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Assessment of anxiety and depression levels in parents of children presenting to the orthopedics outpatient clinic with the complaint of in-toeing

İçe basma yakınması ile ortopedi polikliniğine başvuran çocukların ailelerinin anksiyete ve depresyon düzeyinin değerlendirilmesi

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Abstract

Aim: In-toeing, a variant of normal growth and development of children, is an important reason of referral to the orthopedics outpatient clinics. The aim of the present study is to determine the anxiety, depression, and trait anxiety levels in parents of children presenting to orthopedics and traumatology outpatient clinic with the complaint of in-toeing. In addition, the study aims to investigate the conditions that might be associated with the anxiety level of parents.

Methods: This cross-sectional study included parents of 58 children who presented with the complaint of in-toeing (study group) and those of 40 healthy children (control group). The parents were required to fill in the sociodemographic data collection form, State-Trait Anxiety Inventory (STAI-II), Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI). The scale scores were compared statistically.

Results: The Beck Anxiety Inventory and STAI-II scores of parents of children presenting with in-toeing were statistically significantly higher compared to the control group (P=0.002, P=0.046, respectively). Spearman's correlation analysis revealed a strong correlation between BDI and BAI, STAI-II and BDI, BAI and STAI-II in the study group (r=0.518, P=0.001; r=0.546, P=0.001; r=0.566, P=0.001; respectively). In the control group, there was a weak correlation between BDI and BAI (r=0.346, P=0.029). An analysis of anxiety levels of the mothers in the study group revealed significantly higher scores of BAI and STAI-II compared to the fathers (P=0.025, P=0.001, respectively). The BAI, BDI and STAI-II scores of parents taking the child to the physician more than once a month, the BDI scores of parents having a history of psychiatric treatment and the BAI scores of parents aged between 20-40 were significantly higher in the study group (P=0.001, P=0.001, P=0.001, P=0.001, P=0.033, respectively).

Conclusion: The present study determined that anxiety levels were high in parents, especially mothers, who take their children to the physician frequently despite the absence of physical impairment. In addition, anxiety levels of parents were associated with taking the child to the physician more than once a month, having a history of psychiatric treatment and being aged between 20-40 years.

Keywords: In-toeing, Anxiety, Parents, Depression

Öz

Amaç: Normal büyüme ve gelişmenin varyantlarından olan içe basma, ortopedi polikliniklerine önemli bir başvuru nedenidir. Çalışmamızın amacı içe basma yakınması ile ortopedi ve travmatoloji polikliniğine getirilen çocukların ebeveynlerindeki anksiyete, depresyon ve durumsal kaygı düzeyini belirlemektir. Ayrıca ebeveynlerin kaygı düzeyi ile ilişkili olabilecek durumların gözden geçirilmesi amaçlanmıştır.

Yöntemler: Bu kesitsel çalışmaya içe basma yakınması ile anne ve babası ile birlikte başvuran 58 çocuğun (çalışma grubu olarak) ve sağlık problemi olmayan 40 çocuğun (kontrol grubu olarak) ebeveyni dahil edilmiştir. Ailelerden sosyo-demografik veri formu, Süreklilik Kaygı Ölçeği (STAI II), Beck Depresyon Ölçeği (BDÖ) ve Beck Anksiyete Ölçeği (BAÖ) formlarını doldurmaları istendi. Ölçek puanları istatistiksel olarak karşılaştırıldı.

Bulgular: Beck Anksiyete Ölçeği ve STAI II ölçek puanları içe basma yakınması ile başvuran çocukların ebeveynlerinde kontrol grubuna göre istatistiksel olarak anlamlı derecede yüksek olarak saptandı (P=0,002, P=0,046, sırasıyla). Spearman korelasyon analizine göre içe basma yakınması olan grupta BDÖ ile BAÖ, STAI II ile BDÖ, BAÖ ile STAI II arasında güçlü korelasyon olduğu bulundu (r=0,518, P=0,001; r=0,546, P=0,001; r=0,566, P=0,001; sırasıyla). Kontrol grubunda ise BDÖ ve BAÖ arasında zayıf korelasyon saptandı (r=0,346, P=0,029). Annelerin kaygı düzeylerini belirleyen BAI ve STAI-II skorlarının babalara göre anlamlı oranda yüksek olduğu belirlenmiştir (P=0,025, P=0,001, sırasıyla). Çocuklarını ayda bir kezden fazla doktora götüren ebeveynlerin BAI, BDI ve STAI-II skorlarının, psikiyatrik tedavi öyküsü olanların BDI skorunun ve 20-40 yaş arasındaki ebeveynlerin BAI skorunun anlamlı olarak yüksek olduğu belirlenmiştir (P=0,001, P=0,001, P=0,001, P=0,001, P=0.033, sırasıyla).

