

Maternal Attitudes, Irritability, Problem Solving Skills and Decision Making in Adolescents with Substance Use: Case-control Study



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SUMMARY

Objective: Multiple risk factors affect the emergence of substance use disorders among adolescents and their families. To the best of our knowledge, the effects of irritability, problem solving, decision making skills and maternal attitudes on the severity of the substance use have not been evaluated on the same population. We aimed to evaluate the presence and the effects all of these variables on the severity of substance dependence.

Method: The study included 40 adolescents, between 14 and 17 years of age, consulting the Child and Adolescent Mental Health and Diseases outpatient clinics with complaints of substance use and 40 age and gender matched healthy controls. The diagnoses were based on the DSM-5 diagnostic criteria. Both groups completed a sociodemographic questionnaire, the Parent Attitude Research Instrument (PARI), the Adolescent Decision Making Questionnaire (ADMQ), the Problem-Solving Inventory (PSI) and the DSM-5 Level 2 Irritability Scale. The patient group were also tested on the Addiction Profile Index for Adolescents (API-AF).

Results: Problem solving skills scores of the patients were lower and the scores on the irritability scale completed by the patients and their parents were higher as compared to the control group. Complacency (indifference) in decision-making predicted the severity of the addiction. As the complacency in decision-making increased, the severity of addiction also increased.

Conclusion: Our results indicated that problem solving and decision-making skills and irritability levels of the adolescents together with the family attitudes, affect substance use disorder in adolescence. These variables should be considered in preventive and therapeutic approaches.

Keywords: Adolescence, substance abuse disorder, family attitudes, irritability, problem solving, decision making skills

INTRODUCTION

Substance use disorder (SUD) is an important worldwide problem among children and adolescents. The increasing young population in Turkey constitutes a concern for SUD becoming one of the major problems in the immediate future. Although currently SUD among adolescents prevalence is lower in Turkey as compared to the western countries, the incidences are being observed to increase (TUBİM 2012).

Epidemiologic research has shown that the lifetime prevalence of SUD among adolescents is 11.4% irrespective of gender difference (Merikangas et al. 2010). SUD usually presents at adolescence with the need to have a pleasant time, to

overcome social and emotional problems as well as seeking excitement (Herken et al. 2000). Problems in family, school and peer relationships, deficits of decision making and problem solving skills, and risky behaviours are considered among the factors leading to SUD (Gürol 2008).

Effects of the family on SUD development in adolescents have been reported (Wills and Yaeger 2003). Substance use by any of the parents, negligent parenting and violence in the family are among the reported risk factors. Low self esteem, lack of adequate skills for coping with problems and developing a dependence on parents also cause liability to SUD in adolescence (European Monitoring Centre for Drugs and Drug Addiction 2008). Research made in Turkey

Received: 02.07.2019, Accepted: 02.05.2020, Available Online Date: 01.03.2021

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on the relationship between cigarette and alcohol use and family problems among university students has indicated that cigarette and alcohol users perceived their family environment as unfavourable (Akfert et al. 2009). It has been reported that adolescents with SUD have deficiency of effective problem solving skills in their families (Herrick and Elliot 2001).

Relationship has been demonstrated between impulsive and avoidant problem solving styles and substance use (Jaffee and D’Zurilla 2009). Substance user adolescents resort to improper use of the avoidant coping skills (Jaffee and D’Zurilla 2009). According to research, alcohol dependent individuals tend to have avoidant and evaluative problem solving approaches rather than planned and self confident approaches (Demirbaş et al. 2012). It has also been shown that adolescents with insufficient problem solving skills tend often to encounter high-risk situations which can instigate them to take up high-risk measures such as substance use (Jaffee and D’Zurilla 2009).

