Smoking Cessation Intervention in Adolescents Using Motivational Interview in a Children's Hospital in Turkey: A Pilot Study

Türkiye'de Bir Çocuk Hastanesinde Motivasyonel Görüşme Kullanarak Ergenlerde Sigara Bırakma Müdahalesi: Bir Pilot Çalışma

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ABSTRACT

Objective: The aim of this study was to evaluate the results of the intervention with the "Motivational Interview" on changing the smoking behavior of adolescents in the "Adolescent Outpatient Clinic".

Material and Methods: Thirty-two adolescents smoking at least three cigarettes per/day for the last three months were included in the study. The adolescents were interviewed twice with a one-week interval and then with two weeks interval. The motivational interview was conducted to help them quit smoking each time they came to interview. The adolescents were called by telephone three months after the last interview and were questioned on their smoking behavior change (how many cigarettes smoke per day).

Results: The mean age of the adolescents was 16.4 ± 1.0 (min: 12.0-max: 18.0) years and 47% (n = 15) of them were female. Among adolescents 28% (n = 9) had a chronic disease. According to the statements of the adolescents three months after the last interview, 6.2% (n = 2) of adolescents quit smoking, and 50% (n = 16) decreased the amount of cigartttes smoked. A statistically significant association was found between the rate of quitting or reducing smoking and the frequency of smoking cessation intervention visits (p = 0.016) and the number of cigarettes smoked per day at first admission (p = 0.047). No significant association was found between the smoking reduction rates and the age of adolescents, the age of first experimentation, and the duration of smoking. Smoking reduction rate was found to be higher in patients with a chronic disease, a non-smoker family, female gender and regular attendance to school; but the difference was not statistically significant (p> 0.05).

Conclusion: This study demonstrates that smoking intervention in the early period of smoking and the compliance to smoking cessation interventions may change the smoking behavior of adolescents.

Key Words: Adolescent, Motivational interview, Smoking, Smoking cessation, Smoking reduction

ÖZ

Amaç: "Ergen Sağlığı Polikliniğinde" ergenlerin sigara içme davranışına yönelik "Motivasyonel Görüşme" ile yapılan müdahalenin sigara içme davranışı üzerine etkisinin değerlendirilmesi amaçlanmıştır.

Gereç ve Yöntemler: Çalışmaya son üç aydır, hergün en az üç sigara içen 32 ergen dahil edilmiştir. Hastalar birer hafta ara ile iki kez, sonrasında ikişer hafta ara ile görüşmeye çağırılmıştır. Her gelişlerinde sigarayı bırakmalarına yardımcı olmak amacıyla motivasyonel görüşme yapılmıştır. Hastalar son görüşmeden üç ay sonra telefonla aranmış ve kendilerine sigara içme davranışları sorulmuştur.

Bulgular: Çalışmaya dahil olan ergenlerin yaş ortalaması 16.4±1.0 (minimum:12.0-maksimum:18.0) yıl olup, kızların oranı %47 (n=15)'di. Katılımcıların %28 (n=9)'inde bir kronik hastalık bulunmaktaydı. Ergenlerin, son görüşmeden üç ay sonraki beyanlarına göre, %6.2 (n=2)'si sigarayı bırakmış, %50 (n=16)'si ise azaltmıştır. Ergenlerin sigarayı bırakma veya azaltması ile sigara bırakma görüşmelerine gelme sayısı (p=0.016) ve başlangıçta içilen sigara sayısı (p=0.047) arasında istatistiksel olarak anlamlı bir ilişki saptanmıştır. Katılımcıların yaşı, sigarayı deneme yaşı ve sigara içilen süre ile sigarayı azaltma arasında istatistiksel olarak anlamlı bir ilişki bulunmamıştır. Kronik hastalığı bulunanlarda, sigara içmeyen ebeveyne sahip olanlarda, kızlarda ve okula devam eden ergenlerde sigarayı azaltanların oranı daha fazla bulunmuştur, ancak aradaki fark istatistiksel olarak anlamlı bulunmamıştır (p>0.05).

Sonuç: Bu çalışma, sigaraya başlanan erken dönemde yapılan müdahalenin ve sigara bırakma görüşmelerine uyumun, ergenlerin sigara içme davranışlarını değiştirebileceğini göstermektedir.