Sonuç: Bu çalışmada fiziksel herhangi bir bozukluk olmamasına karşın çocuklarını sık doktora götüren ebeveynlerin özelliklede annelerin kaygı düzeylerinin yüksek olduğu belirlenmiştir. Ayrıca çocuğunu ayda birden fazla defa doktora götürme, psikiyatrik tedavi öyküsünün olması, yaş aralığının 20-40 arasında olması ile ebeveynlerin anksiyete düzeyi ilişkili bulundu.

Anahtar kelimeler: İçe basma, Anksiyete, Ebeveyn, Depresyon

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Introduction

Parents often seek medical advice regarding their child's gait or posture [1,2]. Families visit orthopedics clinics, before the child starts to walk, for conditions that require treatment, such as talipes eqinovarus and metatarsus adductus. Plaster casts, pediatric boots and surgical methods are used in the treatment of these impairments. As with many diseases, children diagnosed early can be treated rather successfully with plaster casts and boots, but late diagnosis decreases the possibility of benefit from nonsurgical treatment methods [3].

Normal variants of the lower extremities in children are caused by rotational problems such as in-toeing and out-toeing, and angular problems such as genu varum (bowleg) and genu valgum (knock knee). In-toeing in childhood often occurs due to femoral anteversion and/or, less commonly, tibial torsion [4]. In fact, most of these conditions, which may cause parental concern, are variants of normal growth and development and have no effect on everyday physical function of the child in later years [2,5]. Gait disturbances, especially in-toeing, developing after the age of 1, are reasons for presenting to orthopedic outpatient clinics [6]. A study by Blackmur et al. [6] has revealed that none of the children who were brought to the hospital by their parents with the complaint of in-toeing needed surgery, 86% did not require a second visit and 14% did not have any significant pathology.

Anxiety in parents with children having chronic disease has been a particular subject of interest in various studies [7-9]. However, to the best of our knowledge, there are no studies in the literature assessing the anxiety levels in parents of children presenting to the hospital with the complaint of in-toeing, and the factors that may be linked to it. The aim of the present study is to determine the anxiety, depression, and trait anxiety levels in parents of children in this patient group.

Materials and methods

For the present study, the approval of Başkent University Research and Ethics Committee was obtained (Project Number: KA17/209) in accordance with the Declaration of Helsinki. The study was supported by Başkent University Research Fund.

Power analysis was performed before the initiation of the study to determine the minimum number of subjects that should be included in the patient and control groups. In this study, the required minimum sample numbers were determined as 30 study group patients and 30 control group patients (using Cohen criteria), alpha=0.05 and power=0.80.

Parents of 66 children who presented to Başkent University Faculty of Medicine Adana Dr. Turgut Noyan Application and Research Center Orthopedic Outpatient Clinic in 2017 with the complaint of in-toeing and whose examination revealed no orthopedic pathology were included in the study. Five children with chronic diseases and 2 children with histories of prior surgery were excluded. The parents of all 59 patients (the study group) were informed about the study. The parents of 1 patient stated their reluctance to enroll and were excluded. Both parents of the remaining 58 patients were administered the sociodemographic data collection form, State-Trait Anxiety Inventory (STAI-II), Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI). Forty healthy children with their parents visiting the pediatric outpatient clinic, who met the inclusion criteria and agreed to enroll in the study, were included as the control group, and completed the same scales.

Scales

Sociodemographic data collection form

This is a personal information form developed by the investigators to collect data related to the independent variables of the study. It inquires age, gender and birth rank of the child, mean number of hospital visits per month, presence of orthopedic disability in the family, presence or absence of family social support, parents' history of being ridiculed by peers and psychiatric treatment, and age and education level.

Beck Depression Inventory (BDI)

BDI is a multiple-choice self-report inventory created by Dr. Aaron T. Beck [10]. It consists of 21 questions, each having a set of 4 answers. Each answer is scored on a scale value of 0 to 3, and the total score ranges between 0 and 63. The total score is graded as follows: 0-4 no/minimal depression, 10-16 mild depression, 17-29 moderate depression, 30-63 severe depression. The reliability and validity study of the Turkish version of the inventory was conducted by Dr. Nesrin Hisli [11]. In the Turkish version, a score of 17 and above is considered major depression.

Beck Anxiety Inventory (BAI)

BAI is a 21-item Likert-type scale developed by Beck et al [12]. It is used to measure the severity of general anxiety. Each item is scored on a scale of 0 to 3 in order of increasing severity. The reliability and validity study of the Turkish version of the inventory was conducted by Dr. Ulusoy [13]. In the present study, the total scores were obtained through psychological assessment.

