Araştırma / *Original article*

Trends and gender differences in alcohol and substance use among children and adolescents admitted to an addiction treatment center in Turkey: comparison of 2014 with 2011

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ABSTRACT

Objective: *The aim of this study was to evaluate the trends and gender differences in alcohol and substance use behaviors in youth admitted to an addiction treatment center in Istanbul.* ***Methods:*** *Participants were 2755 substance using children and adolescents who were treated at the Bakırköy Mental Health and Neurologic Disorders Hospital between 2011 and 2014. The World Health Organization student drug use questionnaire' was completed by trained clinicians.* ***Results:*** *There was an increase in the total number of youths admitted for substance use treatment (31.4% in 2011, 68.6% in 2014). A significant increase found in polysubstance use and in the number of females seeking treatment for substance use from 2011 to 2014. Alcohol, ecstasy, synthetics cannabinoids and heroin usage showed increase whereas inhalants, cannabis, prescribed medicines usage showed decrease in 2014. In 2014 while girls mostly consumed ecstasy, prescribed medicines and cocaine boys mostly used cannabis and synthetics.* ***Conclusions:*** *As new popular illicit drugs emerge in the market in the recent years, it is essential to reexamine the new trends in substance use and to reconsider prevention policies and treatment strategies.* ***(Anatolian Journal of Psychiatry 2016; 17(4):325-331)***

Keywords: *substance use, alcohol, trends, treatment, children, adolescents*

Türkiye'de bir bağımlılık merkezinde tedavi görmekte olan çocuk ve ergenlerde madde ve alkol kullanımındaki eğilim ve cinsiyet farklılıkları: 2011 ile 2014 yıllarının karşılaştırılması

ÖZ

Amaç: *Bu çalışmanın amacı, İstanbul'da bir bağımlılık merkezine tedavi için başvuran gençlerde, alkol ve madde kulanımı davranışıyla ilgili olarak eğilim ve cinsiyet farklılıklarının değerlendirilmesidir.* ***Yöntem:*** *Katılımcılar madde kullanmakta olup, 2011-2014 yıllarında Bakırköy Ruh ve Sinir Hastalıkları Hastanesi'ne başvurmuş 2755 çocuk ve ergendir. Bu amaçla, Dünya Sağlık Örgütü Öğrenci Madde Kullanım Anketi eğitimli klinisyenler tarafından doldurulmuştur.* ***Sonuçlar:*** *2014 yılında madde kullanımı için başvuran gençlerin toplam sayısında artış saptanmıştır (2011'de %31.4, 2014'te %68.6). 2011'den 2014'e kadar çoklu madde kullanımında ve tedavi için başvuran kızlarda anlamlı artış bulunmuştur. 2014 yılında alkol, ekstazi, sentetik kanabinoidler ve eroin kullanımında artma; uçucu, esrar, reçeteli ilaç kullanımında azalma saptanmıştır. 2014 yılında kızlar en çok ekstazi, reçeteli ilaç ve kokain kullanırken; erkeklerin daha çok esrar ve sentetik maddeler kullandığı saptanmıştır.* ***Sonuç:*** *Yeni ve popüler yasa dışı maddeler ortaya çıktıkça, madde kullanımındaki yeni eğilimlerin yeniden gözden geçirilmesi, önleyici tedbirler ve tedavi stratejilerinin belirlenmesi açısından önemlidir.* ***(Anadolu Psikiyatri Derg 2016; 17(4):325-331)***

Anahtar sözcükler: *Madde kullanımı, alkol, trendler, tedavi, çocuklar, ergenler*

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INTRODUCTION

Substance use in young people has proven to be a rapidly changing phenomenon requiring frequent assessments and reassessments as substance use is a leading cause of preventable morbidity and mortality during adolescence and later life. A widespread epidemic of illicit drug use emerged in the 1960s among Turkish and European youth, and since then dramatic changes have occurred in the use of nearly all drugs involved. In the following years, many new illicit drugs have emerged, along with new forms of alcoholic beverages. The usage rate for each individual drug reflects many more rapidly changing determinants specific to that drug. These are: how widely its psychoactive potential is recognized, how favorable the reports of its supposed benefits are, how risky its use is seen to be, how acceptable it is in the peer group and how accessible it is.[1]