Anahtar Sözcükler: Ergen, Motivasyonel görüşme, Sigara içme, Sigarayı azaltma, Sigara bırakma

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INTRODUCTION

According to thw World Health Organisation data, 1/3 of the world's population use at least one tobacco product, and 90% of these users start smoking before the age of 18 (1). In Turkey, 57% of the smokers aged between 15-35 years are known to become regular smokers before the age of 18 (2). In a study in India, it was stated that 75% of smokers between the ages 15-19 years started to smoke regularly around the age of 15 (3). 'Adolescence' is a period in which risky behaviors such as beginning to use tobacco and other substances are increased. Adolescents have more sensitive reward mechanisms because of the ongoing psychosocial change and brain maturation (4). First, adolescents begin to smoke with the mvation of getting acceptance from their peers. They continue smoking due to the hedonic effects (5). Adult tobacco use and related complications can be prevented with the intervention programs targeting adolescent smoking. Intervention programs are implemented in order to avoid adolescents from smoking throughout the world and in our country (6,7). However, smoking is still prevalent in adolescence. It was reported that the proportion of adolescents aged 15-16 years who smoke is 28% in Europe (8). According to the data of Adult Tobacco Survey (2016) Turkey, the tobacco use incidence over the age of 15 is 31.6% (9). In a study conducted with Korean adolescents, the incidence of smoking was found to be 14.3% in 8th grade and 30% in 10th grade (10). The average smoking rate between the ages of 15-19 years was determined to be 29.6% in India (3). In another study, about half of the young people aged 16-20 years stated that they want to quit smoking (11). While nearly half of the smokers aged 13-15 years in Turkey stated that they want to stop smoking, this is valid for only one-third of the users over the age of 15 years (12).

Cigarette users are known to quit smoking easier when they receive support from a healthcare professional. Family physicians, nurses, or specialists are trained to help smokers to quit smoking (13). One of the most important steps taken on this topic in Turkey, was the adoption of 'Framework Convention on Tobacco Control (FCTC) agreement from the 56th assembly of Turkish parliament which was held in 2004 (14). In Turkey's primary health-care system, the first smoking intervention outpatient clinic was opened in 1996. Within the Ministry of Health, certificated smoking intervention outpatient clinics were first established in 2008 (15). However, smoking intervention outpatient clinics in our country only serve patients who are over the age of 18 years (16).

Considering the smoking rates of the adolescent age group and the initial age to start smoking, pediatric and/or adolescent outpatient clinics are essential to provide counseling to quit smoking. This study aimed to evaluate the results of the intervention with motivational interview (MI) to change the smoking behavior of adolescents in our adolescent medicine outpatient clinic.

MATERIAL and METHODS

The study was approved by the Local Ethics Committee of our hospital with a number of 2019-108. The study was conducted in the adolescent medicine outpatient clinic of Children's Hospital in Ankara, between January 2018 and April 2018. Adolescents between the ages 12 to 18 years, who were referred to the adolescent outpatient clinic after the initial interview for smoking at least 3 cigarettes a day for at least 3 months were included in the study. Intermittent smokers (nondaily smokers), adolescents who were diagnosed with psychiatric disorders, and intellectual disabilities were excluded from the study. Thirty-nine adolescents were found eligible for the inclusion criteria. A face to face interview by using the HEEADSSS (Home, Eating, Education/Employment, Activities, Drugs, Sexuality, Suicide, and Safety) psychosocial assesment tool, was applied to all adolescents with any complaints during their first visit (17). All adolescents who were smoking regularly (daily smoker) were given brief advice to quit smoking for being healthy as the first step and then called back for smoking cessation interview after one week. The data of 32 adolescents out of 39 who attended at least one smoking cessation intervention were evaluated for this study.

Smoking cessation intervention

Motivational interview technique was applied for smoking cessation intervention at every control (18). Smoking cessation intervention was carried out by the experts in the field of adolescent health who are qualified in motivational interviewing.

The adolescents were asked to imagine and write about their plans with a 5-year interval and to bring the list one week after their first interview. For females, it was recommended to research and write about the side-effects of smoking on the skin, teeth, hair health, and the effects on the baby, heart, and lungs when smoked during pregnancy. For males, respectively; they were advised to research the effect of smoking on sexual power, hair, teeth, lungs, heart, and vessels. These suggestions were done according to gender by considering the side effects of smoking that might be more interesting to a gender due to social gender roles.

During the face-to-face interview, adolescents were also asked when they first experimented smoking and whom they smoked with. Data about the parents' smoking status, school attendance, duration of smoking, number of cigarettes smoked per day were recorded as well. They were followed up with a 2-week interval after the second interview and then once monthly. MI was conducted at each control by the same adolescent health experts. Motivational interviews were conducted on the future plans of the adolescent and the side effects of smoking. They were informed about the possible signs of abstinence and they were given advise on how to cope with these findings (drinking water, breath exercises, etc.). Adolescents were called by their mobile phones three months

after the latest interview of smoking cessation and asked about their smoking behavior.

