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Association of Physical Activity and Smoking Status with Mood and Anxiety in Adolescents

Ergenlerin Fiziksel Aktivite ve Sigara Kullanımının Duygu Durumu ve Anksiyete ile İlişkisi

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Abstract

Objectives: The aim of this study is assessment of physical activity and smoking status which are factors affecting adolescents' anxiety and mood.

Materials and Methods: Our study was carried out between September 2013 and September 2014 in Ankara Training and Research Hospital Family Medicine outpatient clinic. 266 Adolescents whose ages were between 12-21, accepting to participate in our study were included. "International Physical Activity Questionnaire", "State-Trait Anxiety Inventory", "Beck Depression Inventory" and according to participants' smoking status "Fagerstrom Test for Nicotine Dependence" were applied to participants. Data was analyzed with SPSS 16.0 statistical software.

Results: 266 participants (134 male (50.4%), 132 female (49.6%)) whose ages were between 12 and 21 were included in this study. While 74 (27.8%) participants were performing regular exercise, 192 (72.2%) of them were not. Reduction of physical activity score and increase of state of anxiety score were associated. In addition, there was a correlation between smoking, increase of age, idle sitting time and scores of Beck and increase in state of anxiety scores (P <0.001). There was a significant correlation between increasing Beck depression score, the reduction of physical activity and being a smoker, the increase in trait anxiety score (P <0.001).

Conclusion: To fight against anxiety and depression, the young should be encouraged to spend more time for doing physical activity. Appropriate facilities and training programs should be organized for them. Facilities should be increased in fighting against smoking but it must be known that the real success will be obtained by the prevention of starting smoking.

Key words: Adolescent, physical activity, smoking, anxiety

Öz

Amaç: Çalışmamızda, ergenlerin anksiyete ve duygu durumu üzerine etkili olan faktörlerden fiziksel aktivite ve sigara kullanım durumunun değerlendirilmesi amaçlandı.

Materyal ve Metot: Çalışmamız Eylül 2013 – Eylül 2014 tarihleri arasında Sağlık Bakanlığı Ankara Eğitim Araştırma Hastanesi Aile Hekimliği Polikliniklerinde yürütüldü. Çalışmamıza katılmayı kabul eden 12-21 yaş arası 266 ergen dahil edildi. Ergenlere "Uluslararası Fiziksel Aktivite Anketi", "Durumluk ve Sürekli Kaygı Ölçeği", "Beck Depresyon Ölçeği" ve katılımcılara sigara kullanım durumuna göre "Fagerström Nikotin Bağımlılık Testi" uygulandı. Veriler SPSS 16,0 istatistik programı ile analiz edildi.

Bulgular: Çalışmaya 134 (%50,4) erkek ve 132 (%49,6) kız olmak üzere 12-21 yaş aralığındaki toplam 266 kişi dahil edildi. Katılımcılardan 74 (%27,8) kişi düzenli spor yapıyorken, 192 (%72,2) kişi düzenli spor yapmamaktaydı. Sigara içen kişi sayısı 96 (36,1); sigara içmeyenlerin sayısı 170 (%63,9) idi. Fiziksel aktivite ölçek puanının azalması ile durumluk kaygı puanının artması ilişkili idi. Ayrıca sigara içme, yaşın artması, oturma süresinin artması ve beck puanının artması da durumluk kaygı puanının artması arasında ilişki vardı (P<0,001). Beck depresyon puanının artması ile fiziksel aktivite puanının azalmasının, sigara içiyor olmanın ve sürekli kaygı puanının artması arasında anlamı ilişki vardı.(P<0,001).

Sonuç: Gençlerin, anksiyete ve depresyonla mücadele için fiziksel aktivite yapması teşvik edilmeli, uygun

mekan ve zaman ayırabilmesi için eğitim programları düzenlenmelidir. Sigara ile mücadelede imkanlar arttırılmalı ama asıl başarının, sigaraya başlamanın engellenmesi ile sağlanacağı unutulmamalıdır.
Anahtar kelimeler: Ergen, fiziksel aktivite, sigara kullanımı, kaygı

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Introduction

Family Medicine provides primary health care services without discrimination of age and gender to all people. Since our country has a young population and adolescents hold a special place among population, requirements for better examination of this group are emerging. Adolescents in the rapid growth and development stage must be supported spiritually and followed up.

