Transition in Smoking Stages and Its Relationship with Family Psychological Function and Perceived Social Support in Adolescents of Tabriz, Iran

Abstract

Background: There is limited information on the relationship between family psychological functions and perceived social support with progress in cigarette smoking stages in adolescents. This study was aimed to determine the relationship between family psychological function and perceived social support through a transition in different stages of cigarette smoking in adolescents of Tabriz, Iran. **Methods:** In this study, 4,216 students (14–19 years old) from high schools were selected by multistage cluster sampling method. Initially, we used valid and reliable questionnaires for demographic characteristics, risk factors, Iranian family psychological function, and perceived social support. The smoking status questionnaire was administered twice, with an interval of 6 months. Data were analyzed using univariate and multivariate logistic regression analysis. **Results:** Overall, 3,968 students with the mean (standard deviation) age of 15.96 (0.75) years completed the questionnaire in the first phase of the study. The results showed that lower levels of family psychosocial function ($P < 0.001$) and perceived social support ($P < 0.001$) in the univariate state were significantly associated with progress in cigarette smoking stages. By controlling the potential confounding factors, the weak and moderate family psychological function compared to the strong function increased the chance of progress in the cigarette smoking stages by almost 11 and 4 times, respectively ($P < 0.001$). The low and moderate level of perceived social support compared to the high level increased the chance of progress in cigarette smoking stages by almost 7 and 2 times, respectively ($P < 0.001$). **Conclusions:** It is suggested to perform an organized, precise, and operational planning for strengthening the family psychological functions and providing an appropriate social support condition among adolescents to prevent the tendency toward cigarette smoking and its more advanced phases.

Keywords: *Adolescent, cigarette smoking, family, psychological function, social support*

**Hossein Nemati[1,2],
Asghar Mohammad poorasl[3,4],
Hossein Ebrahimi[5],
Shirin B. Atri[6],
Mohammad H. Sahebihagh[3,6]***

[1]*Student Research Committee, Tabriz University of Medical Sciences,* [2]*M. Sc. Student of Community Health Nursing, Tabriz University of Medical Sciences,* [3]*Tabriz Health Services Management Research Center,* [6]*Department of Community Health Nursing, Tabriz University of Medical Sciences,* [4]*Epidemiology and Biostatistics, Tabriz University of Medical Sciences,* [5]*Psychiatric Nursing, Tabriz University of Medical Sciences, Tabriz, Iran,*

Introduction

Cigarette smoking is one of the most important global health challenges and the preventable risk factor for early mortality and disability in the world.[1] The prevalence of cigarette smoking among adolescents and youth have been increasing, and the age of the smoking onset has been decreasing.[2] Almost 4.7 million, high school students in the United States use at least one tobacco product, including cigarettes, while 3,800 people under the age of 18 years old start cigarette smoking per day.[3] According to the World Health Organization (WHO), the prevalence of cigarette smoking in 2017 among adolescents was 5.9% in Iran (7.5% men and 4.2% women).[4] Studies in 25 European countries have shown the prevalence of cigarette smoking equal to 22% among men.[5]

Adolescence is a period, during which many individuals are involved in high-risk behaviors such as cigarette smoking.[6] Cigarette smoking during adolescence will lead to continuing this behavior at higher ages, and smoking cessation will be with problems.[7] The onset of cigarette smoking in adolescents is a complicated behavior that is affected by various factors. One of the main causes is family background.[8] The family environment plays a basic role in the development of high-risk behaviors such as drug use in adolescents.[9] The family function and its governing relationships can be effective for the tendency of family members toward drug use, especially cigarettes.[10] Beyond financial support and

Address for correspondence:
Dr. Mohammad H. Sahebihagh, Tabriz Health Services Management Research Center, Health Management and Safety Promotion Research Institute and Department of Community Health Nursing, Tabriz University of Medical Sciences, Tabriz, Iran.
E-mail: Sahebihagh@tbzmed.ac.ir

physical care, families have psychological functions that lead to a safe and secure environment and provide a sense of personal identity and support to members.[11] A family in which the basic psychological needs of the members are not met and considered an insecure environment for the psychological well-being of human beings provides the basis for the inappropriate growth of individuals.[12] Family conflicts and psychological problems are associated with cigarette smoking.[13] Hummel *et al*. emphasized poor-quality relationships with parents as a risk factor in the tendency toward cigarettes.[14]

Some evidence suggests that social support encourages adolescents to choose healthy lifestyle methods.[15] The social support during adolescence is important due to the many internal and external variations that occur for individuals.[16] Social support is studied in two ways of received (objective) and perceived (subjective), so in the perceived social support, the individual assessments from the availability of support are considered in necessary and required situations.[17] In the study, it was shown that less perception of social support increased cigarette smoking in cancer patients. The study indicated that perceived social support could be one of the important factors in the success of smoking cessation.[18]

The onset of cigarette smoking and its continuation is essentially a continuous process.[19] Understanding the stages of cigarette smoking in adolescents and specifying the predictors of transition in different stages of cigarette smoking will be highly important in the planning of prevention and control measures.[20] The increasing use of drugs, particularly cigarettes can be sought in the relationships of the individual with the family and society.[21] Given that there is limited information on the relationship between family psychological functions and perceived social support with progress in phases of cigarette smoking, we decided to investigate the relationship between family psychological function and perceived social support through a transition in different stages of cigarette smoking in adolescents of Tabriz.