Although many investigations have shown a relationship between SUD and problem solving skills, it has also been argued that social problem solving skills are not related to addiction (Franken et al. 2001) but correlate with irritability which increases the risk and frequency of substance use. Recent research showed that in male adolescents irritability also plays an important role at externalizing disorders as well as the internalizing disorders (Heleniak et al. 2016). Substance use has been likened to treatment by irritability of its own effects (Khantzian 1997).

Social problem solving and judgement are parts of decision making which has been identified as a risk factor for substance use (Cauffman and Steinberg 2000). Through out adolescence, strong decision making skills are determinants of success that decreases the risk of substance use and other health problems (Albert and Steinberg 2011). The newly reported research in the literature evaluates nonreflective and pleasure oriented decision making as a risk for SUD (Casey et al. 2010). This style of decision making, frequently seen in adolescence, may play a role in the development of SUD in this stage of life (Windle et al. 2009). A relationship has been shown between SUD and the inability to delay pleasure, which is more generalised in adolescence and young adulthood (Perry and Carroll 2008). There is evidence for the role of parenting in the development of effective decision making in children. Longitudinal research on SUD has reported that adolescents with parents who include their children in decision making, as against authoritarianism, develop better decision making skills for avoiding excessive alcohol consumption (Xio et al. 2011).

Given that many characteristics of the adolescents and their families have been implicated as factors affecting SUD, we have decided to compare adolescents with SUD and healthy controls by hypothesising that especially having mothers

with adverse parenting style, high irritability and difficulty in problem solving and decision making not only leads to SUD but that problems in these areas exacerbate addiction in adolescence. In so far as we know, there is not another study in the literature investigating these issues in the same experimental population.

METHOD

The study included 40 adolescents between the ages of 14 and 17 and their mothers who consulted the pediatric psychiatry outpatient clinic for substance use between December 2017 and January 2019. Age and gender matched 40 healthy adolescents without active psychopathology and their mothers were included as the control group. The study was given the approval coded 20.478.486 and dated 26.07.2017 by the Manisa Celal Bayar University Ethics Committee. The diagnoses of the addicted adolescents were made by the clinical interview according to the Schedule for Affective Disorders and Schizophrenia for School-Aged Children: Present and Lifetime Version (K-SADS-PL-DSM-5-T), based on the American Psychiatric Association Mental Disorders Diagnostic and Numerical Handbook (DSM-5). A sociodemographic questionnaire, the Adolescent Decision Making Questionnaire (ADMQ), the Problem-Solving Inventory (PSI) and the DSM-5 Level 2 Irritability Scale were completed by both groups of adolescents. The patient group were also tested on the Addiction Profile Index for Adolescents. The Parent Attitude Research Instrument (PARI) and the DSM-5 Level 2 Irritability Scale-Parent Form were completed by the mothers. Addiction Profile Index Adolescent Form (API-AF) was also completed by the SUD group of adolescents.

Evaluation Tools

The Sociodemographic Questionnaire: This form was created by the authors to determine the sociodemographic characteristics of adolescents participating in the study. Some of the items were of the Likert type or the “yes/no” type, and some were open ended. The participants were asked to evaluate their socioeconomic status and school achievements in the 3-point Likert type items as “good”, “medium” or “bad”. A family history of psychiatric illness was questioned as “the diagnosis, if any” and answered by “yes” or “no”.

The Parent Attitude Research Instrument (PARI): The PARI was developed in the USA by Schafer and Bell in 1958, and was adapted to the Turkish language in 1978 by Güney et al. (Öner 1984, Kulaksızoğlu 1989). The PARI consists of the five sub-factors ‘over protective mothering’, ‘democratic attitude and equality’, ‘rejection of homemaking role’, ‘marital conflict’ and ‘strict discipline’ (Öner 1994, Savran 1995).