The most frequent psychological problems in adolescence stage are depression, anxiety disorders, behavioural disorders, eating disorders, use of alcohol and substance abuse. In a study conducted in a city center of our country, it has been revealed that symptoms which separate adolescents applied to medical facilities for their psychiatric problems from normal ones are depression and anxiety level.[1]

When looked at the prevalence of mental disorders during this period; ratio of ADHD was 3-10% 129, behavioural and oppositional defiant disorders were 3-5%, major depression was 1.3 to 7%, anxiety disorders were 0.2 to 9.3%. In studies using structured psychiatric interview, overall prevalence of psychiatric disorders vary between 4.6 to 50.4%.[1]

While adolescence is a period of having good physical health, it is also a period which habits of long period of risk can be carried or protective habits such as diet, smoking, exercise, substance abuse, driving, sexual behaviour for long-term healthy life in adulthood can be developed.[1-4]

In our country, similar to the world, prevention of children's, adolescents' and young people's meeting with smoking habit is the most basic control component. As it is known, the target audiences for the tobacco industry in order to take the cigarette epidemic, are the people that make up these age groups. Also the most important part of the National Tobacco Control Programme is the prevention of smoking in this age group. [5]

An important issue to be discussed is the physical activity status in the adolescent group. When the benefits of physical activity on physical and mental health are considered, it is clear that it should be encouraged.

Aims of our study are to assess the effect of smoking status on anxiety and mood, to look at the problems of adolescents from this point of view, to take one more step in adolescent counselling and to be more helpful.

Materials And Methods

Our study was carried out under "The Adolescent Guidance Project". It was also carried out after obtaining written informed consents from patients who agreed to participate in the study through questionnaires completed by patients who are 12-21 years of age, by using observational, analytical and prospective methods, between September 2013 and September 2014 in the Ministry of Health Ankara Training and Research Hospital Family Medicine Clinic. Before starting the survey, we got approval of the Ministry of the Health Ankara Training and Research Hospital Ethics Committee. (September 2013, meeting number 0519 and approval number 4323).

"International Physical Activity Questionnaire", "State-Trait Anxiety Inventory", "Beck Depression Inventory" and according to participants' smoking status "Fagerström Test for Nicotine Dependence" were applied to the participants. Information about physical activity was assessed by using the International Physical Activity Questionnaire (IPAQ).

The inclusion criteria are; to be an adolescent aged between 12-21. The exclusion criteria are; to have any chronic or psychiatric diseases. The adolescents with disabilities were also excluded from the study.

The questionnaire was developed by Dr. Michael Booth in 1996, validity and reliability study was conducted and it was found to be convenient to the Turkish society. The first pilot study was conducted in 1998-99 in our country and reliability and validity study was conducted by Physiotherapist Melda Öztürk in 2005. Short form used in this study consists of seven questions; walking time and the time spending in moderate and severe activities are questioned. Time spending in the living are questioned as a separate question. When information in the survey was calculated, duration of activity was noted as minute, activity frequency was noted as day. The score referred to as MET-minute in the calculation is obtained by multiplying the minutes of performed activities with the MET (metabolic rate) score. The calculation results are classified as categorical as follows:

1-Inactive ones: <600 MET-min / pw

2-Minimum active: 600 <- <3000 MET-min / pw

3-Very active: > 3000 MET-min / pw

"State-Trait Anxiety Inventory" which we performed to determine the mood of adolescents was developed in 1970 by Spielberger and his friends, adapted into Turkish society by Öner and Le Compte in 1985, is a likert type scale which measures state and trait anxiety levels separately with 20 questions. Translated into Turkish in 1975 and tested by the validity and reliability studies, the scale is composed of twenty-items of anxiety and trait anxiety scales. [6,7]

There are two kinds of statements in The State and Trait Anxiety Inventories. Direct phrases express negative emotions, the reversed phrases express positive feelings. Reversed phrases in State Anxiety Inventory are 1st, 2nd, 5th, 8th, 10th, 11th, 15th, 16th, 19th and 20th substances. The reversed phrases in Trait Anxiety Inventory consist of 21st, 26th, 27th, 30th, 33rd, 36th and 39th substances. After total weight of direct and reversed

expressions are obtained separately, total weight of the reverse expression points are extracted from total weight of the direct expression point. This number is added to a predetermined and constant value. This constant value is 50 for Anxiety Inventory and 35 for the State-Trait Anxiety Inventory. The latest value obtained is the individual's anxiety score.

