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Research Article

The Effect of Maternal or Paternal Smoking on the Age at Onset of Smoking, Nicotine Dependence and Gender; a Single Center Experience in 902 Patients from the Smoking Cessation Clinic at İstanbul Medical Faculty

Anne veya Baba Sigara İçiciliğinin Sigaraya Başlama Yaşı, Nikotin Bağımlılığı ve Cinsiyet Üzerine Etkileri; İstanbul Tıp Fakültesi Sigara Bırakma Polikliniği'nden 902 Hastada Tek Merkez Deneyimi

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Abstract

Our study was conducted to determinethe role of parental smoking status on the European Medical Association Smoking or Health (EMASH) nicotine dependence scores. Records of patients aged ≥18, registered at the Smoking Cessation Outpatient Clinics, were reviewed. Data of three groups (group 1: mothers' smoking status; group 2: fathers' smoking status; group 3: both parents' smoking status) were compared. A total of 902 patient records were analyzed (54.8% male, 45.2% female, age: 43.79±12.47 years). The average number of cigarettes smoked was 23.98± 9.94/day, and the age of smoking onset was 19.11±5.94 years. There were more individuals with low EMASH score in the subgroup in which mothers did not smoke than that where mothers smoked (p=0.038). The percentage of females was higher (p=0.018) and the average age was lower (p=0.005) in that where mothers smoked. There were more individuals with high EMASH score in the subgroup in which fathers smoked than that where fathers did not smoke (p=0.026). There were more individuals with low EMASH score

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in the subgroup in which none of the parents smoked than that where both parents smoked (p=0.013). We found a strong relationship between smoking patterns and parental smoking.

Keywords
Smoking • Nicotine dependence • EMASH score

Öz
Çalışmamız, ebeveynlerinin sigara içme durumunun kişilerin European Medical Association Smoking or Health (EMASH) nikotin bağımlılık skorları üzerine etkisini belirlemek amacıyla yapılmıştır. Sigara Bırakma Polikliniği'nde kayıtlı olan 18 yaş üzeri hastaların dosyaları gözden geçirildi. Üç gruba (grup 1: annelerin sigara içme durumu; grup 2: babaların sigara içme durumu; grup 3: her iki ebeveynin sigara içme durumu) ayrılan hastaların verileri incelendi. Toplamda 902 hasta dosyası incelendi (%54,8 erkek, %45,2 kadın, yaş ortalaması: 43,79±12,47). Günlük içilen sigara miktarı 23,98±9,94 idi, sigaraya başlama yaşı 19,11±5,94 idi. Annesi sigara içmeyenler alt grubunda, annesi sigara içenlere kıyasla EMASH skoru düşük olan daha fazla kişi vardı (p=0,038). Annesi sigara içenler alt grubunda kadınların oranı daha fazlaydı (p=0,018) ve ortalama yaş daha düşüktü (p=0,005). Babası sigara içenler alt grubunda EMASH skoru yüksek olanların oranı babası sigara içmeyenlere göre daha fazlaydı (p=0,026). Hiçbir ebeveyni sigara içmeyenlerin alt grubunda EMASH skoru düşük olanların oranı her iki ebeveyni sigara içenlere göre daha fazlaydı (p=0,013). Ebeveynlerinin sigara içme durumlarının, kişilerin sigara içiciliği ve bağımlılık düzeyleri üzerinde etkisi olduğu bulundu.

Anahtar Kelimeler
Sigara içiciliği • Nikotin bağımlılığı • EMASH skoru

Introduction

Tobacco use is a very common and important public health issue that affects millions of people by causing mortality and morbidity. Each year, nearly 8 million people world wide, with 100,000 people from Turkey, die from tobacco-related diseases (Stanaway et al., 2018; WHO, 2012). Half of the adult men and one-sixth of the women world wide are smokers (Bilir, Çakır, Elif, Ergüder, & Önder, 2009). The frequency of current tobacco users aged 15 and over in Turkey is 30.9% (43.7% in men and 18.2% in women), according to the Global Adult Tobacco Survey (WHO, 2017). Therefore, understanding the dynamics of tobacco use, initiation, effect of parental smoking, and nicotine dependence may aidin decreasing the burden of tobacco-related diseases in the wider population.

