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Araştırma Makalesi / Research Article

Relationship Between Adverse Childhood Experiences and Premenstrual Syndrome

Çocukluk Çağı Olumsuz Yaşantılar Ile Premenstruel Sendrom Arasındaki Ilişki

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Abstract

Aim: It is known that adverse experiences in childhood are associated with various mental and physical illnesses. In some studies, it is stated that it also affects women's reproductive health. The aim of this study is to determine the relationship between childhood adverse experiences and the prevalence of premenstrual syndrome.

Material and Method: The research was conducted as a cross-sectional and relationship seeker at a public university on young girls aged between 18 and 25 years. The sample size was calculated to be at least 623 students with 0.05 error level, 80% representation power and 99% confidence interval, and the study was conducted with 754 participants. To collect data; "Personal Introduction Form", "Childhood Adverse Experiences Scale (ACES)" and "Premenstrual Syndrome Scale (PMSÖ)" were used. In statistical evaluation; arithmetic mean, percentage distribution, standard deviation, linear regression analysis were used.

Results: 60.5% of the students had at least one ACE, the average age was 20.68±1.98, 52% studied at the faculty of health sciences, 40.3% studied in the first year, 73.2% had PMS, the average age of menarche was found to be 14.84±28.82. In addition, the mean score of ACES is 1.50±1.75, and the average of PMSÖ is 132.36±36.22. As a result of the linear regression analysis, it has been determined that ACES affects the total and all sub-dimensions of PMSÖ.

Conclusion: In conclusion, it can be said that adverse childhood experiences affect PMS symptoms and PMS symptoms increase as the number of ACES increases.

Keywords: Childhood adverse experiences, premenstrual syndrome, young girls

Öz

Amaç: Çocukluk çağındaki olumsuz yaşantıların çeşitli zihinsel ve fiziksel hastalıklarla ilişkili olduğu bilinmektedir. Bazı çalışmalarda kadın üreme sağlığını da etkilediği belirtilmektedir. Bu araştırmanın amacı, çocukluk çağı olumsuz yaşantılar ile premenstruel sendrom görülme sıklığı ve arasındaki ilişkiyi belirlemektir.

Bu çalışmanın amacı, embriyonik kemik gelişimi sırasında düşük (3 mg/kg) ve yüksek (6 mg/kg) doz nikotinin neden olduğu iskelet sistemi malformasyonlarını ikili iskelet boyama yöntemi ile belirleyerek; E vitamininin koruyucu rolünü ortaya koymaktır.

Materyal ve Metot: Araştırma kesitsel ve ilişki arayıcı olarak bir kamu üniversitesinde yürütülmüştür. Örneklem büyüklüğü 0.05 yanılgı düzeyi, %80 temsil gücü ve %99 güven aralığı ile en az 623 öğrenci olarak hesaplanmış olup çalışma 754 katılımcı ile gerçekleştirilmiştir. Verileri toplanmasında; "Kişisel Tanıtım Formu", "Çocukluk Çağı Olumsuz Yaşantılar Ölçeği (ÇÇOYÖ)" ve "Premenstrüel Sendrom Ölçeği (PMSÖ)" kullanılmıştır. İstatistiksel değerlendirmede; aritmetik ortalama, yüzdelik dağılım, standart sapma, linear regresyon analizi kullanılmıştır.

Bulgular: Öğrencilerin %60.5'inin en az bir tane ÇÇOY yaşadığı, yaş ortalamasının 20.68±1.98 olduğu, %52'sinin sağlık bilimleri fakültesinde okuduğu, %40.3'ünün 1. sınıfta okuduğu, %73.2'sinin PMS yaşadığı, menarş yaş ortalamasının 113.12 ±1.52 olduğu saptanmıştır. Ayrıca ÇÇOYÖ puan ortalaması 1.50±1.75, PMSÖ ortalaması 132.36±36.22'dir. Linear regresyon analizi sonucunda ÇÇOY'ın PMSÖ toplam ve tüm alt boyutlarını etkilediği saptanmıştır.

