Original Paper

Separation Anxiety and Its Related Factors Among Preschool Children in Northern Iran From the Parents' Point of View

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ABSTRACT

Introduction: Separation anxiety is a normal development phase in children aged 1-3 years, indicating a healthy maturation of cognition. However, its persistence disrupts the child's daily life and can lead to anxiety disorder.

Objective: This study aims to determine the level of separation anxiety and its related factors among preschool children in northern Iran from the parent's point of view.

Materials and Methods: In this cross-sectional study, 567 mothers who had enrolled their children aged 3-6 years in selected preschools in Rasht, Iran, were selected using a multi-stage cluster sampling method. A demographic form and the separation anxiety assessment scale-parent version (SAAS-P) were used to collect data. Mann-Whitney U test, Kruskal-Wallis test, Friedman's test, and multiple regression analysis were used to analyze the data. $P<0.05$ was considered statistically significant.

Results: Most of the mothers were older than 30 years (72.84%) and housewives (76.13%) with a bachelor's degree (66.01%). Based on findings of multiple linear regression analysis, Parent's quarrels at home (β=5.203, 95% CI; 3.653%, 6.753%, P=0.001), child's history of hospitalization (β=4.174, 95% CI; 1.528%, 6.820%, P=0.002), playing computer games (β=3.282, 95% CI; 0.647%, 5.918%, P=0.015), premature birth (β=3.797, 95% CI; 0.214%, 7.379%, P=0.038) and mother's continuing education (β=2.183, 95% CI; 0.123%, 4.243%, P=0.038) were the most important factors effective in increasing separation anxiety (R^2=0.03).

Conclusion: Separation anxiety in Iranian preschool children can be affected by some socio-demographic characteristics of children and their parents and the children's living environment.

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Highlights

● Separation anxiety disorder (SAD) is one of the most common childhood anxiety disorders.

● Parent's quarrels at home, the child's history of hospitalization, playing computer games, premature birth, and the mother's continuing education are the predictors of an increase in separation anxiety of preschool children in Iran.

● Mother's age, child's attendance in certain sports classes, hours of sleep, and child's interest in exciting news are the predictors of a decrease in separation anxiety among preschool children in Iran.

Plain Language Summary

SAD is an exaggeration of normal anxiety manifested by excessive concerns and worry about separation from a loved one or home. It is a predictor of psychiatric disorders in adolescence; if it is left untreated, it can cause the disorder to continue into adulthood. This study aims to determine the level of separation anxiety and its related factors among preschool children in northern Iran from the parent's point of view. Based on the results, parent's quarrels at home, the child's history of hospitalization, playing computer games, premature birth, and the mother's continuing education are the predictors of an increase in separation anxiety in these children.

Introduction

Separation anxiety disorder (SAD) is one of the most common anxiety disorders in childhood. It refers to the exaggeration of developmentally normal anxiety when the child is unexpectedly separated from home or an attachment figure and enters a new neighborhood or school, death, or illness of close relatives [1, 2]. It is a normal phase of development in children aged 1-3 years [3]. Children normally experience some degree of fear, anxiety, or worry about seeing strangers, being alone, and facing new situations, from about six months to a few years before school [4]. Most of the identified cases of SAD have been in one-and-a-half-year-old children. Gradual improvement is expected at the age of 4-5 years [3, 5]. In Iran, the prevalence of SAD in children is 5.3% [6]. The presence of progressive SAD at older ages in children may indicate a risk of developing anxiety disorders. Persistence of SAD disrupts the child's daily life and can lead to anxiety disorders [3]. It is also a predictor of psychiatric disorders in adolescence; if it is left untreated, it can cause the disorder to continue into adulthood [7]. Anxiety disorders are very important because of their high prevalence [8] and negative functional consequences [4]. According to studies, the prevalence of SAD in Iranian children and adolescents ranges from 0.7-15.7% [9].

Environmental factors [4], family/culture, maternal depression, maternal smoking during pregnancy, parental unemployment [5, 8], parental divorce [10], parenting styles, parental self-efficacy [11], parents' educational level, parents' age, place of residence, mother's job [12], socioeconomic conditions, genetics [4], having a single parent, number of siblings [13], prenatal risk factors [3], severe family environmental stressors [14], socio-emotional behaviors of children, child age, and child gender [8]. have been mentioned as factors affecting childhood SAD. To manage this problem, structured, comprehensive training programs and interventions are needed [5]. In this regard, and due to the statistical heterogeneity in different regions of Iran [9], this study aims to determine the level of SAD and its related factors in preschool children in northern Iran.