From a psychodynamic aspect, substance dependence is defined as "a cluster of physiological, behavioural, and cognitive phenomena in which the use of a substance takes on a much higher priority than other behaviours that once had greater value" (WHO, 1992). Despite the harmful social consequences, there is a compulsive craving to use the drug. If the compulsive substance use is accompanied by either tolerance or a withdrawal syndrome, physiological (physical) dependence arises from changes in the brain. This definition can be applied to nicotine dependence. The high incidence of smoking and associated health issues makes it a priority to understand the factors that affect nicotine dependence with a hope to find an effective cessation method. Cessation success was

found to be associated with genetic factors and nicotine dependence level determined especially by the time to first cigarette of the day (Turkish Thoracic Society, 2014).

Many studies have been designed to determine the factors that influence nicotine dependence. In some studies, environmental conditions were held responsible for trying the substance for the first time, and biological and genetic succeptibility were identified for dependence (Batra, Patkar, Berrettini, Weinstein, & Leone, 2003; Do Prado-Lima et al., 2004; Hall, Madden, & Lynskey, 2002; Lipkus, Schwartz-Bloom, Kelley, & Pan, 2015; Pehlivan et al., 2019; Tarnoki et al., 2014; Wang et al., 2015; Ware, Timpson, Smith, & Munafò, 2014). In a research in whichthe role of genetic factors on tobacco dependence was studied, the CC genotype has been found more frequentlyin current smokers (Do Prado-Lima et al., 2004). People who metabolized nicotine slower through the cytochrome systems (CYP2A6 and CYP2B6) were less dependent on nicotine, stayed away from nicotine for a longer time, and benefitted more from cessation medications (Wang et al., 2015).

Nicotine dependence level is evaluated by the Fagerström Nicotine Dependence Test, in which two parameters improve the scale-the time to first cigarette of the day and number of cigarettes smoked per day (Heatherton, Kozlowski, Frecker, & Fagerström, 1991). In assessing nicotine dependence and treatment requirement, a more practical and shorter test was recommended by the European Medical Association on Smoking or Health (EMASH) guideline in 1997, which questioned the time to first cigarette and the number of cigarettes smoked per day (Kunze, Schmeiser-Rieder, & Schoberberger, 1998). They suggested considering those who smoke their first cigarette of the day within 30 minutes of waking up as having medium to heavy nicotine dependence and offering treatment to those who smoke 15 or more cigarettes per day.

Our study was conducted to determinethe role of parental smoking status on the EMASH nicotine dependence scores of individuals seen in our Smoking Cessation Outpatient Clinic to answer some questions before carrying on with geneticstudies.

Method

The records of all patients aged 18 years and over, registered at the Smoking Cessation Outpatient Clinics of the Department of Pulmonary Disease at İstanbul Medical Faculty from 2000 to 2014, were reviewed. A total of 902 patient records were identified, and the relevant data from their records were collected. Information about age, gender, education level, age at smoking onset, amount of cigarettes smoked (pack/year), maternal smoking, paternal smoking, number of quitting attempts, and dependence score was noted. Personal data were omitted for confidentiality. Ethical approval was obtained from the Ethics Committee of the İstanbul Medical Faculty with the number 2018/1694.

The following three groups were formed on the basis of the parental smoking status: group 1, individuals who provided information about their mothers'smoking status (mother smokes or does not smoke); group 2, individuals who provided information about their fathers' smoking status (fathers mokes or does not smoke); and group 3, individuals who provided information about both of their parents' smoking status (both parents smokeor do not smoke). Comparisons were made between the groups and subgroups using the appropriate statistical method.

Statistical Analysis

Statistical analysis were performed using the SPSS (Statistical Package for Social Sciences, IBM Corp.; Armonk, NY, USA) 21.0 program. Descriptive statistics for continuous variables were given as mean, standard deviation, median, and minimum-maximum. Categorical variables were expressed as number of cases and percentage. The normality range of continuous variables was determined by Kolmogorov-Smirnov and Shapiro-Wilk tests. The comparison of the independent groups was made using the Student's t test for variables with normal distribution and the Mann-Whitney U test for non-normaldistribution. Categorical variables were compared using the chi-square and Fisher's exact test. A value of $p<0.05$ was accepted as significant.