Sonuç: Sonuç olarak çocukluk çağı olumsuz yaşantılarının PMS semptomlarını etkilediği ve ÇÇOY sayısı arttıkça PMS semptomlarının da arttığı söylenebilir.

Anahtar Kelimeler : Çocukluk çağı olumsuz yaşantılar, premenstrual sendrom, genç kızlar

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INTRODUCTION

The term adverse childhood experiences (ACEs) appeared after the Adverse Childhood Experiences Study was published in 1998. ACEs are grouped in three fields as abuse, neglect, and dysfunction at home and include adverse experience categories (1,2). It has been stated that ACEs are effective on general health and female reproductive health (3). Adverse experiences in childhood are known to be associated with various mental and physical diseases (4). Thus, it is considered that being exposed to traumatic experiences in childhood may distort women's ability to recognize, adjust and comply with physical and emotional changes before menstruation, and may increase the distress and dysfunction before menstrual bleeding (5). A few studies have found its relationship with premenstrual syndrome (4,6). PMS is a common health problem among women of productive age. Many women experience physical and emotional changes in the days before menstruation. The occurrence of these symptoms at the luteal phase of each menstrual cycle, their cessation as the bleeding starts, and their negative impact on the women's lives are defined as premenstrual syndrome (PMS) (7). The worldwide prevalence of PMS has been reported as 47.8% (8). According to the results of the studies on PMS conducted in Turkey, its prevalence changes between 5.9-76% (9). It is stated that 5% of women experience PMS at a serious level that negatively affects their work and home life (4). The known risk factors for PSM are hormonal changes, stress, serotonergic dysfunction while factors like lack of exercising, short sleeping time, or malnutrition are unhealthy behaviors (4,10). Additionally, it is stated that experiencing dysmenorrhea, one of the family members experiencing PMS, and negative thoughts about PMS increases the occurrence of PMS (11).

Considering that ACEs cause negative consequences such as depressive dysfunctions, alcohol use, and suicidal thoughts (1,4), it is inevitable for PMS to be not affected by ACEs. It was reported that the management of the effects of premenstrual symptoms is more unsuccessful in individuals who experience childhood trauma (12,13). Thus, this study was conducted to determine the relationship between ACEs and PMS.

MATERIAL AND METHOD

Type of the Study

The study has a cross-sectional and correlational design.

Place and Time of the Study

This research, which was carried out on students receiving midwifery education in Turkey, was carried out on the social media platform between March-May 2021.

Population and Sample of the Study

The population of the study consisted of almost 10.000 students who were studying in the Department of Midwifery in the spring semester of the 2020-2021 academic year in Turkey (14). Participants were determined using the virtual snowball chain sampling method from purposive sampling methods. The least number of individuals who must be included in the sample of the study was determined as 623 students using the power analysis at 0.05 error level, 80% representative power, and 99% confidence interval, and the study was conducted with 754 participants.

Inclusion Criteria

-Being single,
-Being aged between 18 and 25,

Exclusion Criteria

-Leaving study questions unanswered.

Data Collection Tools

The data of the study were collected using the "Personal Identity Form", "Adverse Childhood Events Turkish Form" and the "Premenstrual Syndrome Scale".

Personal Identity Form

The personal identity form, which was developed after the literature review by researchers (15,16), includes 26 questions about the participants' sociodemographic characteristics and menstrual features.

The Adverse Childhood Events Turkish Form (ACE-TR)

The scale was adapted to Turkish by Ulukal et al. (17) and its validity and reliability tests were carried out by Gündüz et al. in 2018. The ACE-TR is a self-report scale that has 10 items and examines adverse experiences before the age of 18 in the yes-no format. The questions contain only the yes option and if the otherwise applies, the question is left. The lowest score that can be obtained from the scale is 0 while the highest score is 10. The scale has no cut-off value. The Cronbach's alpha value was found as 0.742 in the validity and reliability study conducted by Gündüz (17). It was calculated as 0.672 in this study.