Material and Methods

This cross-sectional study was conducted in 2019 in Rasht, north of Iran. The study population includes all parents who enrolled their children in preschools affiliated to the welfare organization of Rasht. Inclusion criteria were: Having a child aged 3-6 years, literacy, being physically and mentally healthy, and enrolling a child in the selected preschool for more than a month. The exclusion criterion was the unwillingness to attend the study. Based on these criteria, 567 eligible parents of children aged 3-6 years participated in the study. The sample size was determined according to the mean SAD score (71.87±9.9) reported by Talaienejad et al. [15] at a 95% confidence interval. The sampling was done using a one-stage cluster sampling method. For sampling, a list of all government and non-government preschools under the supervision of the welfare organization of Rasht

city was first prepared. After giving them a number, and determining the average number of children in each preschool, a number was randomly selected from the list and the samples were randomly recruited from that preschool. Before collecting data, after coordination with the principal of the selected preschools, the study objectives were explained to the parents.

To collect data, a demographic form and the separation anxiety assessment scale-parent version (SAAS-P) were used. The demographic form surveys child characteristics (gender, age, weight, birth rank, age of attendance in preschool, duration of enrollment in preschool, birth status [mature or premature], type of delivery, history of hospitalization, amount of sleep per night/day, place of sleep, and medical history), parental characteristics (mother's age, mother's education, mother's occupation, history of postpartum depression, mother's history of smoking during pregnancy and present, mother's history of alcohol and drug use, corporal/verbal punishment of the child, father's age, father's education, monthly family income, father's history of smoking, father's history of alcohol and drug use, marital status of parents, and parents' quarrel at home) and characteristics of the child's living environment (number of siblings, place of residence, number of family members, type of family (nuclear or extended), history of the recent death of first-degree relatives, parents' continuing education, use of computer games during the day, hours of playing computer games per day, the child's interest in exciting news, the child's interest in watching horror movies, and the child's attendance in certain sports classes. The questionnaires were completed based on a self-report method. The SAAS-P has 34 items rated on a four-point Likert scale from 1 (never) to 4 (always). It has four symptom dimensions: Fear of being alone, fear of abandonment, fear of physical illness, and worry about calamitous events. It also has two dimensions of "frequency of calamitous events" and the "safety signals index". The overall score of this scale is in the range of 34-136. This tool was designed by Hahn et al. [14], and the psychometric properties of its Persian version were assessed by Talaienejad et al. [15]. In this study, the reliability using Cronbach's α was estimated to be 0.71 for the overall scale.

In the present study, continuous variables were expressed as Mean±SD and categorical variables as frequency (percentage). The Spearman correlation test, Mann-Whitney U test, Kruskal-Wallis test, and Friedman's test were used to analyze data. The multiple linear regression analysis was used to determine the predictors of SAD. Statistical analysis was performed in SPSS software, version 21 (SPSS Inc., Chicago, IL, USA). $P < 0.05$ was considered statistically significant.

Results

Most of the children were girls (58.2%) aged <5 years (59.36%). Other information about the characteristics of children is shown in Table 1. Most of the mothers were older than 30 years (72.84%) and housewives (76.13%) with a bachelor's degree (66.01%). Most of the fathers were 30-40 years old (66.67%) and workers (51.49%) with no history of smoking (82.36%) and alcohol use (85.89%). Other information about the characteristics of parents is shown in Table 2. Regarding the living place, most of the participants were from urban areas (96.30%). Most of them had nuclear families (92.95%) with four members (53.62%). Most of the children did not report the experience of the death of a first-degree relative (97.71%). Other information about the characteristics of the living place is shown in Table 3.

Figure 1 shows the scores of separation anxiety for each dimension. The results of Friedman's test showed a statistically significant difference in the scores of separation anxiety based on the characteristics of children, parents, and living place (P=0.001). The results in Table 4 showed that the separation anxiety score was significantly different based on the child age (P=0.001), age at preschool attendance (P=0.006), birth status (P=0.001), type of delivery (P=0.037), amount of sleep (P=0.001), place of sleep (P=0.001), mother's age (P=0.001), mother's education (P=0.001), mother's history of depression (P=0.003), father's age (P=0.007), father's education (P=0.001), father's history of smoking (P=0.004), father's history of alcohol consumption (P=0.002), parents' quarrel at home (P=0.001), continuing education of parents (P=0.002), playing computer games (P=0.009), duration of playing computer games per day (P=0.001), the child's interest in exciting news (P=0.001) and the child's attendance in certain sports classes (P=0.001).