Materials and Methods

This study was conducted from November 2017 to June 2018 in Tabriz, northwest of Iran. In this city, 50,790 students (25,339 boys and 25,451 girls) were enrolled in 334 high schools (163 for boys and 171 for girls) in five regions in the second-grade. In this study, the multistage cluster random sampling method was used. Thus, the number of students was initially estimated in each area, and the number of samples from each area was determined in proportion to the total number of students in that area. In the next phase, the number of high school students in each area was estimated based on the type of school (state-schools, non-state schools, vocational schools, and technical colleges) and the sample of each school was determined in proportion to the total number of students at each school. In the next phase, several

schools were selected using simple random sampling to reach the assigned share. One or more classes were randomly chosen from the selected schools, and all the students of the selected classes were investigated as the research sample. Initially, 60 schools followed by 156 classes (75 boys and 81 girls) were selected. Finally, 4,216 high school students were selected. The exclusion criteria in this study were adolescent orphans, adolescents in the custody of relatives, failure to complete the questionnaire, or experience of crisis over the past year (from disintegrated families). After acquiring the necessary permissions from the faculty, the department of education, and related areas, by referring to the research units, the school authorities were initially justified concerning the research objectives. After obtaining permission and with their coordination, they participated in the class at the appropriate hour by the viewpoint of school authorities and teachers and, by explaining the objectives of the research and obtaining informed consent, the selected students were included in the study. The questionnaire includes demographic characteristics, risk factors, smoking status, family psychological function, and perceived social support.

Cigarette smoking status

The cigarette smoking status was examined using a valid algorithm to determine the consuming phase of smoking in adolescents. This tool was developed by Mohammadpoorasl *et al*. to determine the transition through cigarette smoking stages in adolescents.[19] Based on this algorithm, nine stages were considered for cigarette smoking: 1. Committer: those who never smoked and were sure that would never try. 2. Immotive: those who had not smoked until then and did not want to try in the next 5 years. 3. Progressive: those who had not smoked until then, but wanted to try in the next 5 years. 4. Contemplator: those who had not smoked until then, but wanted to try in the next 6 months. 5. Preparatory: Those who had not smoked until then, but had plans to try in the next month. 6. Tried: Those who had smoked 1–2 cigarettes until then. 7. Experimenter: Those who had smoked more than two cigarettes, but totally less than 100 cigarettes. 8. Regular smoker: Those who sometimes smoked or at least a cigarette in a month and totally more than 100 cigarettes. 9. Established/daily smoker: Those who smoked every day or most days of the week.

The reliability and validity of this algorithm were evaluated by Mohammadpoorasl *et al*. on 4,903 students aging 14–19 years in Tabriz, in which the intra-class correlation coefficient was obtained equal to 0.929 from the questions.[19] Also, according to previous studies,[22,23] cigarette smoking in three statues of nonsmoker (one who has never smoked even a little), experiment smoker (one who has tried smoking, but at most 100 cigarettes), and regular smoker (daily or on most days of the week) were considered.

Family psychological function

This questionnaire contained 89 questions and aimed to assess the psychological functions of Iranian families in 12 dimensions including (communication, progress, emotional literacy, spirituality and religion, leisure time, recreation and entertainment, union, structure and organization, sense of security, conflict resolution, visiting relatives, independence, and control). The minimum score was 89, and the maximum was 623. The score 89–237 indicated a weak function, 237–356 moderate function, and a score higher than 356 showed the strong psychological function of the Iranian family. The validity and reliability of this questionnaire in Iran were assessed by Kimiaee *et al.* on 410 adolescents, the youth, and their parents, and Cronbach's alpha was 0.88 in the dimension of the relationship, 0.74 in the progress, 0.83 in the emotions, 0.74 in the spirituality and religion, 0.72 in the leisure time, 0.79 in the union, 0.65 in the structure and organization, 0.69 in the sense of security, 0.55 in the independence, and 0.45 in the dimension of control.[11]