Results

The average age of our subjects was 43.79±12.47 years (44.15±13.46 years formenand 43.39±11.15 years for women). In total, this study consisted of 54.8% men and 45.2% women (Table 1). The average number of cigarettes smoked per day was 23.98±9.94, and the average age of smoking onset (age of initiation) was 19.11±5.94 years. Most of our patients (58.8%) started smoking before the age of 18. Nearly a fifth of our patients never attempted to quit smoking previously (18.8%). To compare nicotine dependence between subgroups, the subjects were grouped into two, according to their EMASH scores, as low (EMASH 0,1,2) and high (EMASH 3,4) groups (54.5% and 42.7%, respectively). The low and high EMASH groups were also used to determine the relation between nicotine dependence and education level (Table 2). The percentage of individuals with a university education was higher in the low than the high EMASH group ($p<0.01$).

In group 1, the percentage of females was significantly higher than males (53.3% versus 46.7%, respectively, $p=0.018$), in the subgroup in which mothers smoked than that where in mothers did not smoke. Also, the average agein that in which mothers smoked was significantly lower than that where in mothers did not smoke (40.93±12.59 versus 44.48±12.65, respectively, $p=0.005$). Regarding education level, many attained university education in the subgroup in which mothers smoked ($p=0.003$). There were more individuals with a low EMASH score in the subgroup

Table 1.
The General and Clinical Characteristics of the Study Group (n=902)

	n (%) or M ± SD
Gender	
Female	408 (45.2%)
Male	494 (54.8%)
Average age	
Total	43.79±12.47
Male	44.15±13.46
Female	43.39±11.15
Level of education	
Primary school	141 (15.6%)
Secondary + high school	301 (33.3%)
University	311 (34.5%)
(Missing)	149 (16.6%)
Number of quitting attempts	
0	170 (18.8%)
1	245 (27.2%)
2	151 (16.7%)
3	89 (9.9%)
≥4	127 (14.1%)
(Missing)	120 (13.3%)
Groups according to parental smoking status	
Group 1 (only mothers' smoking status)	
Smoker	165 (18.3%)
Non-smoker	558 (61.9%)
(Missing)	179 (19.8%)
Group 2 (only fathers' smoking status)	
Smoker	518 (57.4%)
Non-smoker	237 (26.3%)
(Missing)	147 (16.3%)
Group 3 (both parents' smoking status)	
Smoker	206 (22.8%)
Non-smoker	129 (14.3%)
(Missing)	567 (62.9%)

n: number; SD: standard deviation.

in which mothers did not smoke than that where in mothers smoked (p=0.038). The age of smoking onset was similar in both subgroups. Like wise, there were no differences between them in the amount of cigarettes smoked and number of quitting attempts.

Table 2.
The Relationship between Education Level and EMASH

Education level	EMASH (0, 1, 2) n (%)	EMASH (3, 4) n (%)	p
Primary school	66 (48.2%)	71 (51.8%)	<0.01
Secondary and high school	146 (50%)	146 (50 %)	
University	192 (62.7%)	114 (37.3%)	

EMASH: European Medical Association on Smoking or Health; n: number; p: probability value.

In group 2, the amount of cigarettes smoked (pack/year) was nonsignificantly higher in the subgroup in which fathers smoked than that where in fathers did not smoke (30.91±23.03 versus 26.95±18.06, respectively, p=0.08). There were also no significant differences between the two subgroups (fathers smoked or did not smoke) regarding age, gender, education level, age of smoking onset, and number of quitting attempts. The percentage of individuals with a high EMASH score was significantly higher in thatin which fathers smoked than that where in fathers did not smoke (p=0.026).

In group 3, the number of cigarettes smoked per day was nonsignificantly higher in the subgroup where both parents smoked than the other (none of the parents smoked) (p=0.076). Furthermore, the average age in this subgroup was significantly lower than that in which none of the parents smoked (40.09±12.87 versus 43.30±12.50, respectively, p=0.046). Also, in this subgroup, in which both parents smoked, the percentage of females was nonsignificantly higher (52.7%, p=0.061). Regarding the education level, the percentage of university graduates was the highest in the subgroup in which both parents smoked (p=0.019). There were more individuals with a low EMASH score in the subgroup in which none of the parents smoked than that where in both parents smoked (p=0.013). Nevertheless, no significant difference was found between the two subgroups regarding number of quitting attempts and the age at onset of smoking (Table 3).