Motivational interview

Motivational interview is a well-established evidence-based method of working with patients to promote health behavior change. The goal of MI is to 'help patients identify and change behaviors that place them at risk of developing health problems or that may be pretending optimal management of a chronic condition'. It is a directive, client (smoker) - centered counseling style for eliciting behavior change by helping clients to explore and resolve ambivalence (18,19). Some studies have demonstrated the utility of MI in addressing smoking cessation, with increased quitting attempts and quitting rates in groups receiving MI compared to controls (20). There are four steps used in motivational interviewing. These help to build trust and connection between the patient and the physician, focus on areas that may need to be changed and find out the reasons the patient may have for changing or holding onto a behavior.

1. Express empathy and avoid arguments – The physician listens to the patient without criticizing or accusing, making him/her-self feel understood. The patient's feelings and point of view should be investigated without judging and prejudice. Concerning smoking, conversations that make the patient feel completely guilty of being addicted to cigarettes should be avoided.
2. Develop discrepancies - Conflicts in the patient's mind should be revealed. The physician can help the patient understand the differences between her/his behavior and goals. It should be ensured that the patient is aware of the situation.
3. Roll with resistance and provide personalized feedback. When patients express reasons for not achieving goals, the physician can help them find ways to succeed. If the patient states that she/he accepts all the side effects of cigarette smoking and mention that he/she will continue to smoke, it might have been useful to remind who is making a profit from cigarette smoking.
4. Support self-efficacy, elicit self-motivation - Adolescents' self-confidence, that they can overcome barriers, and achieve change is supported.

The purpose of these methods is to ensure that the adolescent demonstrates his/her intention to get motivated for change.

Statistics

Data were analyzed with Statistical Package for the Social Sciences 24.0 (SPSS 24.0, NY: IBM Corp., 2016) program. Mean, standard deviation, frequency, and percentage were used as descriptive statistics. Since the number of participants was 32, non-parametric tests were used for group comparisons. Mann Whitney U was used for paired group comparisons, Kruskal Wallis was used for comparisons of three or more groups, and Spearman correlation test was used for correlation analyses. P-value < 0.05 was considered significant.

RESULTS

The mean age of the 32 adolescents included in the study was 16.4 ± 1.0 (min: 12.0-max: 18.0). Among adolescents 47% (n = 15) was female and 53% (n = 17) was male. Smoking characteristics of the adolescents are shown in Table I. Fifty-three percent of adolescents had dropped-out of school. All adolescents had their first smoking experience with their peers. The ratio of having at least one other smoker in their family was 78.7%. None of the adolescents exercised regularly (weekly or daily).

Twenty-eight percent of adolescents (n = 9) had a chronic disease. These chronic diseases were; aplastic anemia, Pulmonary Langerhans Cell Histiocytosis, thyroid cancer, asthma, Henoch Schonlein Purpura, Familial Mediterranean Fever and three adolescents with Type 1 Diabetes Mellitus. The

Table I: Smoking characteristics of participants.

	All participiants (n=32) Mean±SD (min –max)	Subjects with Chronic disease (n=9) Mean±SD (min –max)	Female Mean±SD (min –max) (n=15)	Male Mean±SD (min –max) (n=17)
Age (years)	16.3±.2.0 (12.0-18.0)	16.6±1.0 (15.0-18.0)	16.7±1.0 (15.0-18.0)	16.2±1.3 (12.0-18.0)
Frequency of smoking at first admission (Cigarette # /day)	12.6±6.3 (3.0-20.0)	17.7±3.6 (10.0-20.0)	11.1 ± 5.9 (3.0-20.0)	14.1 ± 6.6 (3.0-20.0)
Frequency of smoking after intervention (Cigarette # /day)	8.3±6.2 (3.0-20.0)	11.6± 6.1 (5.0-20.0)	7.1±5.1 (1.0-20.0)	9.3±6.7 (3.0-20.0)
Years since initiation of smoking	3.6± 1.5 (1.0-7.5)	4.5±1.1 (3.0-6.0)	3.8 ± 1.6 (1.5-7.5)	3.4 ± 1.5 (1.0-6.0)
First experience of smoking (years)	12.8 ±1.5 (10.0-15.0)	12.3±0.7 (11.0-13.0)	12.8± 1.7 (10.0-15.0)	12.8 ± 1.3 (11.0-15.0)

Table II: Variables affecting the frequency of smoking after intervention.