Perceived social support

This questionnaire was prepared by Zimet *et al.* to measure perceived social support from the family, friends, and important people of the person's lives.[24] This scale had 12 items, and the subject determined his/her opinion on a 5-point scale from 1 for totally disagree to 5 for totally agree. The minimum score was 12, and the maximum score was 60. The score 12–24 showed low perception, 24–36 moderate perception, and above 36 high perceptions of social support. Bruwer *et al.* (2008) reported the internal reliability of this tool in a sample of 788 high school students using Cronbach's alpha as 86–90% for the subscales of this tool and 86% for the entire tool.[25]

In this study, the socioeconomic status was developed using the father's education, mother's education, household assets, and household income. Due to the strong correlation between these variables, this variable was developed to prevent collinearity in the model using principal component analysis. The students were classified using this variable in one of the levels of very high, high, middle, low, and very low socioeconomic status.

The general risk-taking behavior was investigated using the question "Do you enjoy doing the low-risk thrilling thing?" And the participants with the answer "yes" were categorized as people with this behavior.

The attitude toward smoking in students was evaluated using the valid 6-item questionnaire similar to Hill *et al.*[26] The range of scores was from − 12 to + 12 (−12 as lowest and + 12 as highest attitude) and the higher scores showed a positive attitude.

This study was approved by the Scientific Committee on Ethics, Tabriz University of Medical Sciences (Ethical Code IR.TBZMED.REC.1396.274). The data were analyzed using SPSS-24 software. The descriptive statistics were used to determine the frequency, percentage, mean, and standard deviations of the variables. The transition of cigarette smoking stages was estimated and calculated as the rate of progress by taking a percentage for the total sample and collecting percentage related to the transition to higher stages. Besides, to determine the relationship between the variables, the *t*-test, Chi-square, and univariate and multivariate logistic regression analysis were used.

Results

In total, 3,968 participants (94.1%) of the total students completed the questionnaire in the first phase of the study and were included. A number of 221 (5.3%) students that didn't complete the questionnaire were absented, and 27 (0.6%) students were not interested in participating in the study. From the students who participated in this study, 1868 (47.1%) students were male. The mean age of participants was 15.96 (standard deviation [SD] = 0.75) years (age range of 14–19). In terms of phases of cigarette smoking, in the first phase of the study, 75.5% of all the students (95% CI: 74.1–76.8) were nonsmoker s, 17.0% (95% CI: 15.9–18.2) were experiment smokers, and 7.5% (95% CI: 7.6–3.8) were regular smokers (every day or most days of the week). In the second phase, 73.0% (95% CI: 71.5–74.3) were nonsmoker s, 18.4% (95% CI: 17.1–19.6) were experiment smokers, and 8.6% (95% CI: 7.7–9.6) were regular smokers [Table 1].

As seen in this table, the prevalence of more advanced smoking stages in male students was more than female students. In the second phase of the study, the results showed a decrease in the prevalence of stages such as committer, immotive, contemplation, preparatory, and daily and an increase in the prevalence of stages such as progressive, tried, experimenter, and regular. The highest inclusion of the students was in the regular stage, and the highest exclusion was in the immotive stage.

In the second phase of the study, 296 students (7.5%) did not participate in the study due to the absence from school. From 3,672 remaining students, 429 students (11.7%, 95%CI: 10.68–12.76) were progressed in the phases of cigarette smoking in 6 months. Table 2 shows the transition from phases of cigarette smoking at different levels of demographic variables and risk factors.

As shown in Table 2, all the variables, except living with parents, had a significant relationship with the transition in cigarette smoking stages. Also, transition through stages of cigarette smoking had a significant relationship with different levels of family psychological function and perceived social support. A higher percentage of adolescents with lower levels of psychological functioning of the family and perceived social support were progressed in the second phase of the follow-up at different stages of smoking [Table 2].

Table 1: Prevalence of cigarette smoking stages in the first and second phases of study by gender

Smoking Stages	Male Frequency (%)		Female Frequency (%)		Total Frequency (%)		Diff of Phase$_{1,2}$ (%)
	Phase$_1$	Phase$_2$	Phase$_1$	Phase$_2$	Phase$_1$	Phase$_2$	
Committer	915 (49.8)	881 (50.3)	1598 (77.4)	1438 (74.9)	2513 (64.4)	2319 (63.2)	−1.2
Immotive	132 (7.2)	86 (4.9)	127 (6.2)	100 (5.2)	259 (6.6)	186 (5.1)	−1.5
Progressive	39 (2.1)	28 (1.6)	38 (1.8)	84 (4.4)	77 (2.0)	112 (3.1)	+1.1
contemplation	13 (0.7)	5 (0.3)	23 (1.1)	18 (0.9)	36 (0.9)	23 (0.6)	−0.3
Preparatory	34 (1.8)	18 (1.0)	26 (1.3)	21 (1.1)	60 (1.5)	39 (1.1)	−0.4
Tried	294 (16.0)	273 (15.6)	182 (8.8)	177 (9.2)	476 (12.2)	450 (12.3)	+0.1
Experimenter	143 (7.8)	172 (9.8)	46 (2.2)	53 (2.8)	189 (4.8)	225 (6.1)	+1.3
Regular	95 (5.2)	141 (8.0)	18 (0.9)	17 (0.9)	113 (2.9)	158 (4.3)	+1.4
Daily	172 (9.4)	148 (8.4)	7 (0.3)	12 (0.6)	179 (4.6)	160 (4.4)	−0.2