Discussion

In our study, we found that parental smoking status, both combined and individually, had an effect on EMASH dependency scores. There were more individuals with low dependency score in the subgroup in which mothers and both parents did not smoke than that in which mothers and both parents smoked. Furthermore, there were more individuals with high dependency score in the subgroup in which fathers smoked than that in which fathers did not smoke. Our findings were similar to those of the studies where in parental smoking was associated with increased risk of nicotine dependence in the off spring (Hu, Davies, & Kandel, 2006; Kardia, Pomerleau, Rozek, & Marks, 2003; Selya, Dierker, Rose, Hedeker, & Mermelstein, 2012). The risk was greatest especially when both parents smoked (Hu et al., 2006). Never-

Table 3.
Comparison of Values in Groups

	Mother			Father			Mother and father		
	Smoked	**Did not smoke**	**p**	**Smoked**	**Did not smoke**	**p**	**Smoked**	**Did not smoke**	**p**
Age	40.93±12.59	44.48±12.65	0.005	43.73±12.73	43.44±12.32	0.652	40.09±12.87	43.30±12.50	0.046
Gender			0.018			0.926			0.061
- Male	77 (46.7%)	318 (57%)		292 (56.5%)	133 (56.1%)		61 (47.3%)	119 (57.8%)	
- Female	88 (53.3%)	239 (43%)		225 (43.5%)	104 (43.9%)		68 (52.7%)	87 (42.2%)	
Number of cigarettes smoked per day	24.50±9.97	24.17±10.17	0.193	24.48±10.07	23.49±9.69	0.142	24.56±10.30	23.38±9.83	0.076
Age at onset of smoking	19.18±5.75	19.28±6.18	0.969	18.94±5.77	19.51±6.39	0.202	18.93±5.28	19.39±6.24	0.705
Total years of smoking	22.01±11.00	24.25±12.08	0.068	24.31±11.99	22.75±11.51	0.117	21.46±10.98	22.61±11.56	0.509
Level of education			0.003			0.953			0.019
- Primary school	15 (10.3%)	100 (21.1%)		82(18.6%)	35 (17.7%)		9 (7.8%)	31 (17.9%)	
- Secondary and high school	56 (38.7%)	193 (40.7%)		176 (40%)	81 (40.9%)		45 (38.8%)	72 (41.6%)	
- University	74 (51%)	181 (38.2%)		182 (41.4%)	82 (41.4%)		62 (53.4%)	70 (40.5%)	
EMASH score			0.038			0.026			0.013
- Low (0,1,2)	78 (47.3%)	312 (56.4%)		266 (51.8%)	141 (60.5%)		64 (49.6%)	128 (63.4%)	
- High (3,4)	87 (52.7%)	241 (43.6%)		248 (48.2%)	92 (39.5%)		65 (50.4%)	74 (36.6%)	
Number of quitting attempts			0.677			0.144			0.159
- 1	40	155		134	69		25	56	
- 2	30	93		81	46		21	38	
- 3	18	62		54	29		13	24	
- 4	28	78		85	26		26	26	

EMASH: European Medical Association on Smoking or Health; p: probability value.

theless, there is still controversy about whether there is superiority in the effect of anyparents' smoking behavioror not, and if there is superiority, which parent's smoking status has a greater correlation and effecton individuals' smoking behavior and nicotine dependence. Some studies found maternal smoking to be strongly related with dependence, where as others identify father's smoking status to be associated with higher nicotine dependence (Hu et al., 2006; Selya et al., 2012; Soteriades & Difranza, 2003). This difference can be due to the interaction of multiple factors, such as shared genetics, shared environment, family dynamics, and individual's psychological status. Therefore, further exploration is needed to determine how parental smoking behaviors influence the individuals and how this knowledge may help to increase the effectiveness of smoking prevention programs in public health campaigns.

The average number of cigarettes smoked per day in our study (23.98±9.94) was lightly above the national average. From a national data printed by the Turkish Ministry of Health, the average number of cigarettes smoked per day was 19.2, which was slightly more in men when analyzed regarding gender (Türkiye Cumhuriyeti [TC] Sağlık Bakanlığı, 2014). The reason of our high results might be that we had more men participants (54.8%). Therefore, more detailed studies are needed to determine the risk factors that affect the number of cigarettes smoked per day.