The Premenstrual Syndrome Scale (PMSS)

The validity and reliability study of the scale was conducted by Gençdoğan in 2006. The scale, which is used to determine premenstrual symptoms and severity, is a five-point Likert-type scale with 44 items. The scale has nine subdimensions as depressive sensation, anxiety, fatigue, nervousness, depressive thoughts, pain, appetite changes, sleep pattern changes, and bloating. The lowest score that can be obtained from these nine subdimensions is 44 and the highest score is 220. High scores indicate the high intensity of premenstrual symptoms. The Cronbach's alpha coefficient of the scale was found as 0.75 (18). It was calculated as 0.973 in this study.

Data Collection

The data were collected via Google Forms. The participants provided data with the online self-report method on the Google survey system. The data collection tools were designed in the Google form format and were sent to single young women aged between 18-25 who agreed to participate in the study via WhatsAppIt took approximately 10 minutes to fill the form.

Data Analysis

Considering the conformity of the data to the normal distribution, the data were determined to be between the ±3 standard deviation ranges (19). It was determined that

the data were between the ±3 standard deviation range as a result of the transformation of raw scores into Z scores and no extreme values were distorting the linearity. The data were coded and analyzed using the SPSS 22 package program. Arithmetic means, frequency distribution, standard deviation, and linear regression analysis were used for statistical analyses. The statistical significance level was p< 0.05.

Limitations of the Study

This study has some limitations like all studies. The study was only conducted with young women who had internet connection, who were single and in the age range of 18-25; thus, it is a limitation that the results cannot be generalized to married women and older women. In addition, conducting the study online may have negatively affected the answers of young girls with little technical experience.

Ethical Considerations

The Ethical Committee approval (Decision No: 2021/1855) was obtained to conduct the study. The participants were informed about the study and those who volunteered to participate were included in the study after stating this in the Google form survey.

RESULTS

Sociodemographic characteristics and menstrual cycle-related features of the students, who participated in this study, are presented in Table 1. Of the students, 60.5% experienced at least one ACE, 52% studied at the health sciences faculty, 40.3% were 1st grade students, and 93.4% did not work. The mean age of the students was 20.68±1.98. The mothers of 89.1% of the students did not work while the fathers of 72.1% of the students worked. Of them, 82.2% had middle income, 76.1% had nuclear family, 91.8% did not smoke, and 62.1% did not have boyfriends. The mean body mass index (BMI) was 21.94±3.54. Of the students, 74.8% had regular menstruations, 73.2% experienced PMS, and the mean age at menarche was 13.12 ±1.52 and the mean cycle duration was 28.71±7.28 days (Table 1).

Table 1. Sociodemographic and Menstrual Cycle Characteristics of the Participating in the Study

Variable	n	%
Number of ACE		
0	298	39.5
1	154	20.4
2	124	16.4
3	82	10.9
4 and above	96	12.7
Class		
1	304	40.3
2	116	15.4
3	248	32.9
4	86	11.4
Employment status		
Employed	50	6.6
Unemployed	704	93.4
Mother's employment status		
Employed	82	10.9
Unemployed	672	89.1
Father's employment status		
Employed	544	72.1
Unemployed	210	27.9
Perceived income level		
Low	112	14.9
Middle	620	82.2
High	22	2.9
Living place		
City	526	69.8
County	142	18.8
Village	86	11.4
Family structure		
Nuclear family	574	76.1
Extended family	152	20.2
Broken family	28	3.7
Smoking status		
Yes	62	8.2
No	692	91.8
Status of having a boyfriend		
Yes	286	37.9
No	468	62.1
The regularity of menstruation		
Regular	564	74.8
Irregular	190	25.2
Premenstrual syndrome have status		
Yes	552	%73.2
No	202	26.8
Total	754	100
Age (years)		X±SS 20.68±1.98
Age of Menarche (years)		13.12 ±1.52
Cycle duration (days)		28.71±7.28
BMI (average)		21.94±3.54