In the study of the factors related to the separation anxiety in children, the findings of multiple linear regression analysis (Table 5) showed that the following factors were the predictors of increasing separation anxiety in children: Parents' quarrel at home (β=5.203, 95% CI; 3.653%, 6.753%, P=0.001), history of hospitalization (β=4.174, 95% CI; 1.528%, 6.820%, P=0.002), playing computer games (β=3.282, 95% CI; 0.647%, 5.918%, P=0.015), premature birth (β=3.797, 95% CI; 0.214%, 7.379%, P=0.038) and mother's continuing education (β=2.183, 95% CI; 0.123%, 4.243%, P=0.038). On the other hand, the predictors of decreasing separation anxiety in children were: Mother's age (β=-0.694, 95% CI; -0.935 %, -0.454%, P=0.001), child's attendance in certain sports classes (β=-10.110, 95% CI; -14.088%, -6.131%, P=0.001), hours of sleep (β=-3.849, 95% CI; -6.198%, -1.501%, P=0.001), and child's interest in exciting news (β=-8.018, 95% CI; -12.604%, -3.433%, P=0.001).

Falahzade F, et al. Separation Anxiety and Related Factors in Iranian Preschool Children. J Holist Nurs Midwifery. 2024; 34(4):345-356.

347

Table 1. Demographic characteristics of the children

Variables		No. (%)
Sex	Female	330(58.2)
	Male	237(41.8)
Age (y)	<5	336(59.26)
	5-6	231(40.74)
	Mean±SD	4.46±0.88
Weight (kg)	<15	73(12.87)
	15-20	302(53.26)
	≥20	192(33.86)
	Mean±SD	18.31±3.25
Birth rank	1st	248(43.74)
	2nd	310(54.67)
	3rd	9(1.59)
Age of attendance at preschool (y)	<5	340(59.96)
	≥5	227(40.04)
	Mean±SD	4.44 ±0.87
Duration of attending preschool (week)	<2	393(69.31)
	2-4	174(30.69)
Birth status	Premature	71(1.52)
	Mature	496(87.48)
Type of delivery	Normal vaginal delivery	194(34.22)
	Cesarean section	373(65.78)
Hospitalization history	Yes	132(23.28)
	No	435(76.72)
Sleep amount (h)	<8	102(17.99)
	8-10	420(74.07)
	≥10	45(7.94)
Sleeping place	Parents' bedroom	302(53.26)
	Sibling's bedroom	181(31.92)
	Own bedroom	84(14.81)
History of disease	Yes	88(15.52)
	No	479(84.48)
Type of disease	Lung and breathing problems	4(4.55)
	Asthma and allergies	52(59.09)
	Favism	1(1.14)
	Convulsions	6(6.82)
	Enuresis	21(23.86)
	Anxiety	1(1.14)
	Heart disease	1(1.14)
	Diabetes	1(1.14)
	Epilepsy	1(1.14)

Falahzade F, et al. Separation Anxiety and Related Factors in Iranian Preschool Children. J Holist Nurs Midwifery. 2024; 34(4):345-356.

Table 2. Demographic characteristics of the parents (n=567)

Variables		No. (%)
Mother's age (y)	<30	154(27.6)
	≥30	413(72.84)
	Mean±SD	32.07±4.64
Mother's education*	High school diploma	150(26.98)
	Bachelor's degree	367(66.01)
	Higher than a bachelor's degree	39(7.01)
Mother's occupation**	Employee	116(20.98)
	Housewife	421(76.13)
	Labourer	16(2.89)
Mother's history of depression	Yes	65(11.46)
	No	502(88.54)
Mother's history of smoking	Yes	5(0.88)
	No	562(99.12)
Mother's current smoking	Yes	8(1.41)
	No	559(98.59)
Mother's history of alcohol consumption	Yes	12(2.12)
	No	555(97.88)
Mother's drug use	Yes	0(0)
	No	567(100)
Punishment of the child by the parents	Yes	228(40.2)
	No	339(59.8)
Father's age (y)	<30	28(4.94)
	30-40	378(66.67)
	≥40	161(28.40)
	Mean±SD	36.75±0.69
Father's education***	High school diploma	156(28.36)
	Bachelor's degree	367(66.73)
	Higher than a bachelor's degree	27(4.91)
Father's occupation****	Unemployed	1(19)
	Labourer	276(51.49)
	Employee	259(48.32)

Falahzade F, et al. Separation Anxiety and Related Factors in Iranian Preschool Children. J Holist Nurs Midwifery. 2024; 34(4):345-356.