State Anxiety Inventory (SAI) is a very sensitive tool on assessing rapidly changing emotional reactions. Trait Anxiety Inventory which also consists of 20 items in the second part of the inventory generally aims to measure the continuity of anxiety. Scores are between 20 (low anxiety) and 80 (high anxiety). If there are more than three unanswered phrases, the forms are not scored and accepted as invalid. [7]

High points represent high anxiety levels, low points represent low anxiety levels. The same is true when points were interpreted according to the order of the percentage. Low percentiles (1, 5, 10) indicate that there is less anxiety.[7,8]

It was developed by Beck and his colleague in 1961 to measure behavioural symptoms of an adult's depression. It can be applied to psychiatric patients and also to healthy groups. It is a scale that determines the risk of individuals in terms of depression and assesses the level of depressive symptoms and severity of change. It contains totally 21 self-assessment statements. Substances are listed from light form to severe. Instructions of the scale filled by patients are at the beginning of the scale and patients are instructed to mark the most suitable choice for themselves. It provides Likert-type measurement, ratings range is varying between 0-63. It can be interpreted; 0-9 = minimal, 10-16 = mild, 17-29 moderate, 30-63 = severe as violence (Kilinc and Torun 2011). Subscale scores are calculated by cognitive, affective factors and somatic performance factors. The validity and reliability studies of scale for Turkish (1989) were performed by Hisli and his colleague and the cut-off point was regarded as 17. [9]

Fagerström Nicotine Dependence Test applied only to adolescents who smoke, was developed by O. Karl Fagerström to determine the level of physical dependence on tobacco and consists of six questions. Questions are closed-ended. There is positive correlation between the level of nicotine dependency and test scores. Less than 5 points are considered mild, 5-6 points moderate and up to 7 points show severe nicotine addiction. Validity and reliability study of the Test in Turkish language was performed by Uysal and his friends (2004) and the test was found ($\alpha = 0.56$) as mid-level reliability. [10]

Statistical analysis

Data were analyzed by SPSS 16.0 statistical package software (SPSS Inc., Chicago, IL, USA). Firstly, total score of scales and average of the factor scores were calculated. Effects of factors on each other were analyzed by factorial ANOVA test. Then features such as distribution of the working group according to age groups were put forward by descriptive type analysis (number, percentage, mean and standard deviation). In the next step, comparisons of independent groups were made twice by using Mann-Whitney U test groups. "P values" less than 0.05 were considered statistically significant.

Results

Totally 266 adolescents;134 males (50.4%), 132 females (49.6%) whose ages were 12-21 were included in study. While the average ages of males and females were 16.54 ± 2.72, and 16,15 ± 2,52 respectively, the average age of total participants was 16,31 ± 2,63. When participants were classified according to age groups, 89 of them (33.5%) were between the ages of 12-14; 91 of them (34.2%) were between 14-18 and 86 of them (32.3%) were between 18-21. General characteristics of the participants are shown in Table 1.

While 74 (27.8%) participants were doing regular sports, 192 (72.2%) of them were not. 56 (75,7%) of the total 74 participants who were doing regular sports were male and 18 (24.3%) of them were female. 42 (56.8%) participants who were doing regular sports were interested in football, 16 of them (21.6%) in basketball, 8 of them (10.8%) in volleyball, 7 (9.5%) in swimming and 1 (1.4%) in equestrian sport. In addition, participants who sported regularly were interested in only one sport branch. When classified according to the International Physical Activity Scale score, 38 of participants (14.3%) were in inactive category, 171 of them (64.3%) were in minimum active category and 57 of them (21.4%) were in very active category.