		Frequency of smoking after intervention (Cigarette # per /day)			p
		Quit smoking (n=2)	Reduced smoking (n=16)	Ongoing smoking habit (n=14)	
Frequency of visits to the intervention	one %(n) two %(n) three %(n)	0.0 10.0 (1) 9.1 (1)	18.2 (2) 50.0 (5) 81.8 (9)	81.8 (9) 40.0 (4) 9.1 (1)	*0.016
Frequency of smoking after intervention (Cigarette #/day)	mean rank (n)	3.5 (2)	15.7 (16)	19.38 (14)	**0.047
Gender	female % (n=15) male % (n=17)	6.7 (1) 5.9 (1)	60.0 (9) 41.2 (7)	33.3 (5) 52.9 (9)	*0.529
Chronic disease status	none %(n) there is %(n)	4.3 (1) 11.1 (1)	47.8 (11) 55.6 (5)	47.8 (11) 33.3 (3)	*0.494
Number of other smokers in the family	none %(n) one person %(n) two person %(n)	0.0 (0) 13.3 (2) 0.0 (0)	43.8 (7) 33.3 (5) 57.1 (4)	21.4 (3) 53.3 (8) 42.9 (3)	*0.317
School attendance	attending %(n) drop out %(n)	13.3 (2) 0.0 (0)	60.0 (9) 41.2 (7)	26.7 (4) 58.8 (10)	*0.095

**Comparasion Analyzed with Pearson Chi-Square, ***Kruskal Wallis Test*

frequency of attending smoking cessation interventions were 34.4% (n = 11) once, 31.2% (n = 10) twice, and 34.4% (n = 11) three times, respectively. MI was administered at each smoking intervention. Three months after the last intervention, 6.2% (n = 2) quit smoking, and 50% (n = 16) reduced the number of cigarettes smoked per day compared to the initial admission.

A significant association was found between the number of adolescents quitting or reducing smoking and the number of participations to the smoking intervention (p = 0.016). The relationship between the number of cigarettes smoked at the first visit and the smoking cessation or reduction rates was statistically significant (p = 0.047). No significant association was observed between the smoking cessation or reduction rates and the variables of age, the age of first smoking, and the duration of smoking (p> 0.05). Smoking reduction rate was found to be higher in patients with a chronic disease, a non-smoker family, female gender and regular attendance to school; but the difference was not statistically significant (p> 0.05). The variables affecting the frequency of smoking after intervention are shown in Table II.

DISCUSSION

In this pilot study, the first findings of the smoking intervention programme applied in the adolescent outpatient clinic of a pediatric research hospital in Turkey are presented. To our knowledge, this is the first study to evaluate the results of smoking intervention in a pediatric hospital in our country. Three months after the last intervention, 6.2% (n = 2) of all quited smoking and 50% of the adolescents (n = 16) reduced the number of cigarettes smoked daily. There was an inverse relationship between smoking cessation or reduction and the number of cigarettes smoked daily, and a positive relationship with the compliance to intervention sessions. These findings indicate the importance of smoking intervention applied by a physician experienced in the area of adolescent health and MI in pediatric hospitals.

There are studies showing that MI is effective in adolescents who regularly smoke (21, 22). In a study, when MI and brief information methods were compared in hospitalized adolescents with and without chronic diseases, both methods were found to be similar for smoking cessation, and nearly half of the group treated with MI reduced smoking (22). One study demonstrated that 5% of adolescents quit smoking for one week after MI (21). In another study, 5% of high school smokers stated that they would continue to smoke after five years and when these regular smokers re-evaluated after five years it was determined that 75% of them continued to smoke (23). In our study, the majority of the adolescents invited to the smoking cessation intervention accepted the invitation at the beginning, indicating that adolescents do not wish to be long-term smokers.

In our study it was found that 6.2% (n = 2) of adolescent's quit smoking. In a review, the smoking cessation rates of adolescents ranged from 3 to 30% on average for different periods, 48 hours to 1 year after smoking intervention (24). In a study, it was presented that smoking cessation rate was higher in the brief intervention group compared to controls and the rate increased by 4.8% between the first and the fourth weeks of the intervention. In the same study, 50% of the intervention group was found to have reduced smoking (11). Our results were similar to this study. The low rate of smoking cessation in adolescents can be explained by factors related to the ongoing psychosocial development process and factors that motivate adolescents to smoke (25). In one study, it was stated that it is

difficult for adolescents to quit smoking so that at least reducing it will increase the success of the next quitting attempt (26). The smokers with high levels of addiction are more dependent in adulthood, and therefore interventions to reduce the number of cigarettes smoked during adolescence contribute to the reduction or delay of the side effects of smoking in the future (27).