The amount of cigarettes smoked (pack/year) was nonsignificantly higher in our subgroup where fathers smoked. Similarly in a previous study, it has been found that the number of cigarettes smoked per day was associated with nicotine dependence levels which, along with time to first cigarette in the morning, are a more reliable parameter than cigarettes smoked per year (Hall, Madden, & Lynskey, 2002).

Furthermore, in our study, the average age of smoking onset (age of initiation) was 19.11±5.94, with 58.8% before the age of 18. These results were similar to those of a national study at 58.7% between 18 and 34 years before the age of 18 (TC Sağlık Bakanlığı, 2014).

We found no differences in theage of smoking onset between our groups where in one or both parents smokedand both parentsdid not smoke. Age at smoking onset might be affected by environ mentor genetic influences. Some studies suggested that genes, parental smoking, and friends' smoking contributed to smoking initiation where as genetic and unique environmental factors were associated with persistent smoking and nicotine dependence (Bauman, Carver, & Gleiter, 2001; Scherrer et al., 2012). Later, another study on same-gender twins revealed the role of unshared environmental factors on smoking habits (Tarnoki et al., 2014). Nevertheless, owing to our study design, we did not find differences between genetic and environmental factors. The individuals might have been affected by their parent's smoking habits by copying their behaviors or might have inherited the genes that make them more sus-

ceptible at an earlier age. Therefore, more studies should be designed to understand the effect of genetics and environmental factors on smoking behaviors and dependence levels of individuals.

In our study, there were more women in the subgroup in which mothers smoked than that where in mothers did not smoke indicating an influence between mothers and daughters in smoking habits. Nevertheless, although, there were more women in the subgroup in which both parents smoked than that where in none of the parents smoked, this finding was not remarkable. Furthermore, no gender difference was foundin our study on the basis of the fathers' smoking status. A recent study found that regarding smoking habits and initiation, shared environmental influences were more important in women but genetic influences in men (Verweij et al., 2016). In another study, nicotine dependence was negatively correlated with being a woman (Hu et al., 2006). This was contradictory to our findings, where in we found a high dependency score in women in the subgroup in which mothers smoked. The reason of this finding might be the presence of multiple factors that affect nicotine dependence and smoking habits, including genes and environment. There are many studies about smoking habits and dependence, but more studies should be done to determine the location and effects of the genes associated with nicotine metabolism and dependence.

When we analyzed our results regarding education level, we found that the percentage of university graduates was higher in all groups where in one or both parents smoked. This might indicate an influence of role-modeling of parents' harmful habits. Nevertheless, we did not inquire about family dynamics and childhood traumas, which might have influenced the smoking habits of our subjects. The influence of parental and peer group role-modeling could not be ruled out.

Looking at the relation of education and nicotine dependence in our study, the percentage of individuals with a university education was 62.7% in the low than the high EMASH group ($p<0.01$). In a national study, approximately a quarter of the individuals who had a university education were found to smoke daily, where in many (73.2%) did not smoke (TC Sağlık Bakanlığı, 2014). They also found that as education level increased, the number of cigarettes smoked per day decreased. In other studies, higher education level was associated with less smoking rates, less number of cigarettes smoked per day, and lower nicotine dependence, consistent with our findings (Greenlund, Liu, Kiefe, Yunis, Dyer, & Burke, 1995; Hu et al., 2006).

We found that 67.9% of our patients have attempted to quit previously. In a recent study, the prevalence of quitting attempt among smokers in the last 12 months in Turkey was 44.8% (Song et al., 2016), which was much lower than our results. The reasons that we had a high quitting prevalence might be that the study was conducted in a Smoking Cessation clinic and the quitting attempt was questioned for the entire

life span not in the last 12 months. Also, many of our patients have higher education level, which might have increased their health awareness and influenced their quitting attempts.

In conclusion, we have found a strong relationship between smoking patterns and parental smoking. Nevertheless, more studies are needed to highlight the association between nicotine dependence and the role of parental smoking status.