Table 1. General characteristics of the participants

PARAMETERS	MALES N (MEAN±SD)	FEMALES N (MEAN±SD)	GENERAL N (MEAN±SD)	P
Age	134(16.12±2.71)	132(15.52±2.53)	266(16.33±2.62)	0.158
Activity Scale Score	134(2316±1363)	132(1791±1102)	266(2056±1267)	0.001
Sitting Time	134(275.41±127.52)	132(276.92±121.32)	266(276.11±124.24)	0.925
State Anxiety Score	134 (41.72±14.73)	132(46.41±14.14)	266(44.02±14.63)	0.008
Trait Anxiety Score	134(39.54±13.13)	132(43.92±13.64)	266(41.62±13.53)	0.008
Beck Depression Score	134(9.12±8.03)	132(10.53 ± 8.43)	266(9.83±8.22)	0.174
Pocket/Year	45(23.71 ± 11.32)	51(27.42 ± 22.61)	96(25.71 ± 18.22)	0.318
Fagerström Score	45(5.42 ± 1.73)	51(5.43 ± 1.42)	96(5.42 ± 1.63)	0.891
	MALES N(%)	**FEMALES N(%)**	**GENERAL N(%)**	**P**
Smoking	134 (50.38)	132 (49.62)	266 (100)	
Yes	45 (33.58)	51 (38.64)	96 (36.09)	0.327
No	89 (66.42)	81 (61.36)	170 (63.91)	0.327
Regular Sports	134 (50.38)	132 (49.62)	266 (100)	
Yes	56 (41.79)	18 (13.64)	74 (27.82)	<0.001
No	78 (58.21)	114 (86.36)	192 (72.18)	
Activity Scale	134 (50.38)	132 (49.62)	266 (100)	
İnactive	17 (12.69)	21 (15.91)	38 (14.29)	<0.001
Minimum Active	74 (55.22)	97 (73.48)	171 (64.29)	
Very Active	43 (32.09)	14 (10.61)	57 (21.42)	

SD: Standart Deviation

Number of smoker participants was 96 (36.1%) and non-smokers were 170 (63.9%). 45 of the smokers (46.9%) were male and 51 of them (53.1%) were female. According to the Fagerström Test for Nicotine Dependence, it was found that 30 participants (32.6%) were slightly; 40 participants (43.5%) were moderately and 22 participants (23.9%) were highly dependent.

The effects of other factors on state anxiety scores for adolescents who participated in this study are shown in Table 2. In our study, the factors that increase the state anxiety scores such as smoking, increasing age, increase of inactive time, the increase in the beck points and increase in physical activity scores were statistically significant (P <0.001).

Table 2. The effects of other factors on state anxiety scores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Model	552571.292(a)	13	42505.484	557.118	<0.001	0.966
Gender	124.487	1	124.487	1.632	0.203	0.006
Sport	183.109	5	36.622	0.480	0.791	0.009
Activity Point	1010.672	2	505.336	6.623	0.002	0.050
Smoking	2270.065	1	2270.065	29.754	<0.001	0.105
Age	540.732	1	540.732	7.087	0.008	0.027
Sitting Time	951.295	1	951.295	12.469	<0.001	0.047
Beck Score	1500.364	1	1500.364	19.665	<0.001	0.072
Error	19302.708	253	76.295			
Total	571874.000	266				

When we look at the relationship between state anxiety score points and physical activity, it was found that anxiety scores were decreased when physical activity score was increased and in this case this finding was statistically significant (P <0.001).

According to the international physical activity scale, 38 participants (14.3%) were categorized as inactive, 171 participants (64.3%) were categorized as minimally active and 57 participants (21.4%) were categorized as very active.

When correlation among increased physical activity score, decrease of inactive time and decreasing state of anxiety scores was evaluated, state of anxiety was statistically significant (P <0.001). In our study; it was found that state of anxiety scores of smokers were statistically significant (P <0.001).

When inactive time of participants increased, state anxiety scores and beck depression points decreased and this finding was statistically significant (P <0.001). It was also found to be statistically significant that there was a positive correlation between beck depression points and state anxiety score (P<0,001) (Table 3).

Table 3. The Relation between beck depression points and state anxiety score

		Age	Inactive time	State anxiety Score	Beck score
Age	Pearson Correlation	1	0.076	0.111	0.004
	Sig. (2-tailed)		0.217	0.070	0.946
	N	266	266	266	266
Sitting time	Pearson Correlation	0.076	1	0.519	0.428
	Sig. (2-tailed)	0.217		<0.001	<0.001
	N	266	266	266	266
State anxiety score	Pearson Correlation	0.111	0.519	1	0.693
	Sig. (2-tailed)	0.070	<0.001		<0.001
	N	266	266	266	266
Beck score	Pearson Correlation	0.004	0.428	0.693	1
	Sig. (2-tailed)	0.946	<0.001	<0.001	
	N	266	266	266	266
	Sig. (2-tailed)	0.946	<0.001	<0.001	
	N	266	266	266	266

In our study; it was found that there was a relationship between the increase of calculated scores according to state anxiety scale and "the reduction of physical activity score", “being a smoker”, "reduction of inactive time”, "increase of Beck depression score" and this finding was also considered statistically significant (P <0.001) (Table 4).