State-Trait Anxiety Inventory (STAI-II)

STAI is a paper-and-pencil test, developed by Spielberger, that can be administered to subjects aged 14 years and above with reading comprehension ability [14]. STAI-II aims to assess how a person feels in general, regardless of the situation. The validity and reliability study of the Turkish version of both were conducted by Öner and Le Compte [15].

Statistical analysis

Normal distribution of continuous variables was assessed using the Shapiro-Wilk test. Mann-Whitney U test was used to compare the two independent groups and the data were then compared with Kruskal-Wallis test. Two-way multiple comparison test was used to compare non-normally distributed data for more than two independent groups. Chi-square test was used to investigate the relationship between two categorical variables. Statistical analysis was performed with IBM SPSS Statistics for Windows, Version 24.0. A *P*-value <0.05 was considered statistically significant.

Results

Sociodemographic data

The comparison between the groups revealed no statistically significant difference regarding the genders of the children, ages of the parents, number of children in the family, history of prior surgery, continuous medication use, history of

psychiatric treatment, orthopedic disability in the family, and frequency of visit to the physician (P>0.05 for each). A statistically significant difference was found between the groups in terms of education level, occupation, presence of social support, history of being ridiculed by peers, birth rank of the child, history of problems in pregnancy and of in-toeing in either parent (P<0.05 for each) (Table 1).

Table 1: Demographic Characteristics of parents in the case and control groups

Variable	Case		Control		
	n	%	n	%	*P*-value
Child's gender					
-Male	36	62.1	26	65	0.741
-Female	22	37.9	14	35	
Age of parents					
-20-30	12	10.3	8	10	0.115
-30-40	47	40.5	16	20	
-40-50	49	42.2	48	60	
-50+	8	6.9	4	10	
Education level					
-Secondary school	16	13.8	0	0	0.019*
-High school	20	17.2	24	30	
-University	80	69	56	70	
Occupation					
-Unemployed	29	25	0	0	0.001*
-Worker	34	29.3	48	60	
-Civil servant	32	27.6	24	30	
-Self-employed	18	15.5	8	10	
-Physician	3	2.6	0	0	
Number of children					
-1	23	39.7	14	35	0.056
-2	25	43.1	12	30	
-3	10	17.2	14	35	
Prior surgery					
-Yes	51	44	24	30	0.121
-No	65	56	56	70	
Continuous medication use					
-Yes	11	9.5	10	12.5	0.588
-No	105	90.5	70	87.5	
Social support					
-Yes	27	23.3	40	50	0.001*
-No	89	76.7	40	50	
History of psychiatric treatment					
-Yes	10	8.6	8	10	0.792
-No	106	91.4	72	90	
History of being ridiculed by peers					
-Yes	12	10.3	20	25	0.022*
-No	104	89.7	60	75	
Birth rank of the child					
-1	59	50.9	24	30	0.016*
-2	35	30.2	24	30	
-3	22	19	32	40	
Health problems in pregnancy					
-Yes	8	13.8	0	0	0.013*
-No	50	86.2	40	100	
Chronic disease in the child					
-Yes	3	5.2	0	0	0.142
-No	55	94.8	40	100	
History of in-toeing in childhood					
-Yes	14	12	0	0	0.027*
-No	102	88	80	100	
Orthopedic disability in the family					
-Yes	4	3.4	8	10	0.105
-No	112	96.6	72	90	
Visit to the physician per month					
-1	73	62.9	48	60	0.124
-2	22	19	8	10	
-3	18	15.5	24	30	
-4+	3	2.6	0	0	

** Statistical significance P=0.05; Chi-squared test

Comparison of Inventory Scores

BAI and STAI-II scores were statistically significantly higher in the parents of children presenting with the complaint of in-toeing than in the control group (P=0.002, P=0.046, respectively). Spearman's correlation analysis revealed a strong correlation between BDI and BAI, STAI-II and BDI, BAI and STAI-II in the study group (r=0.518, P=0.001; r=0.546, P=0.001; r=0.566, P=0.001; respectively). In the control group, there was a weak correlation between BDI and BAI (r=0.346, P=0.029). The BAI, BDI and STAI-II scores according to study groups were given detail in Table 2.

An analysis of anxiety and depression levels of the mothers in the study group revealed significantly higher scores of BAI and STAI-II compared to the fathers (P=0.025, P=0.001, respectively). The scores did not vary significantly between the study and the control groups in terms of the gender of the children (P=0.561, P=0.984, P=0.546, P=0.834, P=0.318, P=0.547, respectively). The anxiety scores of parents between the ages of 30 and 40 years were higher compared to other age groups, while BAI and STAI-II scores were lower in parents above the age of 50 (P=0.033, P=0.001, respectively).