The Adolescent Decision Making Questionnaire (ADMQ): Developed by Mann et al. in 1989, the ADMQ was adapted to the Turkish language by Çolakakadioğlu (2003). The first part of the questionnaire, consisting of six items, is the subscale evaluating self-confidence. Increased score in this subscale indicates that self-esteem increases during the decision-making process and is evaluated as positive. The second part of the scale, consisting of four sub-sections under the heading of coping styles, includes the cautious-selective (vigilance), panic, evasiveness and complacency in decision making. Cautious decision making reflects a person's ability to make a rational choice amongst all options before making a decision. Panic subsection assesses the decisions taken to save one's self from anxiety and conflict when needing to make a sudden decision. Evasiveness (avoiding responsibility) in decision making is about postponing the decisions and trying to transfer the responsibility to someone else. Complacency (indifference) in decision making is acting as if one does not need to make a decision although it is necessary (Harmoni 1989, Friedman and Mother 1993, Çolakakadioğlu and Güçray 2007).

The Problem Solving Inventory (PSI): The PSI assesses the person's problem solving styles, applicable to both adolescents and adults. It was developed by Heppner and Peterson in 1982 and the validity and reliability of the Turkish language version was carried out by Çam (1995). The PSI is a self-report inventory consisting of 35 items, each scored between 1-6, except the unscored items 9, 22 and 29, totalling maximally 192 and minimally 32 obtainable points. Increasing scores express inadequacy of the individual in problem solving skills. Lower scores are more positive (Savaşır and Şahin 1997, Özdamar 2004).

The Addiction Profile Index Adolescent Form (API-AF): The development, validity and reliability studies on the API-AF were carried out by Ögel et al. (2012). Prepared for the adolescent group, it is used to evaluate the severity and dimensions of addiction. The API-AF includes the subscales on substance use characteristics, addiction diagnostic criteria, the effect of substance use on a person's life, the intense desire to use substance, and the motivation to stop using the substance (Ögel et al. 2012).

The DSM 5 Level 2 Irritability Scale- (Child Adolescent and Parent Forms): This scale consisting of 7 items examines the level of irritability in children and adolescents. The parent form is completed by the parents of children and adolescents aged 6-17 and a self-report form is completed by adolescents aged 11-17. The questions are scored between 0-2. The total score of the first six items can vary between 0-12. The increased scores on scale indicate the increased degree of irritability (APA 2013). The validity and reliability of the scale in the Turkish language was determined by Yalin Sapmaz et al (2017).

The Schedule for Affective Disorders and Schizophrenia for School-Aged Children: Present and Lifetime Version -DSM-5 November 2016 -Turkish Adaptation (K-SADS-PL-DSM-5-T): This updated semi-structured interview scheduled by Kaufman et al. (2016) according to the DSM-5 diagnostic criteria, was adapted to the Turkish language by the researchers, and the translation and back-translation texts were tested in trial interviews with parents and children where by the final form as the K-SADS-PL-5-T was achieved. Its validity and reliability were determined by Ünal et al. (2018).

Statistical Analysis

The SPSS 20 software was used for statistical analysis. In the evaluation of the data, the descriptive statistics as the mean, standard deviation, minimum, maximum, percentage were used. Comparison of the variables was made by the Chi Square test in the categorical data, by the Mann-Whitney U test in groups not meeting the parametric assumptions. Depending on the distribution of the variables, the correlations between measurements were evaluated with the Spearman test. Linear regression analysis was used to determine the variables related to the severity of addiction in the SUD group. The variables determined in simple linear regression analysis to be related to the API-AF data ($p < 0.05$) were evaluated by multiple linear regression analysis including the age variable. Statistical significance level was indicated by $p < 0.05$.