349

Variables		No. (%)
Father's history of smoking	Yes	100(17.64)
	No	467(82.36)
Father's history of drug use	Yes	8(1.41)
	No	559(98.59)
Father's history of alcohol consumption	Yes	80(14.11)
	No	487(85.89)
Marital status of parents	Separated	11(1.94)
	Living together	556(98.06)
Parents' quarrel at home	Rarely	160(28.22)
	Sometimes	269(47.44)
	Often	130(22.93)
	Always	8(1.41)
Number of siblings	No siblings	232(40.92)
	One	304(53.62)
	Two	30(5.29)
	Three	1(18)

*11 missing data, **14 missing data, ***17 missing data, ****31 missing data.

Discussion

The findings indicated that the separation anxiety score of children in the dimension of fear of being left alone was higher than in other dimensions, which is consistent with Cooper-Vince et al.'s study [16]. Conversely, a study reported that the highest separation anxiety score was related to the fear of physical illness [17]. The reason for this discrepancy can be the difference in the age group of the children. In our study, the children who were born prematurely and those born by cesarean section had higher separation anxiety scores. Moreover, the children who slept in own rooms for more than ten hours per night had lower separation anxiety. Consistent with these findings, a study reported that most children typically experience separation anxiety at the age of 1.5-6 years, and its rate is expected to decrease with aging. Other studies have also shown the effect of prenatal factors and risk factors during pregnancy on the incidence of separation anxiety in children [3]. Sleeping with parents has been reported as a risk factor for separation anxiety in children [18], which is consistent with the present study.

The separation anxiety score in children with older parents, having a mother with no history of depression, having a father with no history of smoking and alcohol consumption, having parents with a diploma, and having parents with no quarrels at home was lower compared to other children. In this regard, a study reported that the highest prevalence of anxiety disorders in Iranian children was in those whose mothers had a bachelor's degree [12], while a study showed no statistically significant relationship between mothers' education and child anxiety [8]. The reason for this discrepancy seems to be cultural differences. The existence of appropriate support systems for children, especially in the pre-school age, significantly reduces the risk of significant clinical problems in children [19].

Moreover, the separation anxiety score in children whose mothers had continuing education and in those playing computer games for more than one hour per day was higher than in other children. On the other hand, separation anxiety in children interested in exciting news and those attended special sports classes was lower. It seems that mother's education and the role conflict in her life cause or exacerbate maternal anxiety, which has been reported

Falahzade F, et al. Separation Anxiety and Related Factors in Iranian Preschool Children. J Holist Nurs Midwifery. 2024; 34(4):345-356.

Table 3. Characteristics of the child's living place

Variables		No. (%)/Mean±SD
Place of residence	Urban areas	546(96.3)
	Rural areas	21(3.70)
Number of family members	3	232(40.92)
	4	304(53.62)
	5	30(5.29)
	6	1(18)
Living with grandparents	Yes	40(7.05)
	No	527(92.95)
Death of first-degree relatives	Yes	30(5.29)
	No	537(97.71)
Continuing education of parents	Yes	73(12.87)
	No	494(87.13)
Parents with continuing education	Father	26(35.62)
	Mother	41(56.16)
	Both	6(8.22)
Playing computer games	Yes	415(73.19)
	No	152(26.81)
Duration of playing computer games per day (h)	≤1	205(49.4)
	>1	210(50.6)
		1.45±0.61
Child's interest in watching horror movies	Yes	24(4.23)
	No	543(95.77)
Child's interest in exciting news	Yes	37(6.53)
	No	530(93.47)
Child's attendance in certain sports classes	Yes	51(8.99)
	No	516(91.01)
Type of attending sports	Gymnastics	30(58.82)
	Football	6(11.76)
	Dance	4(7.84)
	Swimming	2(3.92)
	Ballet dance	5(9.8)
	Taekwondo	2(3.92)
	Children's sports	2(3.92)

Falahzade F, et al. Separation Anxiety and Related Factors in Iranian Preschool Children. J Holist Nurs Midwifery. 2024; 34(4):345-356.