Smoking patterns of adolescents are generally different from adults. Some adolescents may be intermittent smokers, who smoke too much during socializing but sometimes do not smoke for days. Smoking can be difficult to quit since it is a strong socializing tool for adolescents (28). Although, it was found that smoker parents and peers had no significant effect on the smoking cessation of adolescents, it was also shown that the presence of these factors reduced the desire of the adolescent to quit smoking and caused more withdrawal symptoms during the cessation period (29). In our study, the smoking reduction rate was found to be higher in the presence of non-smoking parents. However, the fact that the difference being not statistically significant may be related to the small sample size. In our study, since smoking patterns of close friends were not asked in detail, the effect of the peers on reducing smoking could not be evaluated. One-month cessation rate of adolescents was found to be 14% in one study and taking support and having a low level of smoke dependence were stated as positive predictors of smoking cessation (30). In another study, a low level of smoke dependence and regular sports activities were found to be effective in stopping or reducing smoking (26). We found that the lower the number of cigarettes smoked initially, suggesting that ceasier the quitting or reducing smoking in this cohort. This shows that adolescents in the early stages of smoking can easily reduce smoking, probably because they are less dependent.

The rate of smoking cessation in adulthood was significantly lower in the group who started smoking before the age of 15 compared to those who started smoking after that age (31). The literature shows that in adolescence, which is the period when smoking is usually first experienced, proper intervention to the cognitive development of adolescents may reduce the intense smoking in adulthood (27). In early adolescence, which is before the age of 14, adolescents often experience emotional fluctuations when attempting to cope with adaptation to the novelty of physical change. Adolescents usually experience smoking for the first time with peers during this period. Adolescents who started smoking before the high school became more regular smokers and have higher levels of dependency. In middle adolescence period (14-17 years), the importance of peer influence increases with the beginning of high school and entering a new social environment (32, 33). All adolescents in our study stated that they smoked their first cigarette with their peers. With the perception of looking attractive or “being cool” by smoking, adolescents are more susceptible to become addicted to smoking. In our study, considering the average age of smoking onset of the participants is 12, this group may have the potential of becoming heavy smokers (25 or more cigarettes a day) in adulthood (34). Therefore, the fact that approximately half of the adolescents in our study have reduced smoking might protect them from being heavy smokes in the future.

In a study, having a male gender and being a light smoker were found to be positive factors for reducing smoking. Regular exercise before the intervention was found to be an effective factor in quitting smoking (26). Since none of the adolescents exercised regularly in our study, we were unable to assess the effect of exercise on smoke reduction rate. In our study, although there was no significant difference between female and male participants, the rate of smoking reduction was slightly higher in the female gender. This may have been because the number of cigarettes smoked per day was lower in female adolescents, and therefore might be less dependent. Although the rate of smoking reduction was higher among adolescents with a chronic disease, the difference was not significant. This might be due to the small sample size of regular smokers with a chronic disease. It was seen that adolescents with chronic diseases who attended more than one smoking intervention, reported reduction in the the number of cigarettes smoked daily. The literature shows that adolescents with chronic disease are as risky as their peers. Actually, adolescents with chronic disease may even be more inclined to perform risky behaviors in order not to be perceived differently from their peers (35). In our study, in accordance with the literature, adolescents with chronic diseases were found to be as prone to risky behaviors as their peers.

Small sample size and MI not being compared with another smoking cessation intervention method are among the limitations of this study. Another limitation of our study was that the information about quitting or reducing smoking of adolescents was obtained by phone calls.

In conclusion, this study demonstrates that smoking interventions in the early period of smoking and the compliance to smoking cessation interventions may change the smoking behavior of adolescents. Although the smoking cessation rate of adolescents was low, raising awareness about the high addiction and short and long term side effects in adolescents can reduce the number of cigarettes smoked daily and reinforce the cessation attempts in a positive way. In our country, more smoking intervention outpatient clinics that adolescents can easily apply and receive support are needed. With the data from these clinics the intervention programmes and follow-up guidelines appropriate for this age group could be established in the future.

Compliance with Ethical Standards:

Conflict of Interest: On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research

committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

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