In the study group, BDI scores were higher in parents with history of psychiatric treatment (P=0.001). BAI scores were highest in parents bringing their 2nd child for examination in the study group (P=0.017). However, in the control group, BAI and STAI-II scores were higher for the 1st child compared to the 2nd and 3rd (P=0.001, P=0.001, respectively).

BDI and BAI scores of parents who took their children to the physician more than once per month for any reason were higher in the case group, while no significant difference was observed in the control group (P=0.001, P=0.001, P=0.858, P=0.316, respectively). BAI, BDI and STAI-II scores of the case and control groups are given in Table 3.

Table 2: Comparison of groups regarding scale scores

Variables	Case (n = 116)	Control (n = 80)	*P*-value
BDI, mean (SD)	7.45 (5.66)	5.8 (2.11)	0.283
BAI, mean (SD)	8.24 (8.4)	3.8 (2.16)	0.002*
STAI-II, mean (SD)	40.1 (8.39)	37.4 (9.68)	0.046*

* Statistical significance P=0.05; Mann-Whitney U test

Table 3: BDI, BAI and STAI-II scores in the case and control groups regarding each variable

Variable	Case				Control			
	n	BDI, mean (SD)	BAI, mean (SD)	STAI-II, mean (SD)	n	BDI, mean (SD)	BAI, mean (SD)	STAI-II, mean (SD)
-Mother	58	7.95 (5.44)	9.66 (9.68)	43.31 (8.25)	40	6 (1.95)	3.8 (2.71)	41.8 (10.09)
-Father	58	6.93 (5.89)	6.77 (6.59)	36.79 (7.23)	40	5.6 (2.3)	3.8 (1.51)	33 (7.06)
P-value		0.065	0.025*	0.001*		0.658	0.661	0.011*
-Female	36	7.29 (5.1)	8.43 (8.4)	40.21 (8.32)	26	5.73 (2.24)	3.54 (2.1)	36.42 (9.41)
-Male	22	7.7 (6.53)	7.93 (8.48)	39.93 (8.6)	14	5.93 (1.94)	4.29 (2.27)	39.21 (10.27)
P-value		0.561	0.984	0.546		0.834	0.318	0.547
Visit to the physician per month								
-0-1	37	6.03 (4.44)	6.68 (7.67)	39.18 (9.34)	24	5.83 (2.73)	3.83 (2.73)	37.58 (12.29)
-1-2	11	9.95 (6.67)	14.36 (9.39)	45.64 (5.25)	4	6 (0)	5 (0)	42.75 (1.26)
-2-3	9	9.89 (7.41)	7.11 (7.68)	36.28 (3.14)	12	5.67 (0.49)	3.33 (0.49)	35.25 (0.87)
-3+	1	9 (0)	8 (0)	45 (0)	0			
P-value		0.001*	0.001*	0.001*		0.858	0.316	0.129
History of psychiatric treatment								
-Yes	10	12.2 (5.01)	12 (17.01)	42.6 (6.79)	8	8 (0)	1 (0)	42 (0)
-No	106	7 (5.53)	7.89 (7.14)	39.89 (8.52)	72	5.56 (2.09)	4.11 (2.05)	36.89 (10.09)
P-value		0.001*	0.333	0.472		0.028*	0.001*	0.161
History of being ridiculed by peers								
-Yes	12	6.08 (1.93)	6.42 (3.42)	40.25 (8.75)	20	5.5 (1.51)	5.1 (1.66)	41.5 (9.12)
-No	104	7.61 (5.93)	8.45 (8.78)	40.09 (8.39)	60	5.9 (2.29)	3.37 (2.16)	36.03 (9.62)
P-value		0.694	0.613	0.835		0.548	0.014*	0.598
History of in-toeing in childhood								
-Yes	13	7.46 (9.92)	8.69 (11.71)	40.38 (11.79)	0	0	0	0
-No	103	7.45 (4.96)	8.18 (7.96)	40.07 (7.94)	80	5.8 (2.11)	3.82 (2.16)	37.4 (9.68)
P-value		0.083	0.27	0.756				
Age of parents								
-20-30	12	8.83 (2.98)	8.5 (3.66)	47.08 (4.17)	8	6 (0)	5 (0)	42.75 (1.26)
-30-40	47	8.3 (7.51)	9.85 (10.48)	42.4 (9.16)	16	6.5 (1.6)	7 (1.07)	50.88 (8.72)
-40-50	49	6.2 (3.25)	6.84 (6.58)	37.55 (5.73)	48	6.17 (1.99)	2.83 (1.49)	34.58 (4.23)
-50+	8	8 (7.09)	7 (9.26)	31.75 (10.4)	8	2 (0)	2 (0)	22 (0)
P-value		0.113	0.033*	0.001*		0.012*	0.001*	0.001*