Table 4. The effects of other factors on trait anxiety scores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Model	494860.089(a)	13	38066.161	671.183	<0.001	0.972
Gender	131.803	1	131.803	2.324	0.129	0.009
Sport	585.549	5	117.110	2.065	0.070	0.039
Activity	509.138	2	254.569	4.489	0.012	0.034
Smoking	662.868	1	662.868	11.688	0.001	0.044
Age	5.192	1	5.192	0.092	0.762	0.000
Sitting Time	335.310	1	335.310	5.912	0.016	0.023
Beck Score	2486.285	1	2486.285	43.838	<0.001	0.148
Error	14348.911	253	56.715			
Total	509209.000	266				

When we look at the relationship between "Trait anxiety score" with "Physical activity score"; it was found that points of concern decreased when physical activity score increased and this was statistically significant (P <0.001). According to the international physical activity scale, 38 participants (14.3%) were categorized as inactive, 171 participants (64.3%) as minimally active and 57 participants (21.4%) were very active.

In our study, trait anxiety scores were found to be statistically significant (P <0.001) for smokers. (P<0,001). Increase trait anxiety scores, increase inactive time and increase the beck depression scores were found as statistically significant (P <0.001).

Considering the categories created by the Beck Depression Inventory, 179 participants (67.3%) were in minimal; 31 participants (11.7%) were in slight depression category, 45 people (16.9%) were in medium depression category and 11 people (4.1%) were in severe category.

Table 5. The Relation between trait anxiety scores, sitting time and beck depression scores

		Sitting time	**Beck score**	**Trait anxity score**
Sitting time	Pearson Correlation	1	0.428	0.481
	Sig. (2-tailed)		<0.001	<0.001
	N	266	266	266
Beck score	Pearson Correlation	0.428	1	0.757
	Sig. (2-tailed)	<0.001		<0.001
	N	266	266	266
Trait anxiety score	Pearson Correlation	0.481	0.757	1
	Sig. (2-tailed)	<0.001	<0.001	
	N	266	266	266

The reduction of physical activity scores, being a smoker and increase of trait anxiety score are connected with the increasing Beck depression score and this was found to be statistically significant (Table 6). When we look at the relationship between physical activity points and Beck Depression Point, it was found that depression score was decreased when physical activity score was increased and this situation was statistically significant (P <0.001).

In our study, beck depression scores for smokers were found to be statistically significant and higher (P <0.001).

The trait anxiety scores and inactive time are increased by the increasing Beck Depression Scores (P <0.001) and this was statistically significant (Table 7).

Table 6. The effects of other factors on beck depression scores

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Model	39024.533(a)	14	2787.467	159.412	<0.001	0.899
Gender	40.267	1	40.267	2.303	0.130	0.009
Sport	136.675	5	27.335	1.563	0.171	0.030
Activity Point	1623.876	2	811.938	46.434	<0.001	0.269
Smoking	680.479	1	680.479	38.916	<0.001	0.134
Age	15.666	1	15.666	0.896	0.345	0.004
Sitting Time	35.895	1	35.895	2.053	0.153	0.008
State Anxiety Score	56.267	1	56.267	3.218	0.074	0.013
Trait Anxiety Score	451.907	1	451.907	25.844	<0.001	0.093
Error	4406.467	252	17.486			
Total	43431.000	266				

Discussion

In this study; reduction of physical activity scores and increase of state of anxiety scores were found associated. In addition, there was a correlation between smoking, increase of age, idle sitting time and scores of Beck points and increase in the state of anxiety scores.