RESULTS

The mean age of the adolescents in the SUD group was 16.2 (SD=0.95), 21 (52.5%) being males and 19 (47.5%) being females. The mean age of starting substance use was 12.48 (SD=2.05). Majority of the SUD group adolescents were high school or primary school leavers with poor and moderate academic performance and perceptions of low or middle socioeconomic level. Both the SUD and the control group participants came from similar regions. All of the SUD group participants had met the substance they used in the circle of friends and 72.5% of these wrote "yes" to the question on whether they had experienced any negative life events up to the present, which was significantly higher than in the control group ($p < 0.001$). The mean age of the adolescents in the control group was 16.4 (SD=0.74), 21 (52.5%) being males and 19 (47.5%) being females. Their academic performance was significantly better than that in the SUD group ($p < 0.001$). More of the control group participants had continued to have formal education and the socio-demographic level perceptions of the majority were at medium and high levels. The demographic characteristics of the substance user adolescents and the control group are summarized in Table 1.

Table 1. Sociodemographic Characteristics of the SUD and the Control Groups

	Case (n=40)		Control (n=40)		p
	n	%	n	%	
Attendance status					
Continuing formal education	5	12.5	38	95	p<0.001
School dropout	28	70	2	5	
Continuing open education	7	17.5	-	-	
Negative Life History					
Present	29	72.5	1	2.5	p<0.001
Absent	11	27.5	39	97.5	
Academic success					
Well	4	10	27	67.5	p<0.001
Moderate	18	45	11	27.5	
Worse	18	45	2	5	
Perception of socioeconomic level					
Lower	17	42.5	1	2.5	p<0.001
Middle	18	45	17	42.5	
Upper	5	12.5	22	55	
Living region					
Village	1	2.5	1	2.5	0.397
Town	22	55	16	40	
City	17	42.5	23	57.5	
Place of residence					
House	38	95	40	100	0.247
Hostel	2	5	-	-	

n: Number

Table 2. Sociodemographic Characteristics of Parents in Both Group

	Case (n=40)		Control (n=40)		p
	n	%	n	%	
Marital status of parents					
Married	28	70	39	97.5	0.002
Divorced	12	30	1	2.5	
Maternal Education					
Didn't go to school	7	17.5	-	-	p<0.001
Elementary school	16	40	3	7.5	
Middle school	10	25	9	22.5	
Highschool and upper	7	17.5	28	70	
Paternal Education					
Didn't go to school	1	2.5	-	-	p<0.001
Elementary school	12	30	-	-	
Middle school	19	47.5	6	15	
Highschool and upper	8	20	34	85	
Family history of substance use					
Present	4	10	-	-	0.058
Absent	36	90	40	100	
Maternal Psychiatric disorder					
Present	7	17.5	-	-	0.006
Absent	33	82.5	40	100	
Paternal Psychiatric disorder					
Present	3	7.5	-	-	0.077
Absent	37	92.5	40	100	

n: Number

Table 3. Comparison of the Performances of the SUD and the Control groups on the Parent Attitude Research Instrument (PARI), Problem Solving Instrument (PSI), DSM-5 Irritability Parent and Adolescent Scales and the Adolescent Decision Making Questionnaire (ADMQ)

	Case Mean	Control Mean	z	p
PARI				
Overprotective mothering	59.89	21.11	-7.472	p<0.001
Democratic attitude and equality	27.49	53.51	-5.027	p<0.001
Rejection of homemaking role	58.96	22.04	-7.144	p<0.001
Marital conflict	59.61	21.39	-7.380	p<0.001
Strict discipline	56.30	24.70	-6.090	p<0.001
PSI total score	48.36	32.64	-3.031	0.002
ADMQ				
Self-confidence	38.58	41.43	-.361	0.718
Cautious-selective (vigilance)	36.78	44.23	-1.468	0.142
Panic	39.48	41.53	-.397	0.691
Evasiveness (avoiding responsibility)	38.40	42.60	-.819	0.413
Complacency	36.76	44.24	-1.459	0.145
DSM-5 Irritability scale-adolescent	55.45	25.55	-5.824	p<0.001
DSM-5 Irritability scale-parent	59.99	21.01	-7.539	p<0.001

Mann Whitney U test is applied

The most common comorbid diagnoses in the SUD group were attention deficit hyperactivity disorder (ADHD) (37.5%) and conduct disorders (CD) (20%), followed by major depressive disorder and bipolar disorder. The most frequently used substances were cannabis (80%) and ecstasy (72.5%), followed by volatile (70%) and synthetic (15%) cannabinoids. The incidence of using more than one substance in the SUD group was 77.5%.