Throughout these many changes, substance use among the nation's youth has remained a major concern for parents, teachers, youth workers, health professionals, law enforcement, and policymakers, largely because substance use is one of the greatest and yet most preventable causes of morbidity and mortality both during and after adolescence. Worldwide, many countries try to collect data about the trends in substance use in order for prevention. One of the main projects conducted for this goal is the European School Survey Project on Alcohol and Other Drugs (ESPAD Project). The most important objectives in the long run are to monitor trends in substance use among students in European countries and to compare trends between countries and between groups of countries.[2] A similar data collection in USA is, Monitoring the Future (MTF) study, which is a long-term study of American adolescents, college students, and adults through age 55. It has been conducted annually by the University of Michigan's Institute for Social Research since its inception in 1975.[1]

The ongoing collection of valid and reliable data is very important in identifying the problems and determining the effective policies and intervention efforts in substance use.

There has been a limited research that evaluated the substance use trend among children and adolescents in Turkey. A recent study evaluated the trend of substance use in children and adolescents between 2011, 2012, and 2013 in Istanbul.[3]

Similar to the MTF studies which are conducted annually,[1] our present study is designed to evaluate the latest trends in substance and alcohol use of youth in 2014 and to determine the annual differences, at one of the biggest treatment center for youth in Istanbul, so that we could compare the annual results and identify the preference of popular substances with the induction of media and other social effects on behalf of the establishment of current preventive policies and treatment methods just like the MTF studies.[1] For this purpose, data for 2014 was compared with data for 2011 to see the change in trends and gender differences of substance use between these years.

METHODS

The children and adolescents admitted for substance use treatment to the 'Children and Adolescent Alcohol and Drug Dependency Treatment Center (CAADDTC)' at Bakırkoy Training and Research Hospital for Psychiatry, Neurology and Neurosurgery, Istanbul, Turkey, between 2011 and 2014 were recruited for the study. The study proceeded under the permission of the local ethical committee of the Bakırkoy Hospital. All subjects and their parents were asked to participate and they were provided written informed consent after the procedures were fully explained to them and their questions were answered. Inclusion criteria were having literacy, having given informed consent, and age no greater than 18 years old.

The 'World Health Organization (WHO) Students' Drug Use Questionnaire' and a semi-structured form were completed for all patients by trained clinicians (authors). Students' drug use questionnaire (WHO), has been validated by Adelekan and Odejide.[4] This questionnaire has three sections. The first section relates to sociodemographic items, the second section assesses the pattern of substance use. The substances of enquiry include tobacco, alcohol, cannabis, synthetic cannabinoids, opiates, cocaine, psycho-stimulants, hallucinogens, organic solvents/inhalants, prescription medicines, and hypnosedatives. For each class of substances, there are four subsections to elicit current and lifetime use, frequency of use and age of first use. The third section consists of items relating to substance use among the patient's friends and family members and the patient's knowledge about the harmful effects of substance use.

Semi-structured form was used to obtain self-reported information. Subjects and family charac-

teristics were analyzed in terms of substance types, gender and age groups. Since tobacco use gives variety of different results, it is not included in the analysis.

Substances were categorized as alcohol; MDMA-ecstasy (3,4-methylenedioxy-N-methylamphetamine); cannabis; prescription medicines; heroin; cocaine; solvents/inhalants, synthetic cannabinoids and others. Prescription medicines included benzodiazepines.

Statistical analysis

Descriptive statistics of the categorical data and of the numerical data are expressed as numbers and percent values and mean±SD respectively, and they are illustrated in tables. Pearson's chi-square test was used for relationships between years, genders, and age groups. A p value <0.05 was accepted as statistically significant. PASW (ver.18.0) program was used for all statistical calculations.

RESULTS

The number of patients who were admitted to CAADDTC for treatment and included in the study was 865 in 2011 and 1890 in 2014. Number of adolescents included in the study was 2755. According to the age group distribution, the ratio of participants included in this study who were older than 14 years of age was 95.4%; whereas, the ratio of participants who were younger than 14 years old was 4.6%. Additionally, the gender distribution ratios of participants included in this study consisted of 83.3% boys and 16.7% girls.