ACE: Adverse Childhood Experiences, BMI: Body Mass İndex

Table 2 shows the numbers and frequency distribution of the participants who said yes to the items of the ACE-TR. Of the participants, 33.4% 33.4% answered as yes to Item 1 (Has a parent or an adult member of your household often or very often ... abused you, despised you, humiliated you, or belittled you? Or has she/he acted in a way that physically hurt you and scared you?), 25.2% 25.2% answered as yes to Item 2 (Has a parent or an adult member of your household often or very often ... assaulted you, slapped you or thrown something at you? Or has she/he ever hit you hard enough to leave a scar or get injured?), and 12.5% 12.5% answered as yes to Item 3 (Has an adult or someone at least 5 years older than you ever touched you or caressed you or asked you to sexually touch his/her body?) Additionally, 27.1% 27.1% answered as yes to Item 4 (Have you often or very often felt as follows? No one in your family loves you or thinks you are important or special? Or Your family has not taken care of you, you have not felt close to your family or you have not supported each other?) and 11.1% 11.1% answered as yes to Item 7 (Has your mother or step-mother often or very often assaulted you, slapped you or thrown something at you? Or has she often or very often kicked you, beat you, or hit you with a fist or something harder? Or has she hit you continuously at least for a few minutes or has she threatened you with a gun or knife?).

The lowest and highest scores of the students included in the study and their mean scores are presented in Table 3. The mean score on the ACE-TR was 1.50±1.75, and the lowest and highest scores were 0 and 8, respectively. The mean score on the PMSS was 132.36±36.22, and the lowest and highest scores were 44 and 216, respectively (Table 3).

It was determined as a result of the regression analysis performed that adverse childhood experiences significantly predicted premenstrual syndrome and its subdimensions positively and the models formed were statistically significant. Considering the R2 values regarding the models, it was observed that 6% of the variance in the depressive sensation, 5.3% of the variance in the anxiety, 6.6% of the variance in fatigue, 5.1% of the variance in nervousness, 9.6% of the variance in depressive thoughts, 3.3% of the variance in pain, 1.2% of the variance in appetite changes, 3.5% of the variance in sleep pattern changes, 3% of the variance in bloating, and 7.1% of the general variance of PMS were explained by the changes in ACEs (Table 4).

Table 2. Number and Percentage Distribution of Participants Who Say Yes to Their ACE's Items

Items	n	%
1. Did a parent or other adult in the household often. Swear at you, insult you, put you down, or humiliate you? or Act in a way that made you afraid that you might be physically hurt?	126	33.4
2. Did a parent or other adult in the household often. Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured?	95	25.2
3. Did a parent or other adult in the household often. Push, grab, slap, or throw something at you? or Ever hit you so hard that you had marks or were injured?	47	12.5
4. Did you often feel that. No one in your family loved you or thought you were important or special? or Your family didn't look out for each other, feel close to each other, or support each other?	102	27.1
5. Did you often feel that. You didn't have enough to eat, had to wear dirty clothes, and had no one to protect you? or Your parents were too drunk or high to take care of you or take you to the doctor if you needed it?	12	3.2
6. Were your parents ever separated or divorced?	26	6.9
7. Was your mother or stepmother: Often pushed, grabbed, slapped, or had something thrown at her? or Sometimes or often kicked, bitten, hit with a fist, or hit with something hard? or Ever repeatedly hit over at least a few minutes or threatened with a gun or knife?	42	11.1
8. Did you live with anyone who was a problem drinker or alcoholic or who used street drugs?	16	4.2
9. Was a household member depressed or mentally ill or did a household member attempt suicide?	32	8.5
10. Did a household member go to prison?	13	3.4
Number of pregnant women not living any Adverse Childhood Experience	149	39.5

ACE: Adverse Childhood Experiences

An increase of 1 unit in the adverse childhood experiences score causes an increase of 1.031 unit (B) in the depressive sensation score, .922 unit (B) in the anxiety score, .813 unit (B) in the fatigue score, .698 unit (B) in the nervousness score, 1.231 unit (B) in the depressive thoughts score, .308 unit (B) in the pain score, .183 unit (B) in the appetite changes score, .333 unit (B) in the sleep pattern changes, .329 unit (B) in the bloating score, and 5.849 unit (B) in the total score of PMSS based on the equations that can be formed in relation to regression models. Regarding the standardized beta coefficients, it was observed that ACEs were more significant predictors for general PMS and Depressive Sensation (β= .248) subdimension. Thus, it can be stated that higher levels of ACES accompany higher levels of PMS among young women.