The mean age of the mothers and fathers were, respectively 42.98 (SD=6.47) and 47.84 (SD=3.52) for the SUD group and, respectively, 40.2 (SD=3.68) 42.92 (S=3.63) for the control group. Most parents in both groups were married, but divorce was significantly higher among the SUD group parents (p=0.002). The education level was mostly at primary school level among the SUD group mothers (40%, p<0.001) and at secondary school level (47.5%, p<0.001) among the fathers.

A family history of drug use was reported by 10% of the SUD group in contrast to the control group, who did not report a similar history (p=0.058). The incidence of a family history of psychiatric disorder was 17.5% among the SUD group mothers which differed significantly from the control group

Table 4. Relationship between the Parent Attitude Research Instrument (PARI), Problem Solving Instrument (PSI), DSM-5 Irritability Parent and Adolescent Scales, Adolescent Decision Making Questionnaire (ADMQ) and the Addiction Profile Index- Adolescent Form (API-AF) Severity Scores of the SUD Group of Adolescents

	API-AF Severity	
	r	p
PARI		
Over protective mothering	-.062	0.703
Democratic attitude and equality	-.260	0.105
Rejection of homemaking role	.329	0.308
Marital conflict	.204	0.206
Strict discipline	.075	0.647
PSI Total score	.059	0.718
ADMQ		
Self-confidence	.207	0.200
Cautious-selective (vigilance)	.035	0.830
Panic	.189	0.244
Evasiveness (avoiding responsibility)	.251	0.118
Complacency	.487	0.001
DSM-5 Irritability scale-adolescent	.112	0.492
DSM-5 Irritability scale-parent	.028	0.865

Spearman correlation test is applied

Table 5. Addiction Profile Index Adolescent Form-Reduced Model of Variables Affecting Severity Scores with Multiple Linear Regression

		B	Std B	t	p
API-AF severity	Constant	9.017		2.248	0.031
	Panic	0.126	0.278	1.787	0.083
	Evasiveness (avoiding responsibility)	0.067	0.108	0.643	0.524
	Complacency	0.252	0.351	2.197	0.035
	Age	0.69	0.046	0.317	0.753

R²=0.293; P=0.014

API-AF: Addiction profile index adolescent form

($p<0.05$), while the 7.5% incidence of a paternal history of psychiatric disorder was not significantly different from the control group ($p=0.077$). The maternal psychiatric disorder diagnoses of the SUD group were depression ($n=5$), bipolar disorder ($n=1$) and schizophrenia ($n=1$) while the paternal diagnoses were substance dependence ($n=2$) and bipolar disorder ($n=1$) (Table 2).

The PARI scores of the SUD group, except for the democratic attitude were significantly higher than in the control group (Table 3). Also, the PSI score of the SUD group was significantly higher than that of the control group ($p<0.05$). The ADMQ scores of the control group were higher, but the difference from the SUD group was not statistically significant. Adolescent and parent irritability scores were found to be statistically significant in the SUD group participants (Table 3).

A significant correlation was not determined in the subscale comparisons between the PARI and API-AF severity scores of the SUD group. Also the API-AF severity score of the SUD group was not significantly correlated with the scores on the PSI and the DSM-5 Irritability Scales. A positive correlation was found between the complacency (indifference) subscale of ADMQ and the and the API-AF severity score (Table 4). In the simple linear regression evaluation, variables which were determined to be related to the severity of addiction (API-AF severity) ($p<0.05$), were included in the multiple linear regression analysis in which a separate model was created for the API-AF severity score. The model was found significant ($p<0.05$). It was determined that the severity of addiction increased significantly as the complacency (indifference) in decision-making increased (Table 5).

