patients is lower than in adult patients. The procedure's success might suffer as a result of the nurses' anxiety. The performance of the procedures becomes more challenging for both the medical staff and the kids, and the kids' anxiety increases as the success rate declines. Ensuring good communication with parents and healthcare personnel during invasive interventions and providing them with accurate information will significantly reduce these problems [11].

This research was conducted to evaluate the effect of parental presence on nurses' anxiety levels during intravenous interventions in children.

Research questions: In the research, "What are the trait anxiety levels of nurses?" and “How does the presence of parents during intravenous interventions affect the state anxiety levels of nurses?” and "Is there a relationship between the nurses' age and experience and their state anxiety levels?" were answered.

Material and methods

Study Design

This research was carried out in an analytical, cross-sectional, and pretest-posttest manner to evaluate the effect of parental presence on the anxiety level of nurses during intravenous interventions in children.

Population and sample

Data were collected with nurses working in the pediatric departments of a public hospital in Istanbul between 01 September and 30 December 2021. The population for the research consisted of 70 pediatric nurses. The number of participants to be included in the research was determined using the sampling formula with a known as population. The sample size was calculated as 50 pediatric nurses with the 80% confidence interval, p (probability of the event examined) as = 0.5, and ±5% sampling error. Totally 50 pediatric nurses participated in the research. The universe has been reached by 71.42%.

The inclusion criteria for the study were having at least one year of experience in the pediatric clinic and volunteering to participate in the study.

Instrumentation

Research data were collected using the Information Form and the State-Trait Anxiety Inventory.

1. Information Form: This form, prepared by the researchers, includes questions regarding the socio-demographic characteristics of the nurses and their profession.

2. The State-Trait Anxiety Inventory: Ner and Le Compte (1982) assessed the scale's reliability and validity developed by Spielberger et al. (1970). The State-Trait Inventory is a self-assessment questionnaire and has two separate scale forms consisting of 40 items. It was initially developed to investigate anxiety in adults, and later it was found to be suitable for high school students and people with psychiatric disorders and physical diseases. After ten years of trials, psychologists have concluded that this inventory can be applied to all youth and adults.

Trait Anxiety (A-Trait): Trait anxiety is the individual's tendency to become anxious. These people tend to perceive the situations they experience as constantly stressful and experience feelings of unhappiness and discontent as a result of perceiving a threatening element. Individuals who experience constant anxiety can be easily upset, become pessimistic, and experience state anxiety frequently.

State Anxiety (A-State): It is the fear that individuals feel about the stressful situations they are in, and physical changes such as sweating, turning pale, and trembling occur in the individual. State anxiety inventory level increases when stress increases, and decreases when stress disappears.

In the State-Trait Anxiety Inventory, both scales have four answer options, and the weight values of the options vary between 1-4. The State Anxiety Scale determines the fear individuals feel about stressful situations, and the answer options for each item are marked as (1) not at all, (2) a little, (3) a lot, and (4) completely. The trait anxiety scale determines the individual's tendency towards anxiety, and each answer option is marked as (1) not at all, (2) a little, (3) a lot, or (4) completely. There are two types of expressions in the scales, such as direct and reversed. The State Anxiety Scale has ten reversed statements, and the Trait Anxiety Scale has seven reversed statements. The scales consist of twenty statements, and the total scores obtained from each scale vary between 20 and 80. High scores indicate a high level of anxiety [12].

The State-Trait Anxiety Inventory's Turkish adaptation found that the reliability coefficients for the state anxiety scale and the trait anxiety scale were both between 0.83 and 0.92. In this study, the pre-test was found to be 0.79 for the state anxiety scale, the post-test was 0.89 for the state anxiety scale, and 0.83

for the trait anxiety scale, and both scales together were found to be 0.87.