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References

Bilir, N., Çakır, B., Elif, D., Ergüder, T., & Önder, Z. (2009). Tobacco control in Turkey. *WHO Europe,* 43-45. Available from: http://www.euro.who.int/__data/assets/pdf_file/0004/98446/E93038.pdf

Batra, V., Patkar, A., Berrettini, W., Weinstein, S., & Leone, F. (2003). The genetic determinants of smoking. *Chest, 123*(5), 1730-1739. https://doi.org/10.1378/chest.123.5.1730 https://doi.org/10.1378/chest.123.5.1730 [Crossref]

Bauman, K. E., Carver, K., & Gleiter, K. (2001). Trends in parent and friend influence during adolescens. The case of adolescent cigarette smoking. *Addictive Behaviors, 26*(3), 349-361. https://doi.org/10.1016/S0306-4603(00)00110-6 [Crossref]

Do Prado-Lima, P. A. S., Chatkin, J. M., Taufer, M., Oliveira, G., Silveira, E., Neto, C. A., & da Cruz, I. B. M. (2004). Polymorphism of 5HT2A serotonin receptor gene is implicated in smoking addiction. *American Journal of Medical Genetics Part B: Neuropsychiatric Genetics, 128*(1), 90-93. https://doi.org/10.1002/ajmg.b.30004 [Crossref]

Greenlund, K. J., Liu, K., Kiefe, C. I., Yunis, C., Dyer, A. R., & Burke, G. L. (1995). Impact of father's education and parental smoking status on smoking behavior in young adults: The CARDIA study. *American Journal of Epidemiology, 142*(10), 1029-1033. https://doi.org/10.1093/oxfordjournals.aje.a117555 [Crossref]

Hall, W., Madden, P., & Lynskey, M. (2002). The genetics of tobacco use: methods, findings and policy implications. *Tobacco Control, 11*(2), 119-124. http://dx.doi.org/10.1136/tc.11.2.119 [Crossref]

Heatherton, T. F., Kozlowski, L. T., Frecker, R. C., & Fagerström, K. O. (1991). The Fagerström test for nicotine dependence: A revision of the Fagerström tolerance questionnaire. *British Journal of Addiction, 86,* 1119-1127. https://doi.org/10.1111/j.1360-0443.1991.tb01879.x [Crossref]

Hu, M. C., Davies, M., & Kandel, D. B. (2006). Epidemiology and correlates of daily smoking and nicotine dependence among young adults in the United States. *American Journal of Public Health, 96*(2), 299-308. https://doi.org/10.2105/AJPH.2004.057232 [Crossref]

Kardia, S., Pomerleau, C., Rozek, L., & Marks, J. (2003). Association of parental smoking history with nicotine dependence, smoking rate, and psychological cofactors in adult smokers. *Addictive Behaviors, 28*, 1447-52. https://doi.org/10.1016/S0306-4603(02)00245-9 [Crossref]

Lipkus, I. M., Schwartz-Bloom, R., Kelley, M. J., & Pan, W. (2015). A preliminary exploration of college smokers' reactions to nicotine dependence genetic susceptibility feedback. *Nicotine & Tobacco Research,* 337-343. https://doi.org/10.1093/ntr/ntu155 [Crossref]

Kunze, U., Schmeiser-Rieder, A., & Schoberberger, R. (1998). European Medical Association Smoking or Health (EMASH)--consensus on smoking cessation: guidelines for physicians. *Sozial-und Praventivmedizin, 43*(3), 167-72. https://doi.org/10.1007/BF01359725 [Crossref]

Pehlivan, S., Uysal, M. A., Cagatay, T., Nursal, A. F., Kekik-Cinar, C., Erkan, F., & Pence, S. (2019). CYP2A6 gene variants may explain smoking status in a Turkish cohort. *Psychiatry and Clinical Psychopharmacology, 29*(3), 340-5. https://doi.org/10.1080/24750573.2018.1547177 [Crossref]

Scherrer J. F., Xian, H., Pan, H., Pergadia, M. L., Madden, P. A., Grant, J. D., & Bucholz, K. K. (2012). Parent, sibling and peer influences on smoking initiation, regular smoking and nicotine dependence. Results from a genetically informative design. *Addictive Behaviours, 37*(3), 240-247. https://doi.org/10.1016/j.addbeh.2011.10.005 [Crossref]