DISCUSSION

The results obtained in our study suggest that adolescents who use substance have inadequate skills for problem solving as compared to healthy adolescents, that there are problems with the attitudes of their mothers, that they have high levels of irritability, that they delay decision making or avoid responsibility and that the tendency to complacency or indifference exacerbates their substance dependence.

Inadequacies in parental attitudes and supervision and weak parent-child relationship have been shown to result in increasing amounts of substance and alcohol use (Clark et al. 2005, Luyckx et al. 2011). Baumrind (1991) reported that adolescents with SUD had been exposed to a more authoritarian parental attitude when they were 4 years old. In a study recently conducted in Turkey with 581 secondary school students, statistically significant relationships were demonstrated between alcohol use and inconsistency and insensitivity dimensions and the authoritarian-repressive

attitude dimension; and also between cigarette use and the authoritarian-repressive attitude dimension of family problems in adolescence (Arslan and Balkis 2014). In a study on 544 adolescents between the ages of 14-18, those who had SUD were found to have lower perceptions of family support. Their families showed less acceptance-interest, control-supervision and provided psychological autonomy (Aydoğdu and Çam (2013). When the attitudes of the families of 50 adolescents between the ages of 14 and 18 with and without SUD were analysed, the scores on "acceptance-interest", "psychological autonomy" and "control-supervision" dimensions were significantly lower in adolescents with SUD; and while the "negligent" parental attitude (48%) was observed more frequently in the SUD group, the democratic parental attitude (46%) was more frequent in the control group (Atar et al. 2016). Our study supported the literature in showing that all parental attitude scores were significantly higher in the SUD group except the scores on the democratic parental attitude which were found to be higher in the control group. It can be said that substance user adolescents with intrusive, over-controlling mothers who want their children to be addicted to them do not trust themselves adequately when decision making and need the control and approval of another individual. Also, when not having enough time to make a decision, they may be unable to use the panic dimension for coping with quick decision making to escape from the stress and conflict, and yet again need another individual's interpretation and control.

It is reported in the literature that SUD is frequently accompanied by mental disorders such CD and ADHD (Zincir et al. 2012, Kuğu et al. 2000, Bilaç et al. 2019). Difficulties in problem solving skills can be observed in children and adolescents diagnosed with destructive behavior disorder (Özcan et al. 2010). In our study the difficulties of problem solving and decision making shown in the SUD group, as compared to the healthy controls, may have also been affected by the CD and ADHD comorbidities.

Investigations on parental attitudes have demonstrated that parental democratic attitudes increase as the education level increases and the socio-economic level gets raised from the lower to the middle and upper levels; and, also, the problem-solving skills of adolescents increase as the education level of their parents increases (Bronstein and Zlotnik 2008, Serin and Derin 2008, Çağlayan et al. 2008, Yıldırım et al. 2011, Çetin and Aytar 2012). In our study, the differences observed in the education and socioeconomic levels between the adolescents with SUD and the control group may underlie the significant differences in the problem solving skills and the maternal attitudes of the two groups.

The children of parents with high levels of support, acceptance and interest have a lower future risk of substance use (Sitnick et al. 2013). The risk of substance abuse is lower

in children with sufficient sense of trust in family and friends as compared to the children who have not developed a similar sense of trust (Siyez et al. 2012). Considering the results of our research and of others, it is clear that there is a significant relationship between familial characteristics and substance use, and that adverse maternal attitudes pose the risk for substance use during adolescence.

Herrick and Elliott (2001) argue that substance abuse is associated with inadequate coping skills. Especially the impulsive and avoidant problem solving styles have been shown to be related to substance use (Jaffee and D 'Zurilla 2003). It has been reported that there are deficiencies of the skills for problem solving and coping with daily problems in the families of adolescents with SUD (Herrick and Elliott 2001). Adolescents who make less use of the rational problem solving skills have reported facing negative and risky moods more often which can lead them to high risk behaviours such as substance use (Jaffee and D 'Zurilla 2009).