Collection of data

In the hospital where the research was conducted, intravenous procedures are performed by nurses. The intervention room in the area was used for interventions on the cephalic or basilic vein. During intravenous interventions, the parent is not present with the child in the hospital routine, and the procedure is performed together with another healthcare professional. Nurses and the parents of the children who would undergo the procedures were informed about the study, and their written consents were obtained. The nurses who made up the sample were asked to fill out the introductory information form and the trait anxiety inventory. The research was carried out in two phases with nurses who would apply intravenous catheters to children. In the first phase, the nurses in the sample group were asked to fill out the State Anxiety Inventory within 15 minutes after the intravenous interventions were applied to the children while the parents were with their children. In the group where parents were included, parents were positioned within the child's view and held their children's arms during the procedure. In the second phase, after a period of 15 days, the same sample group had invasive interventions performed without the participation of the family; the child's arm was held by another healthcare professional; and after the procedure, the nurses filled out the State Anxiety Inventory within 15 minutes.

Data analysis

The SPSS 26 package statistical program was used to evaluate the data. Frequency, percentage, mean, and standard deviation findings in the descriptive characteristics of the nurses were presented. The mean, standard deviation, maximum, and minimum values of the State-Trait Anxiety Inventory were stated, and normality distributions were examined with the Kolmogorov-Smirnov test ($p > 0.05$). An independent sample t test was used to compare independent variables with two categories with dependent variables, and a one-way ANOVA was used to compare independent variables with more than two categories with dependent variables. A dependent sample t test was used to compare repeated measurements of the State Anxiety Scale. The relationship between quantitative data was examined with Pearson correlation analysis. The data was tested with a 5% margin of error.

Ethical considerations

Before conducting the research, the necessary approvals were obtained from the Non-Interventional Research Ethics Committee of Biruni University (Date: May 21, 2021/Protocol Number: 2021/51-20) and the hospital where the research was conducted. An informed consent form was presented to the participants before the research, and they were included in the study after they approved the form. Participants were informed that they could withdraw from the research at any time.

Results

It was observed that 68% of the participants were women, 78% had a bachelor's degree, 42% had income less than their expenses, 62% were single, and 26% had children. 54% of the nurses stated that they worked in the pediatric emergency department; 62% of them stated that they worked in the unit willingly; and 82% of them were not satisfied with their financial income. 80% of the participants stated that they did not participate in communication programs in nursing. It was determined that the average working time as a nurse was 6.30±6.94 years, and the average working time in the pediatric ward was 3.96±3.55 years. The average working time as a nurse was 6.30±6.94 years, the average working time in the pediatric ward was 3.96±3.55 years, and the average monthly working time in the ward was 211.64±32.59 hours (Table 1).

Table 1 The distribution of nurses' descriptive features (N:50)

Variables		Mean ±SD	Min-Max
Age (years)		28.94±6.37	22-48
Duration of working in the profession (years)		6.30±6.94	1-30
Working time in children's service (years)		3.96±3.55	1-16
		n	%
Gender	Male	16	32.0
	Female	34	68.0
Education Status	High School	6	12.0
	Bachelor's degree	39	78.0
	Postgraduate (Master of Science and/or doctorate)	5	10.0
Income status	Income less than expenses	21	42.0
	Income equals expenses	19	38.0
	Income more than expenses	10	20.0
Marital Status	Single	31	62.0
	Married	19	38.0
Do you have children?	Yes	13	26.0
	No	37	74.0
Unit/ward/department that is worked	Child emergency	27	54.0
	Pediatric clinic	23	46.0
Voluntary employment in the service	Yes	31	62.0
	No	19	38.0
Satisfaction with the profession's financial income	Yes	9	18.0
	No	41	82.0
Participation in nursing communication programs	Yes	10	20.0
	No	40	80.0

Of the nurses; 58% stated that they experienced stress during intravenous interventions, 36% said that when intravenous interventions failed, they waited for the patient to rest and tried again, 46% were affected by the attitude of the patient's relatives during the intervention, 46% were hesitant to try again when they were intervened during intravenous interventions, and 96% stated that he thought that patients' relatives interfered with his initiatives in his professional life.

When they thought that they were guided by their parents during intravenous interventions, 52% stated that they warned their parents not to interfere with my interventions, 94% stated that they considered it disrespectful for patients' relatives to intervene during intravenous interventions, and 42% stated that they considered changing the department they worked in because of the patient's relatives but gave up such a decision (Table 2).