The mean ages of adolescents in the years 2011 and 2014 were 16.4±1.47 years and 16.1±1.32 years, respectively; this difference was not statistically significant. When these two groups were compared, the differences between their ages at treatment admission, and the ages at the time that they began to use substances were similar (p=0.324). The ages of the adolescents when they began to use substances were determined for the year 2011 and 2014 separately, and were 14.2±2.0 years and 14.1±1.9 years, respectively; the age to begin using substances did not differ significantly between years (p=0.174). Poly-substance use in the year 2014 was significantly higher as compared to 2011. The mean number of substance types used determined for the years 2011 and 2014 were 2.25±1.23 and 2.94±1.88, respectively.

The distributions of the responses of participants with regard to years and demographic characteristics are illustrated on Table 1. The number of females was significantly higher in the year 2014 (p<0.001); distribution of age groups with regard to years did not differ significantly.

Comparison of substance use ratios

Substance use ratios in the years 2011 and 2014 are compared in the Table 2, and p values are indicated. Cocaine use ratio did not differ significantly between the years 2011 and 2014 (p>0.05). The alcohol, ecstasy, synthetic cannabinoids and heroin use ratios were significantly

Table 1. The distributions of the responses of participants with regard to years, demographic properties

Years*	2011		2014		
Properties	n	%	n	%	p
Gender					
Male	754	87.2[a]	1270	81.2[b]	<0.001
Female	111	12.8[a]	295	18.8[b]	
Admitted to hospital by					
Family	592	68.8[a]	1190	85[b]	<0.001
Social services	35	4.1[a]	86	6.1[b]	
Legal services	120	13.9[a]	67	4.8[b]	
Himself/herself	21	2.4[a]	57	4.1[b]	
Other	93	10.8[a]	0	0[b]	
Inpatient treatment	84	9.7[a]	65	4.7[b]	
Age groups					
<14 yrs	41	4.7	70	4.6	0.867
≥14 yrs	824	95.3	1455	95.4	

*****: *Completely different letters at the bottom right of the percent are shown statistically significant differences between 2011 and 2014 years.*

Table 2. Comparison of substance use ratios in 2011 and 2014

Years*	2011		2014		
Properties	n	%	n	%	p
Alcohol	198	22.9[a]	653	47.5[b]	<0.001
İnhalants	523	60.5[a]	546	39.5[b]	<0.001
Ecstasy	271	31.3[a]	656	47.4[b]	<0.001
Cannabis	626	72.4[a]	773	55.9[b]	<0.001
Synthetics	54	6.2[a]	1018	73.5[b]	<0.001
Prescribed med.	58	6.7[a]	60	4.3[b]	0.014
Heroine	109	12.6[a]	240	17.3[b]	0.003
Cocaine	48	5.5[a]	98	7.1[a]	0.153
Other	58	6.7[a]	29	2.1[b]	<0.001

*****: Completely different letters at the bottom right of the percent are shown statistically significant differences between 2011 and 2014 years

Table 3. Comparison of substance use ratios in 2011 and 2014 with regard to gender

	2011					2014				
	Male		Female			Male		Female		
	n	%	n	%	p	n	%	n	%	p
Alcohol	163	21.6[a]	35	31.5[b]	0.020	531	47.6[a]	122	47.3[a]	0.922
Inhalants	461	61.1[a]	62	55.9[a]	0.288	442	39.5[a]	104	39.8[a]	0.909
Ecstasy	214	28.4[a]	57	51.4[b]	0.001	516	46.0[a]	139	53.3[b]	0.034
Cannabis	547	72.5[a]	79	71.2[a]	0.762	642	57.2[a]	131	50.2[b]	0.039
Synthetics	41	5.4[a]	13	11.7[b]	0.011	840	74.8[a]	177	67.8[b]	0.021
Prescribed medicines	50	6.6[a]	8	7.2[a]	0.821	43	3.8[a]	17	6.5[b]	0.050
Heroine	91	12.1[a]	18	16.2[a]	0.263	192	17.1[a]	48	18.4[a]	0.698
Cocaine	35[a]	4.6[a]	13[b]	11.7[b]	0.002	66[a]	5.9[a]	32[b]	12.3[b]	0.001
Others	49	6.5[a]	9	8.1[a]	0.527	20	1.8[a]	9	3.4[a]	0.090

*****: Completely different letters at the bottom right of the percent are shown statistically significant differences between male and female in 2011 and in 2014 years.