* Statistical significance: P=0.05; Kruskal-Wallis test

Discussion

To the best of our knowledge, there are no studies in the literature assessing the anxiety levels in parents of children presenting to the hospital with the complaint of in-toeing, and the factors that may be linked to it. The present study aimed to determine the variance of depression and anxiety levels in parents of children with suspected in-toeing, compared to the general population.

BAI and STAI-II scores of parents in the case group of the present study were higher compared to the general population. These parents were in fact subjects who took their children to the physician more frequently, had higher levels of

depression and history of health problems in pregnancy and of being ridiculed by peers in childhood. In addition, anxiety levels were higher in parents visiting the physician with their 2nd child. Especially those between the ages of 30-40 years had elevated levels of anxiety concerning their children, whereas anxiety was lower in the older age group. This suggests that anxiety level decreases depending on the parents' life experience. Studies on parental roles have revealed results in favor of the positive effects of having a child. It has been shown that individuals with children have better physical and psychological health than those without: Mothers had lower life stress, health problems and depression, and higher life satisfaction and self-esteem; and fathers had better psychological health [16-19]. This is possibly related to feeling obliged to act more responsibly as parents. With fatherhood, men are generally more mature and responsible, taking less risk [20]. Most fathers restrain from risky behaviors, such as smoking, excessive alcohol consumption, or doing dangerous sports, both before and after the birth of their child, and become even more cautious thereafter [20,21].

The anxiety level of the parents in the case group of the present study was higher, which is consistent with the literature. The fact that the baby's physical and psychological needs are met by the mother during pre and postnatal periods leads to a strong bond between both. This may result in the mother's feeling of liability for any physical or mental impairment that may occur in the child. Some studies have shown that anxiety levels are higher in mothers with disabled children than in those with healthy children, whereas other studies reported no such difference, regardless of the disability level of the child [7,8].

Similarly, while some studies reported high levels of depression in parents with disabled children, others reported moderate levels of depression [8]. In the present study, no significant difference was observed between the case group and the control group with regards to depression scale scores, which was in line with the findings of Sajedi et al. [7]. However, the present study revealed higher anxiety and depression levels in parents who felt obliged to take their children to hospital more than once per month. The main reason for frequent visit to the physician may be the desire to achieve early management of any suspected deformity and, thus, to prevent chronic disability.

The correlation analysis in the present study revealed a statistically significant relationship between BAI and frequent visit to the physician, history of psychiatric treatment, and being between 20-40 years of age. Studies have shown that mothers of younger age tend more to have babies with difficult temperament, cognitive developmental delay, behavioral problems and inadequate language development [22-25]. In line with that, lower levels of depression and anxiety and higher marital satisfaction and well-being were reported in individuals who thought that they assumed parental role in due course [26,27]. However, this may be linked to better living conditions, as mentioned earlier. Individuals who become parents later in life are more likely to have better economic circumstances than those doing so earlier [28]. Older parents also have higher education levels and better career achievements, as well as lower fertility rates [29].

The present study determined lower levels of social support in the study group. This fact may have caused parents to spend more time with their children and exhibit more protective behaviors. It has elsewhere been reported that parents of children with congenital disabilities adapt to that condition easier in families with strong social ties [30]. Stronger social support partially relieves the burden on the mother, resulting in reduced stress and, in turn, decreased proneness to depression and anxiety.

Limitations

The present study has some limitations. First, it is a single-center study with a small sample size, which may be inadequate to give a picture of the general population. Similar future studies with multi-center design may promote the reliability of results for the general population. Second, self-reported sociodemographic data were used in the present study, meaning that their verification may be necessary to improve the reliability of results.

Conclusions

The present study determined that anxiety levels were higher in parents, especially mothers, of children who were taken to the physician with the complaint of in-toeing but who were found to be healthy upon examination. It is thus possible to conclude that parental anxiety may cause unnecessary examination and treatment of the child. Moreover, depression or anxiety symptoms in the mother, especially in the first 2 years of the child's life, may later lead to emotional and behavioral problems in childhood and prominent levels of depressive symptoms in adolescence. Therefore, it is of utmost importance to keep track of parental attitudes and mental states in the first years of the child's life. This requires a multidisciplinary approach, involving psychiatric support when necessary.

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