Table 3. The Lowest and Highest Scores and Average Points of the Students Who Participated in the Study from the Scales

Variable	X ±SS	Min/max points that can be obtained	Min/max points received
ACES	1.50±1.75	0-10	0-8
PMSS	132.36±36.22	44-220	44-216

ACES: Adverse Childhood Experiences Scale, PMSS; Premenstrual Syndrome Scale

Table 4. Linear Regression Analysis Results of the Prediction of the ACES's and its Sub-Dimensions of PMSS

Scales		B	t	β	R^2	F	p
ACES	Depressive Affect	1.031	4.950	.248	.061	24.504	.000
	Anxiety	.922	4.601	.231	.053	21.153	.000
	Fatigue	.813	5.153	.257	.066	26.552	.000
	Irritability	.698	4.77	.225	.051	20.041	.000
	Depressive Thoughts	1.231	6.32	.310	.096	39.957	.000
	Pain	.308	3.554	.181	.033	12.667	.000
	Appetite Changes	.183	2.104	.108	.012	4.428	.036
	Sleep Changes	.333	3.672	.186	.035	13.497	.000
	Swelling	.329	3.382	.172	.030	11.437	.000
	PMS_Total	5.849	5.365	.267	.071	28.782	.000

ACES: Adverse Childhood Experiences Scale, PMSS; Premmesntrual Syndrome Scale, B; Non-standardized Beta Coefficient, β; Standardized Beta Coefficient, R2; Explanatory Coefficient, *p<0.05; t test result for the significance of the regression coefficients and the F test result for the significance of the model

DISCUSSION

Premenstrual syndrome is experienced every month regularly and causes dysfunctions in daily life activities, negatively affects education life and decreases the life quality of those who experience it (16). Most studies in the literature have stated that PMS has caused negative outcomes regarding the quality of life, sleep quality, and anxiety-stress (15,20). However, the factors that cause PMS have mostly been disregarded. There is a limited number of studies on the relationship between the ACEs and PMS (4,6); however, there is no such study conducted in Turkey.

This study found the total mean score on the ACE-TR of participants as 1.50±1.75 (Table 3). This score was found as 1.8±1.55 (21) and 2.8± 2.4 (22) in other studies. The number of ACEs was mostly emphasized in relevant studies using the ACE-TR instead of focusing on the mean score. A relevant study reported that the rate of children's physical abuse in Turkey changes between 15% and 75% and the rate of sexual abuse is almost 20% (23). Of the participants, 60.5% had at least one ACE within the first 18 years of their lives while 12.5% had four or more ACEs (Table 1). Bellis et al. found that 46.5% of the participants had at least one ACE and 8.3% had four or more ACEs (24). Furthermore, Angerud et al. found that 58.6% of the participants had at least one ACE while 8% had five or more ACEs (25). Strine et al. found that 72% of the participants had at least one ACE and 12.6% had four or more ACEs (26) Similarly, Felitti et al. determined that two-third of

adults had at least one ACE while more than 10% had four or more ACEs (1). The results of this study are in line with the literature.

Adults, who were not loved, cared for, sympathized with by their parents in their childhood, have significantly higher scores on depression, somatization, interpersonal sensitivity, and paranoid ideation compared to adults who were not exposed to such actions (17). This study determined that 27.1% of the participants felt such emotions (Item 4: Table 2). In a systematic compilation of many studies conducted in Turkey, 25.7% of the participants stated that they experienced domestic neglect at least once (23). Such problems experienced in childhood may cause a very serious social problem in adulthood (27). Additionally, physical, mental, and psychophysical disorders caused by this may become a life-long health issue for individuals (28).