When the nurses' mean scores on the State-Trait Anxiety Scale are examined, the mean score on the Trait Anxiety Scale is 42.70±7.36. When a parent is with the children during the procedure, the mean State Anxiety Scale score is 52.32±6.66. The mean State Anxiety Scale score when the child was not with a parent was 33.028.18. The suitability of the data for a normal distribution was examined with the Kolmogorov-Smirnov test, and it was found that it conformed to a normal distribution ($p > 0.05$).

Table 2 Distribution of nurses' opinions regarding the procedure (N:50)

Variables		n	%
Stress during intravenous interventions	Yes	29	58.0
	No	21	42.0
Attitude in case of failure of intravenous interventions	I try until I succeed	9	18.0
	I continue until the patient starts to feel uncomfortable.	8	16.0
	I wait for the patient to rest, then I try it.	18	36.0
	I receive assistance from other health professionals	15	30.0
Being affected by the attitude of the patient's relatives during the intervention	Yes	23	46.0
	Partially	21	42.0
	No	6	12.0
If your intravenous intervention is interfered during the procedure, would you be hesitant to try again?	No, I focus on my work	27	54.0
	Yes, I hesitate	23	46.0
Have you ever considered that the relatives of your patients can obstruct your professional efforts?	Yes	48	96.0
	No	2	4.0
How do you react when you think that you are being manipulated by the parents during your intravenous interventions?	I take the parents out of the room	15	30.0
	I warn parents not to interfere with my attempts	26	52.0
	I ignore the parents	5	10.0
	I apply intravenous interventions in cooperation with parents	4	8.0
Would you consider it disrespectful if patients' relatives interfere during your intravenous interventions?	Yes, totally disrespectful	47	94.0
	No, I don't see it as disrespect	3	6.0
Have you ever thought about changing the department you work in because of patient relatives?	Yes, I changed my department	8	16.0
	I thought about it but gave up on such a decision.	21	42.0
	I'm thinking of changing it now	14	28.0
	No, I never had that thought	7	14.0

Table 3 Distribution of nurses' State-Trait Anxiety Scale mean scores (N:50)

Parameter	Number of Items	Mean ±SD	Min	Max	p**
Trait Anxiety Scale	20	42.70±7.36	29 (20)*	59 (80)*	0.200
State Anxiety Scale (With parent presence)	20	52.32±6.66	33 (20)*	71 (80)*	0.200
State Anxiety Scale (When parent is not present)	20	33.02±8.18	20 (20)*	55 (80)*	0.200

SD: Standard Deviation;
Min: Minimum;
Maks: Maksimum
* The smallest and largest values that can be taken from the scale,
** Kolmogorov-Smirnov normality test (p>0,05)

Table 4 Comparison of State Anxiety Scale mean scores in the presence and absence of a parent during the procedure

Parameter	Mean ±SD	t	P
State Anxiety Scale (With parent presence)	52.32±6.65	13.232	0.000
State Anxiety Scale (When parent is not present)	33.02±8.17		

SD: Standard Deviation;
t: Dependent Sample t Test

When the mean scores of the State Anxiety Scale measured in the presence and absence of a parent with the children during the procedure were compared, it was seen that there was a significant difference. Accordingly, the nurses' state anxiety scale mean score was significantly lower when a parent was not with the children during the procedure (p<0.001).

Table 5 The relationship between age, working hours, working years in the pediatric ward, monthly working hours and the State-Trait Anxiety Scale

Parameter		Trait Anxiety Scale	State Anxiety Scale (With parent presence)	State Anxiety Scale (When parent is not present)
Age	r	-0,112	-0,009	-0,055
	p	0,440	0,952	0,705
Working time in the profession (years)	r	-0,080	0,029	-0,072
	p	0,579	0,840	0,621
Working time in the child clinic (years)	r	-0,079	-0,075	-0,046
	p	0,588	0,607	0,753
Monthly working time (hours)	r	0,001	0,101	0,054
	p	0,995	0,485	0,711

r: Analysis of Pearson Correlation

When the relationship between age, working time, working time in the pediatric ward, monthly working time, and the State-Trait Anxiety Scale was examined, it was seen that there was no significant relationship (p>0.05).