Table 4. Comparison of substance use ratios in 2011 and 2014 with regard to age groups

	2011					2014				
	<14 yrs		≥14 yrs			<14 yrs		≥14 yrs		
	n	%	n	%	p	n	%	n	%	p
Alcohol	3	7.3[a]	195	23.7[b]	0.015	14	23.3[a]	639	48.6[b]	0.001
İnhalants	36	87.8[a]	487	59.1[b]	0.001	29	48.3[a]	517	39.1[b]	0.001
Ecstasy	3	7.3[a]	268	32.5[b]	0.001	11	18.3[a]	645	48.7[b]	0.001
Cannabis	11	26.8[a]	615	74.6[b]	0.001	15	25.0[a]	758	57.3[b]	0.001
Synthetics	3	7.3[a]	51	6.2[a]	0.771	22	36.7[a]	996	75.2[b]	**0.001**
Prescribed medicines	1	2.4	57	6.9	0.263	2	3.3[a]	58	4.4[a]	0.698
Heroine	2	4.9	107	13.0	0.127	7	11.7[a]	233	17.6[a]	0.235
Cocaine	0	0	48	5.8	0.112	3	5.0[a]	95	7.2[a]	0.521
Others	1	2.4	57	6.9	0.263	0	0[a]	29	2.2[a]	0.247

*****: *Completely different letters at the bottom right of the percent are shown statistically significant differences between age groups in 2011 and in 2014 years*

higher in the year 2014; however, use of inhalations, cannabis, prescribed medicines and other substances was lower in 2014 compared to 2011.

Comparison of the year results by the gender

Substance use ratios in 2011 and 2014 with regard to gender are compared in the table below, and p values are indicated (Table 3). Cannabis, inhalants, prescribed medicines and heroin use ratios did not differ significantly among males and females between years (p>0.05). In 2014, there were no differences in alcohol, inhalants, heroin use between genders, however ecstasy, prescribed medicines and cocaine use were higher in girls and cannabis and synthetics use were statistically higher in boys.

Comparison of the year results by the age groups

Substance use ratios in 2011 and 2014 with regard to age groups (below or above 14 yrs.) are compared in the table below, and p values are indicated (Table 4). In 2011, synthetics, prescribed medicines, heroin and cocaine; in 2014, inhalants, prescribed medicines, heroin and cocaine use ratios did not differ significantly between the age groups (p>0.05). In 2011, alcohol, ecstasy and cannabis; in 2014, plus synthetics were higher in subjects who are older than 14 years of age. In 2011 only inhalants use was higher in subjects who are younger than 14 years of age.

DISCUSSION

Present study found that there was a statistically significant increase in the rate of alcohol, ecstasy, synthetic cannabinoids and heroin use

use in 2014 and there was a statistically significant increase in the mean number of substances used in 2014 compared to the year 2011. Increase in ecstasy, synthetic cannabinoids and heroin use in 2014 is consistent with the 2015 study of Tanidir et al.[3] In present study only alcohol use showed increase in 2014 compared to their 2013 findings. Their finding of decrease in inhalant use continued in 2014; use of cannabis, prescribed medicines and other substances also showed decline in 2014 compared to 2011.