Table 7. The Relation between sitting time, trait anxiety score and beck depression score

		Sitting time	Beck score	Trait anxiety score
Sitting time	Pearson Correlation	1	0.428	0.481
	Sig. (2-tailed)		<0.001	<0.001
	N	266	266	266
Beck score	Pearson Correlation	0.428	1	0.757
	Sig. (2-tailed)	<0.001		<0.001
	N	266	266	266
Trait anxiety score	Pearson Correlation	0.481	0.757	1
	Sig. (2-tailed)	<0.001	<0.001	
	N	266	266	266

There was a significant correlation among increasing Beck depression score, the reduction of physical activity and being a smoker, the increase in trait anxiety score.

Sportsman's Beck Anxiety Inventory scores were found to be significantly lower than in control groups statistically in Canan and Ataoğlu's (2010) study. In our study, we found that depression scale scores and anxiety scores are high for adolescents whose physical activity scores are low and are also smokers.[11]

Similar to Basaran and his colleagues' study (2009), we found in our study that anxiety scores of adolescents were affected positively by physical activity. In addition, points of concern were detected to be affected negatively by sitting time.[12]

In our study, anxiety scores of adolescents were found to be negatively affected by smoking. Similar to Marakoğlu (2006), these findings show that smoker adolescents' mental health is under risk.[13]

Similar to Genç and his friends' study (2011), physical activity time for adolescent boys was found to be longer than females' in our study. In our study, anxiety scores and depression scale scores were significantly lower similarly in those who regularly perform sports.[14]

According to some researches, the anxiety levels of females were found to be higher than the anxiety levels of males. In this study, anxiety levels of females were higher likewise.[15]

When we look at the prevalence of smoking; contrary to the Hamzaçelebi and his colleagues' study in 2008, , smoking status of females (52.4%) was higher than smoking status of males (46.9%) in our study, actually this ratio was high in both genders.[16]

In addition, the anxiety scores of adolescents were found to be negatively affected by depression scores in our study. This finding is similar to Özbay and his colleagues' study (1991).[17]

Blumenthal and his colleague chose 16 females and 16 boys by the random sampling technique (1985) and took them in 10-week exercise program, they also chose 16 volunteers with same features as control group. Similar to our work, results showed that participants of the exercise group mentioned less about anxiety and depression than the members of the control group.[18]

In our study we can reach useful conclusions in the management of depression situation by addressing the factors which affect the anxiety and depression scores of adolescents positively or negatively in practice. We can see the activities to quit smoking from this perspective. Whether quitting smoking is beneficial for reducing anxiety or not is arguable. Taking the situation in reverse, there is probability that a person with high depression and anxiety means high rate of smoking. Researchers showed that people smoke with the influence of social, psychological and pharmacological factors.

Because of the positive effect of physical activity on anxiety and depression, adolescents can be directed to regular exercises. Participance in physical exercise and recreational activities can develop their skills, and this development will reduce stress and depression.[19] While Craft and Landers (1998) decided that exercise is beneficial in terms of individual and group interventions to reduce depression, similar results were obtained by Leith (1994) and Morgan (1997).[20-22] In addition, it is also known that exercise can be used as a tool especially for the treatment of low and moderate levels of depression, which is

one of the most common diseases currently, directly or complementary, it is also known to be an important method of intervention and control in terms of prevention and treatment of depression and as effective as medication. [23-27]

Knapen and colleagues demonstrated (2005) that movement therapy is effective on the self-concept, physical self-concept and development of self-esteem, as well as decreased depression and anxiety levels. [28,29]

In our study, although beneficial results have been reached, more comprehensive and multicenter studies are needed for widespread application of the results.

Our findings about adolescents may be beneficial in managing depression and anxiety of adolescents from different perspectives. In our study, we concluded that the lack of physical activity and being a smoker affect both anxiety and depression situation negatively. Therefore, we think that reduction of tobacco use and increase in physical activity for adolescents would have a positive effect on anxiety, depression and mood.

The importance of the first step is great. If primary health care facilities take part in the fight against smoking, the rate of success increases.

Most important feature of adolescence is the experience of rapid change. Participation in sportive activities is important in every period of life, especially for children, young adults and adolescents; it has more critical importance for strengthening the health, disease prevention and psychosocial well-being.

In conclusion; we think that prevention of smoking for adolescents and efforts for directing adolescents to sportive activities by increasing their physical activities would be helpful in coping with anxiety, depression and mood disorders. Our work has the potential which can shed light on studies which will be held in the future on this issue.

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