Discussion

Parents are the most significant source of support for children during hospitalizations and painful procedures. The absence of trusted individuals in the hospital environment can reduce a child's tolerance to pain during procedures. Anxiety and fear are the most critical emotional reactions accompanying pain. Studies have shown a direct relationship between anxiety and pain, with each intensifying the severity of the other [6,13]. In the study, when examining nurses' mean scores according to the State-Trait Anxiety Inventory, the mean score of the Trait Anxiety Scale was found to be 42.70±7.36 (Table 3). Similar to study, conducted by Ocaktan et al., (2002) found the average trait anxiety score among healthcare workers to be 44.8±5.9 [14]. Results can be explained by both the stressful nature of the nursing profession and the fact that the research was conducted during the pandemic period.

In all nursing interventions, there is an interaction between

the nurse and the patient, and in invasive procedures, factors can positively or negatively affect the relationship between the nurse, the patient, and their families. Especially during invasive procedures involving painful applications, both the patients and nurses can be affected. Managing interactions during painful and discomforting procedures that may result in failure or frequent repetitions can be challenging. In such cases, patients' or their families' reactions can be a stressor for nurses, affecting them as well [15]. In present study, the mean score of the State Anxiety Scale during procedures when parents were present was 52.32±6.66, and it was 33.02±8.18 when parents were not present. When comparing the mean scores of the State Anxiety Scale during procedures with and without the presence of parents, it was significantly lower when parents were not present ($p<0.001$) (Table 4). However, studies investigating family involvement in healthcare settings have concluded that parents should be present with their children as painful procedures increase [16,17].

There are studies showing that parents' presence during invasive procedures reduces the anxiety levels of both parents and children, speeds up the recovery process, and reduces pain [6,13,18-21]. Pani et al. (2016) reported that the presence of parents during the first dental examination of children aged 6-8 reduced anxiety levels, and Sağlik & Çağlar (2019) indicated that involving parents during invasive procedures in emergency departments reduced children's anxiety levels [6,21]. Studies in the literature support that families' presence during intravenous procedures is also supported by nurses working in pediatric clinics [5,10,22]. Davidson et al. (2017) found that family-centered care minimized anxiety for patients and parents and positively affected the recovery process [8]. In the study conducted by Khajeh et al. (2017) noted that healthcare workers did not include the family in the patient's treatment and care process, adversely affecting both the family and the child [23].

In addition to studies showing that parents' presence reduces children's anxiety levels, there are also studies indicating no difference in anxiety levels between children with and without parents present [24-27]. In a study conducted by Tantikul and Theeranate in 2014 with 72 families with children under the age of 4, parents who were with the child during IV interventions, parents who wanted to be with the child but were not allowed to be with the child and parents who did not want to be with the child were studied in 3 groups. As a result of the study, it was observed that there was no significant difference between the groups in terms of anxiety and pain levels [27]. In another study, the pain level was examined in two groups: those who were with their parents and those who were with healthcare personnel during intravenous access and it was concluded that the presence of parents had the least effect on the pain level [26].

In addition to these studies, in a study conducted by Boztepe (2012), 62.8% of nurses stated that parents should not be present with their children during painful procedures. As for the reasons for this; nurses stated that the disadvantages of parents being with their children were that 77.1% of them increased the stress of the child, 60% of them increased the stress of healthcare professionals, 60% of them made the procedure difficult, and 48.5% of them prolonged the duration of the procedure [28]. Similarly, in a study conducted by Karadaş and Şenturan in 2021, 62.9% of nurses reported that 62.9% experienced stress when patients and their relatives were with them during invasive interventions; 51.3% were afraid of making mistakes during the interventions, and 25.4% were afraid to re-enter the patient's room when the intervention was performed [15]. However, it should not be forgotten that family-centered care practices are recommended.