351

Table 4. The SAD scores based on the characteristics of children, parents, and living place

Variables		Mean±SD	P*
Child's age	<5	73.247±15.08	0.001*
	5-6	68.72±15.49	
Age of attendance at preschool (y)	<5	72.93±15.26	0.006*
	≥5	69.10±15.35	
Birth status	Premature	78.76±13.73	0.001*
	Mature	70.34±15.35	
Type of delivery	Normal vaginal delivery	73.73±12.07	0.037*
	Cesarean section	70.19±16.76	
Child's amount of sleep	<8 hours	78.69±13.03	0.001**
	8-10 hours	70.20±15.29	
	>10 hours	66.02±16.34	
Child's sleeping place	Parents' bedroom	72.49±14.39	0.001**
	Sibling's bedroom	73.46±14.02	
	Own bedroom	63.02±18.84	
Mother's age	<30 years	76.61±13.24	0.001*
	≥30 years	69.46±15.71	
Mother's education	High school diploma	68.39±17.26	0.003**
	Bachelor's degree	73.35±14.23	
	Higher than a bachelor's degree	67.62±15.79	
Mother's history of depression	Yes	76.57±16.16	0.003*
	No	70.73±15.19	
Father's age (y)	<30	78.18±12.63	0.007**
	30-40	71.87±15.52	
	≥40	69.11±15.19	
Father's education	High school diploma	67.73±17.15	0.001**
	Bachelor's degree	73.90±13.53	
Father's history of smoking	Yes	74.99±16.68	0.004*
	No	70.63±15.02	
Father's history of alcohol use	Yes	75.63±16.58	0.002*
	No	70.70±15.10	

Falahzade F, et al. Separation Anxiety and Related Factors in Iranian Preschool Children. J Holist Nurs Midwifery. 2024; 34(4):345-356.

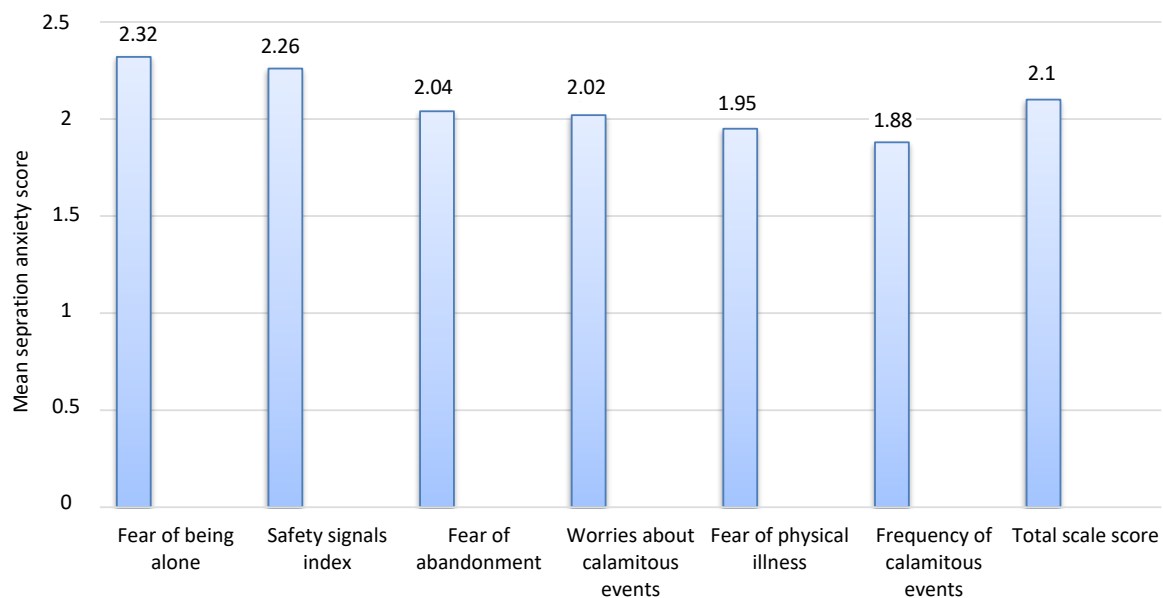| Variables		Mean±SD	P*
Parents' quarrel at home	Rarely	63.22±15.92	0.001**
	Sometimes	72.63±14.30	
	Often	78.54±12.42	
	Always	77.63±12.83	
Parents with continuing education	Father	67.81±15.33	0.002**
	Mother	78.66±13.64	
	Both	69.33±8.21	
Playing computer games	Yes	72.45±14.34	0.009*
	No	68.53±17.72	
Duration of playing computer games per day	≤1	69.32±14.59	0.001*
	>1	75.51±13.42	
Child's interest in exciting news	Yes	60.62±14.35	0.001*
	No	72.15±15.20	
Child's attendance in certain sports classes	Yes	58.45±13.72	0.001*
	No	72.68±14.79	