In present study polysubstance use ratio were found to be higher in 2014 compared to 2011. Pumariage analyzed data from a recent survey of substance abuse and significant risk factors amongst 31272 high school youth between ages of 14 and 18 in Istanbul, Turkey. In their sample, 2.6% of youth had engaged in the use of two of any nine illicit substances other than cannabis.[5] Our study showed that polysubstance use was higher in subjects who are older than 14 years of age. This finding is consistent with the 2013 study of Bracken, who reported that adolescents increased their use of almost every substance (except inhalants) with the increasing age.[6] One study investigating substance use in a sample of Turkish medical students reported that 4% of students reported using illicit drugs (cannabis, ecstasy, cocaine) at least once in their lifetime.[7]

Cannabis and synthetic cannabinoid use

Our study revealed that by the year 2014, synthetic cannabinoids use was significantly increased, whereas cannabis use showed decrease from 2011 to 2014. These results were inconsistent with the USA, MTF 2013 results. In USA cannabis use increased but, synthetic cannabinoid use declined in 2013 and in 2014.[1,8] However, our results which point out a significant decrease in cannabis use are consistent with MTF 2014 results, which reveals that, cannabis use, after five years of increasing among teens, declined slightly in 2014. Our results about cannabis use are also consistent with the EMCDDA data, which reports that the overall use of cannabis appears to be stable or even declining.[9]

Synthetic cannabinoids seem to have replaced cannabis in recent years in Turkey. During the last years, marketing of synthetic cannabinoids has increased markedly in Turkey since synthetic cannabinoids was cheap, easily accessible and there were detection difficulties in labs. Our result of increment in synthetic cannabinoids and decrement in cannabis might be due to the fact that the cannabis is more expensive and is strictly controlled by narcotic police department; however synthetic cannabinoids were readily and legally available on the internet and from street vendors etc. in Turkey. Additionally, since synthetics do not have odor and stain and are easy available, perceived risk associated with synthetics might be low among youth in Turkey.

Present study reveals that, decrease in use of inhalants that was shown from 2011 to 2013 by 2015 data of Tanidir et al.[3] continued in 2014. Similarly MTF study reveals that the use of inhalants also declined in 2013 in USA.[1]

This result might be due to that in recent years easy accessible, cheaper synthetic cannabinoid agents may replace them in Turkey.

Cocaine use

Present study showed that cocaine use remained steady between 2011 and 2014. Our study results are consistent with the MTF study whereas inconsistent with the EMCDDA study. Similarly, cocaine use was also reported to remain unchanged between 2013 and 2014 in USA.[8] However, cocaine use is showing a decrease in the EMCDDA study in the recent years.[9]

Ecstasy use

There was a statistically significant increase in the prevalence of ecstasy use from 2011 to 2014 in our study. Similarly, in the USA, annual prevalence of ecstasy use in high school students was found to be increased from 2010 to 2012 but had not been changed from 2012 to 2013 which is not consistent with our results.[1] MTF study 2014 results showed that, ecstasy (MDMA) use showed a statistically significant decline in 2014.[8] This finding is totally inconsistent with our results, which showed a statistically significant increase in ecstasy usage by the year 2014. The study of Corapcıoglu and Ogel investigated the trends of substance use among youths between the years 1998 and 2001 in Istanbul. They found that the lifetime ecstasy use in the secondary school students increased between 1998 and 2001.[10] Increment seen in ecstasy use in present study might be due to lower level of perceived risk for experimental use among high school students. Concordantly recent studies showed that perceived risk and disapproval of ecstasy is lower than other hard drugs among youth.[1,10]

Alcohol use

Our results showed a significant increase in alcohol consumption from 2011 to 2014. In contrary, gradual declines were seen in alcohol use

in USA, from 1980 to 2013.[1] MTF 2014 study results, showed a decline in alcohol use.[8] Lifetime prevalence of alcohol use has also been relatively unchanged in most European countries.[2] Until now, results of most of the studies of alcohol use among Turkish youth were lower than European and American results.[1,11] This was attributed to predominacy of Islamic religion among Turkish population and strict prohibition of alcohol consumption by Islamic religion. Increment in alcohol use from 2011 to 2014 in our study might be due the influences of globalization, which include other cultural features. The globalization and social media glamorize youth culture including substance abuse as a significant aspect of behavior.[7] Akvardar reported risky alcohol consumption ratio as 7.4% in Turkish medical students.[7] We predict that adolescent alcohol use like other illicit drugs is soon likely to become perhaps the most important challenge for emerging economies like Turkey.