During one of the painful procedures, inserting an intravenous catheter, nurses also experience anxiety alongside the anxiety experienced by children and their families. More than half of the nurses (58%) experienced stress during intravenous interventions; nearly half (46%) were affected by the attitudes of the patient's relatives, (46%) were hesitant to try again when intervened, almost all (96%) thought their interventions were interfered with by the patient's relatives, and (94%) considered it disrespectful (Table 2). A study indicated that while nurses supported parents' active participation in care, they believed that the parents' constant presence during the hospital process could cause some problems [17]. According to Krinstensson-Hallström (2000), it was determined that pediatric nurses supported family-centered care but did not always include parents in the practice [29]. In another study stated that nurses advocated the necessity of family-centered care but faced various challenges in care and treatment due to systemic and physical conditions [18, 30]. Kuo et al. (2012) found that these challenges as staff and time shortages, communication difficulties, role confusion, fear of role loss, high workload, and difficulty in ensuring collaboration between nurses and parents [31]. However, there are studies emphasizing the importance of family-centered care. In the study conducted by Yildiz and Temuçin, cooperation with the family in treatment and care, convenience in the implementation of care, more efficient and effective use of time and resources were stated as the benefits of family-centered care for nurses [32]. In another study, nurses identified the advantages of parents being with their children during invasive procedures as increased child compliance with the procedure (90.0%) and calming the child (65%) [28].

There are many studies showing that family-centered care reduces anxiety levels for both the child and the family during invasive procedures. Providing information about the procedure to parents and children and explaining it in a language they understand will reduce such interventions. Developing individualized approaches to reduce the concerns and strengthen coping strategies of children and their parents is crucial. Healthcare workers should use strategies to understand each child and family's issues, ask questions to get to know them, listen, and explain. These strategies are vital for strengthening the communication between the child, family, and nurse [33]. A review of the literature shows that education and communication support provided to children and families about the procedure and including the family in the child's care reduces parental stress and anxiety levels [34-36]. In another study Jaberi et al. (2020) found that anxiety levels decreased and satisfaction levels increased among parents who participated in educational sessions in the clinic [37].

To adopt family-centered care, it should be emphasized to nurses starting from their education process, and they should be encouraged to implement it in clinical settings. Factors that increase nurses' state anxiety scores should also be identified. Additionally, informing parents about their behavior and attitudes while being present with their children is essential for raising awareness and understanding among children and parents.

Limitations

This study was limited in that the pediatric nurses who participated worked in the pediatric units of hospitals in Istanbul. Therefore, the findings of this study may have limited application to other pediatric nurses working in other hospitals, regions, or countries. Conducting the research during the pandemic period may have affected the trait and state anxiety score averages. Changes in the children and families in the patient group of this study may have affected the results.

Recommendations

The presence of parents with their children during intravenous catheterization increases the anxiety of nurses. This anxiety may affect the success of the procedure. Therefore, the necessary service education programs should be organized for nurses to identify the causes of anxiety and to adopt family-centered care in reducing this anxiety. Conducting studies with larger sample groups where the children in the intervention and control groups have similar characteristics during intravenous catheterization will help to ensure the generalizability of the findings.

Conclusion

This study determined that nurses experience anxiety during invasive procedures, feel that patient relatives interfere with them during these procedures, are affected by this behavior, prefer to warn the patient relatives after the intervention, perceive this behavior as disrespectful, and are hesitant to attempt again when interfered with during invasive procedures. It was also found that nurses have high levels of trait anxiety, and their state anxiety levels are higher when a parent is present during an invasive procedure compared to when a parent is not present. Although nurses experience more stress when parents are present during invasive procedures, pediatric nurses should support family-centered care by ensuring that parents are present with their children during intravenous catheter insertion, as this reduces the anxiety levels of both children and parents. Identifying and reducing nurses' anxiety levels will contribute to their professional development by enabling them to exhibit positive attitudes towards the child, themselves, and the family. Continuous in-service training is recommended to help pediatric nurses adopt family-centered care.

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