Our study supported the literature in showing that the young people with SUD perceived themselves insufficient in problem solving and as this skill decreased, they avoided taking responsibility. This indicates that substance user adolescents with low problem-solving skills postpone decision making in situations where decision-making is necessary, or burden others with the responsibility. It has been shown in the literature that the lowered decision making skill in adolescents with SUD also depends on the deficiencies in social problem solving success (Cauffman and Steinberg 2000).

Our results support the reports in the literature by showing that increasing indifference in decision making increases and predicts addiction severity. Hence, it can be said that substance user adolescents by avoiding decision making when it is needed exacerbate the need for substance use, as shown by resorting often to avoidant coping mechanisms instead of appropriate alternative coping ways (Jaffee and D 'Zurilla 2009). In parallel with these findings, it can be said that when facing a problem, substance user adolescents opt for the avoidant coping style as if the situation does not require decision making thus coping with the problem by not taking a decision.

Studies showing the association of high level of anger with substance use are few in numbers (Terzi 2009, Öner et al. 2005, Benvegna et al. 2005, Avcı et al. 2017, Tarter et al. 1995). It was determined by using the Aggression Questionnaire that substance user adolescents had more physical, indirect, hostile, angry aggression levels compared to those who did not use substance (Terzi 2009). The severity of addiction increased with persistent anger as the inward and outward anger increased (Avcı et al. 2017).

A long term follow up study on adolescents at 10-12 years of age with substance user fathers showed that the family

dysfunction, stress level of the child, and low impulse control were effective on the irritability scores of the child after 2 years such that the style of coping with the family incompatibility of these highly irritable adolescents was resorting to substance use (Tarter et al. 1995). In our study, it was observed that the irritability levels of the adolescents with SUD, although higher than that of the healthy adolescents in accordance with the literature, did not correlate with the severity of addiction and irritability in contrast to the results of Avcı et al. (2017).

Our study, despite providing data on the factors affecting the increasingly prominent problem of substance use in adolescence, has limitations that need to be considered in the evaluation of the data. Having included only the adolescents and their mothers who consulted the child and adolescent psychiatry outpatient clinics with complaints of substance use, our study is cross-sectional with a low number of participants which prevents the generalisation of the obtained results. Another limitation is having matched the patient and the control groups only on the basis of age and gender and the dissimilarities of data in these two groups with respect to parental education level and history of psychiatric disorders.

In conclusion, the results of our study indicate the need for determining in all risk groups the familial risk factors, their effects on the problem solving and decision making skills and irritability levels of adolescents for the purpose of developing preventive measures against these. Such evaluations can guide professionals in this field for the development of protective measures and clinical practices on substance use, which is one of the most serious problems facing the world and especially the youth in recent years. The results of our study show that the follow-up and treatment on youth with SUD should not be restricted only to substance use.

These youths should be evaluated by clinicians in order to develop healthy problem-solving and healthy decision-making skills in difficult situations and they should be provided with the appropriate therapeutic treatment methods to acquire the proper skills. Developing problem solving skills is central to the cognitive behavioral practice directed to substance use behavior in both adults and adolescents. Development of effectively targeted problem solving skills will increase the effectiveness of treatment. Physicians should work not only with adolescents but also on the inappropriate parenting attitudes of their parents. In particular, as shown by the results of our study, adolescents with raised irritability and aggression levels should be kept in mind as being under the risk of substance use and should be brought under treatment approaches for anger control. With all these approaches, it should be possible to prevent substance use and reuse in all risk groups.

There is need for more studies on community based long term follow-up studies in order to identify strategies for

the prevention of substance use by adolescents. In order to prevent substance abuse and addiction, professionals working in this field should advise both adolescents and their families on issues such as developing problem-solving skills and anger control as well as monitoring the follow up in the risk groups.

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