Many children and teenagers start working at an early age to contribute to the living of their families or to support themselves in Turkey and encounter various types of abuse and neglect (23). The most common types of physical abuse are pulling hair, pulling ear, throwing something, hitting by hand, and slapping (29). The present study found that 38.2% of young women were subjected to physical violence (Item 3-7: Table 2). This rate reaches 90% in African countries (28). Individuals, who were subjected to physical abuse in childhood, have low self-esteem and more emotional and behavioral problems. Physical abuse is considered a way of upbringing instead of violence but many interpersonal, cognitive, emotional, and behavioral problems, low emotional intensity, high temper, and abusive behaviors are more common among individuals, who were subjected to physical abuse (23,28).

The rate of sexual abuse has been found as 20% in Turkey (23). This rate was found as 12.5% (Item 3; Table 2) in this study, and the WHO states that 120 million young women are sexually abused (30). This result is similar to those in the literature. It is stated that physical and sexual abuse in the first 18 years of life may cause mood disorders and PMS (31). It is also stated that being subjected to physical and sexual abuse in the first 18 years of life may cause mood disorders and such abuse might be associated with the sex life and reproductive health of individuals. Abused individuals may have an increased tendency to problems related to sex (vaginismus, etc.). Additionally, the tendency to problems related to the menstrual cycle, pregnancy and postpartum periods as well as sex may increase (32. The presence of PMS symptoms is important in terms of improving the reproductive/sexual health and life quality of young women (16). This study found the total mean score on the PMSS of the participants as 132.36±36.22 (Table 3). The mean scores on PMSS were found as 22.14±32.60 (15), 144.84±27.28, (33), and 148.77±23.26 (16) in studies conducted in Turkey. This mean score indicates that most young women experience PMS. The rate of young women who stated to have experienced PMS was 73.2% in this study (Table 1). The American College of Obstetricians and Gynecologists (ACOG) determined that 85% of women experience PMS while this rate was 57.4% in the study by Kısa et al. and the occurrence rate of PMS was 60.1% in the study by (11,35). Considering the results of the regression analysis performed, 7.1% of the total score on the PMSS, 6% of the depressive sensation score, 5.3% of the anxiety score, 6.6% of the fatigue score, 5.1% of the nervousness score, 9.6% of the depressive thoughts score, 3.3% of the pain score, 1.2% of the appetite changes score, 3.5% of the sleep pattern changes score, and 3% of the bloating score can be explained by the score obtained from the ACE-TR (Table 4). It was observed that ACEs increased depressive thoughts, fatigue, depressive sensation, and anxiety the most. Studies in the literature indicate that ACEs mostly cause anxiety, depression, and mood disorders (6,36) and have a relationship with fatigue/bad sleep quality (36,37). ACEs play an important role in the mental health and hardiness of young people. Thus, PMS might become difficult to handle for young women. As some studies reported that negative mood might cause PMS (38,39), this study found that ACEs cause PMS.

Additionally, an increase of 1 unit in the total score on the ACE-TR causes a positive increase of 0.267 unit (β1) in the total score on the PMSS (Table 4). This result indicates that childhood traumas are effective variables in increasing PMS symptoms in young women. It is believed that this result will contribute to the literature due to the limited number of studies supporting this result (4,6).

CONCLUSION

This study found that ACEs had within the first 18 years of life affect the reproductive health of women. The study also found that ACEs are common in Turkey and they affect the total and subdimension scores of the PMSS. It was determined that ACEs affected the depressive thoughts, fatigue, depressive sensation, and anxiety subdimensions the most. Agreeing that ACEs are an important determinant of PMS will allow health professionals to better communicate with young women and facilitate handling PMS. It is recommended to work on a larger sample to better understand the importance of "ACEs"..

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Ethical approval: The Ethical Committee approval (Decision No: 2021/1855) was obtained to conduct the study.

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