Heroin

Looking at the trends in heroin use, we found an increase in prevalence. Contrary to that, there was a decline in heroin use in the developed countries.[12] EMCDDA Study, reported heroine to be generally stable and trending downwards except Turkey during recent years.[9] A study of substance use trends from Italy reported a consistent decrease in the prevalence of heroin use between 2005 and 2009.[13]

Interpretation of this finding of increase seen in heroin use might be that, our study population consisted of subjects seeking treatment for substance use and that, people using heroin seek treatment more frequently since heroin withdrawal syndrome is more severe and vital compared to other drugs. Furthermore, since our clinic has an inpatient unit for heroin addictive patients who need to be hospitalized in order to obtain suboxan (buprenorphine-naloxan comb), this might have led to an increment in the number of heroine using patients.

Male-female differences in substance use

Our study's results revealed that cannabis use showed increase among males from 2011 to 2014 and this finding is consistent with the MTF study[12] and with ESPAD data in 2007 in the 27 countries.[2,14,15] Annual prevalence tends to be more in males for ecstasy (MDMA), cocaine, cocaine powder, heroin in the MTF study. In contrast, our study found ecstasy use significantly high in females in 2014, which is inconsistent with the MTF study.[12] Our study is also inconsistent with the MTF study as we found no gender differences in the usage of heroin in 2014 and cocaine use remains to be statistically higher in females in our 2014 results.

Similar with our results, Moreira reported that the rate of crack cocaine-related hospitalizations increased in women in 2010.[16] These data may indicate a new trend in the pattern of psychoactive substance use in women. Increment in cocaine might be due to the glamorizing effects of movies and media and negative influences of these on adolescents.

Our results showed that alcohol use was statistically higher in females in 2011, whereas in 2014 no gender difference was detected. This shows a decrease in alcohol use in girls in Turkey by the year 2014.

Inconsistent with the MTF study[12], which found higher inhalant use in female subjects, no gender difference was found by means of inhalants use in our study.

Age differences

In the present study, subjects who are 14 years and older used alcohol, ecstasy, cannabis and synthetics more frequently in 2014 and the difference is statistically significant. Inhalants use was higher in subjects who are 14 years and younger in 2011, but inhalants use did not show any statistical difference among the age groups by the year 2014 which indicates a decrease in the inhalants usage in the youngsters (age less than 14) as very a good improving sign.

LIMITATIONS

The strength of our study is the large sample size from a high-risk population, which may better characterize substance users and their patterns of use compared to national drug survey studies. Our most important limitation is the possible selection bias that might have inflated the level of poly-drug and hard drug use, because our clinic is one of the biggest addiction treatment centers with an inpatient unit for youths in Turkey. Additionally, our patients mostly come from low income and less educated families, possibly constituting a group, with a greater number of psychiatric problems and disorders compared to population-based and other clinical samples. Our study sample may not be totally representtative for all substance using youths in Turkey, particularly due to the existence of youths who did not attend substance treatment services and due to the fact that data were limited to one city

of the country. Anyhow, Istanbul is a city which has a high immigration rate from other parts of the country, therefore many children and adolescents from other cities of Turkey are referred to that special center for substance use treatment.

CONCLUSION

Present study showed that, there were marked changes in the types of substances used between the years 2011 and 2014 in Turkey. Also an increase in the total number of youths being admitted for substance use treatment and in the number of treatment seeking females were observed by the year 2014.

As new popular illicit drugs emerge in the market in the recent years, it is essential to reexamine the new trends in substance use and to reconsider prevention policies and treatment strategies. Considering the increase in the number of youths using substances, newer and more effecttive treatment and preventive strategies should be updated for children and adolescents who are under risk in Turkey.

Authors' contributions: *N.G.D.: Identification of research topic, literatüre, planning, writing process; A.D.Ç.: Planning, research procedure; O.Z.: Statistical analysis, writing process; M.T.: Literature, research procedure F.Ö.: Research procedure; G.G.: Statistical analysis; G.M.K.: Statistical analysis; A.E.: Identification of research topic, planning, writing process.*

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