Selya, A. S., Dierker, L. C., Rose, J. S., Hedeker, D., & Mermelstein, R. J. (2012). Risk factors for adolescent smoking: parental smoking and the mediating role of nicotine dependence. *Drug and Alcohol Dependence, 124*(3), 311-8. https://doi.org/10.1016/j.drugalcdep.2012.02.004 [Crossref]

Song, Y., Zhao, L., Palipudi, K. M., Asma, S., Morton, J., Talley, B., & Khoury, R. (2016). Tracking MPOWER in 14 countries: Results from the Global Adult Tobacco Survey, 2008-2010. *Global Health Promotion, 23*(2_suppl), 24-37 https://doi.org/10.1177/1757975913501911 [Crossref]

Soteriades, E. S., & DiFranza, J. R. (2003). Parent's socioeconomic status, adolescents' disposable income, and adolescents' smoking status in Massachusetts. *American Journal of Public Health, 93*(7), 1155-60. https://doi.org/10.2105/AJPH.93.7.115 [Crossref]

Stanaway, J. D., Afshin, A., Gakidou, E., Lim, S. S., Abate, D., Abate, K. H., & Abdela, J. (2018). Global, regional, and national comparative risk assessment of 84 behavioural, environmental and occupational, and metabolic risks or clusters of risks for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. *The Lancet, 392*(10159), 1923-1994. https://doi.org/10.1016/S0140-6736(18)32225-6 [Crossref]

Tarnoki, D. L., Tarnoki, A. D., Littvay, L., Lazar, Z., Karlinger, K., Molnar, A. A., & Horvath, I. (2014). Transmission of second-hand smoke sensitivity and smoking attitude in a family. *Annals of Agricultural and Environmental Medicine, 21*(4), 771-775. https://doi.org/10.5604/12321966.1129931 [Crossref]

TC Sağlık Bakanlığı. (2014). *Küresel Yetişkin Tütün Araştırması 2012.* Türkiye Halk sağlığı Kurumu. Ankara, Turkey: Türkiye Cumhuriyeti Sağlık Bakanlığı Yayın No 948. https://havanikoru.saglik.gov.tr/dosya/dokumanlar/yayinlar/KYTA-2012-TR-25-07-2014.pdf.

Türk Toraks Derneği Tütün Kontrolü Çalışma Grubu. (2014). *Sigara Bırakma Tanı ve Tedavi Uzlaşı Raporu.* Ankara, Turkey: Miki Matbaacılık. http://www.toraks.org.tr/book.aspx?list=1655&menu=240

Verweij, K. J., Creemers, H. E., Korhonen, T., Latvala, A., Dick, D. M., Rose, R. J., & Kaprio, J. (2016). Role of overlapping genetic and environmental factors in the relationship between early adolescent conduct problems and substance use in young adulthood. *Addiction, 111*(6), 1036-1045. https://doi.org/10.1111/add.13303 [Crossref]

Wang, H., Park, S. L., Stram, D. O., Haiman, C. A., Wilkens, L. R., Hecht, S. S., & Le Marchand, L. (2015). Association between genetic ancestries and nicotine metabolism biomarkers in the multiethnic cohort study. *American Journal of Epidemiology, 182*(11), 945-951. https://doi.org/10.1093/aje/kwv138 [Crossref]

Ware, J. J., Timpson, N., Smith, G. D., & Munafò, M. R. (2014). A recall-by-genotype study of CHRNA5-A3-B4 genotype, cotinine and smoking topography: study protocol. *BMC Medical Genetics, 15*(1), 13. https://doi.org/10.1186/1471-2350-15-13 [Crossref]

World Health Organisation. (2017). *WHO report on the global tobacco epidemic: monitoring tobacco use and prevention policies.* Geneva, Switzerland: World Health Organization; Licence: CC BY-NC-SA 3.0 IGO. https://apps.who.int/iris/bitstream/handle/10665/255874/9789241512824-eng.pdf;jsessionid=C3D56036ED25A9C70D594ED7E11A64E1?sequence=1

World Health Organization. (2012). WHO global report: mortality attributable to tobacco. Geneva, Switzerland: WHO press. https://apps.who.int/iris/bitstream/handle/10665/44815/9789241564434_eng.pdf?sequence=1&isAllowed=

World Health Organization. (2012). *WHO global report on mortality attributable to tobacco.* Geneva, Switzerland: WHO press.