*Mann-Whitney U test, **Kruskal-Wallis test.

Figure 1. Mean scores of the separation anxiety in total and for each dimension (n=567)

Falahzade F, et al. Separation Anxiety and Related Factors in Iranian Preschool Children. J Holist Nurs Midwifery. 2024; 34(4):345-356.

353

Table 5. Factors related to separation anxiety from parents' perspective

Variables	Regression Coefficient	Standard Error	P*	95% CI	
				Lower Bound	Upper Bound
(Constant)	84.419	5.365	0.001	73.880	94.958
Parents' quarrel at home	5.203	0.789	0.001	3.653	6.753
Mother's age	-0.694	0.122	0.001	-0.935	-0.454
Child's attendance in certain sports classes	-10.110	2.025	0.001	-14.088	-6.131
Child's amount of sleep	-3.849	1.196	0.001	-6.198	-1.501
Child's interest in exciting news	-8.018	2.334	0.001	-12.604	-3.433
History of hospitalization	4.174	1.347	0.002	1.528	6.820
Playing computer games	3.282	1.342	0.015	0.647	5.918
Birth status	3.797	1.824	0.038	0.214	7.379
Mother's continuing education	2.183	1.049	0.038	0.123	4.243

*Multiple Linear Regression model; R^2=0.03; P=0.001; F=25.21.

in other studies [3, 20]. Sports and physical activity can be effective factors in protecting children from anxiety [21, 22]. The use of computer games significantly increased the separation anxiety of children, which is consistent with the findings of other studies [23, 24].

Studies have shown that when there are conflicts between parents, their children are very anxious about the future and are worried about being left alone by one of them [3]. Another factor influencing the increase in separation anxiety in children was the history of hospitalization, This is an unpleasant and anxious experience not only for the child but also for the family [25]. In children, due to cognitive and emotional limitations as well as dependence on parents, the ability to adapt to an environment is low, which makes the children more vulnerable and anxious [26, 27].

According to the findings of this study, premature birth was associated with an increase in separation anxiety in children. The level of anxiety in mothers with premature infants is higher than in mothers with mature infants [28]. Based on the findings of this study, as the mother becomes older, the separation anxiety of her child decreases. With the increase in parents's age, their parenting skills improve, which in turn reduces the perceived stress in parents and, as a result, reduces the behaviors that can cause anxiety in children. This is consistent with Gharibi et al.'s findings [29]. Another factor in reducing children's separation anxiety was their interest in exciting news. It seems that, with increasing interest in ex-

citing news and stories and the ability to imagine the story and its heroes, the children's ability to express their feelings increases which can reduce their anxiety.

One of the limitations of the present study was the selection of 3-6 year old children and not considering children with younger ages. Therefore, caution should be exercised in generalizing these findings to all age groups of children. It is recommended that a more extensive study be conducted on children below this age range. Another limitation was the existence of missing data for some characteristics of parents.

The separation anxiety of children can be influenced by some socio-demographic characteristics of children, parents, and living environment. By considering these influential factors and providing counseling and emotional support to parents and children, and teaching effective interventions to parents to apply them on their children, an effective step can be taken to promote family-centered care and children's health.

Ethical Considerations

Compliance with ethical guidelines

Ethical approval for this study was obtained from Guilan University of Medical Sciences (Code: IR.GUMS. REC.1398.236). Written informed consent was obtained from all participants after explaining the study objectives to them.

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355

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356

Falahzade F, et al. Separation Anxiety and Related Factors in Iranian Preschool Children. J Holist Nurs Midwifery. 2024; 34(4):345-356.