Table 2: Transition in cigarette smoking stages at different levels of demographic variables, risk factors, family psychological function, and perceived social support

Variable		Transition		Total	P
		No	Yes		
Gender	Male	1500 (85.6)	252 (14.4)	1752 (47.7)	<0.001
	Female	1743 (90.8)	177 (9.2)	1920 (52.3)	
Socioeconomic status	Very low	603 (86.5)	94 (13.5)	697 (20.3)	<0.001
	Low	639 (92.1)	55 (7.9)	694 (20.2)	
	Middle	616 (88.9)	77 (11.1)	693 (20.2)	
	High	598 (89.1)	73 (10.9)	671 (19.5)	
	Very high	575 (84.2)	108 (15.8)	683 (19.9)	
Field of study	mathematics	668 (88.6)	86 (11.4)	754 (20.5)	0.021
	empirical sciences	1094 (86.1)	176 (13.9)	1270 (34.6)	
	Humanities	660 (89.7)	76 (10.3)	736 (20.0)	
	technical and vocational	821 (90.0)	91 (10.0)	912 (24.8)	
Living with parents	Yes	3086 (88.4)	403 (11.6)	3489 (95.2)	0.223
	No	151 (86.3)	24 (13.7)	175 (4.8)	
Family smoker	Yes	1080 (84.7)	195 (15.3)	1275 (34.9)	<0.001
	No	2149 (90.2)	234 (9.8)	2383 (65.1)	
Friend smoker	Yes	816 (79.7)	208 (20.3)	1024 (28.3)	<0.001
	No	2382 (91.7)	215 (8.3)	2597 (71.7)	
General risk-taking behavior	Yes	1617 (85.2)	280 (14.8)	1897 (51.8)	<0.001
	No	1619 (91.9)	143 (8.1)	1762 (48.2)	
Family psychological function	weak	32 (27.6)	84 (72.4)	117 (3.5)	<0.001
	moderate	194 (65.5)	102 (34.5)	307 (9.1)	
	strong	2572 (92.9)	197 (7.1)	2962 (87.5)	
Multidimensional perceived social support	low	84 (42.2)	115 (57.8)	211 (5.7)	<0.001
	moderate	493 (81.8)	110 (18.2)	641 (17.2)	
	high	2494 (93.1)	186 (6.9)	2877 (77.2)	
Age		15.94±0.76	16.06±0.72	15.96±0.75	0.002
Previous year average		17.76±1.87	16.93±2.41	17.67±1.95	<0.001
Attitude toward smoking		−8.82±4.76	−4.05±7.01	−8.32±5.25	<0.001

Numbers are the number (%) or the mean±SD

In order to evaluate the relationship between family psychological function and perceived social support with progress in cigarette smoking stages, the univariate and multivariate logistic regression analysis was used [Table 3]. The variables of age, gender, socioeconomic status, family smoker, friend smoker, field of study, previous year average, attitude toward cigarette smoking, and general risk-taking behavior were included in the model as the potential confounding variables. According to the results, the lowest levels of family psychological function and perceived social support in the univariate states were significantly associated with progress in cigarette smoking stages. This relationship was also significant with the control of potentially confounding factors. By

Table 3: Logistic regression relationship between family psychological function and perceived social support with progress in cigarette smoking stages

Univariate analysis				
		OR	95% CI	*P*
Family psychological function	Strong	1	-	-
	Moderate	6.86	5.19-9.08	<0.001
	Weak	34.27	22.25-52.80	<0.001
Multidimensional perceived social support	High	1	-	-
	Moderate	2.99	2.32-3.86	<0.001
	Low	18.36	13.35-25.24	<0.001
Multivariate analysis				
		OR*	95% CI	*P*
Family psychological function	Strong	1	-	-
	Moderate	4.34	2.97-6.34	<0.001
	Weak	10.75	5.62-20.60	<0.001
Multidimensional perceived social support	High	1	-	-
	Moderate	2.38	1.71-3.30	<0.001
	Low	6.78	4.23-10.89	<0.001

OR: Odds ratio, CI: Confidence interval. *Adjusted for age, gender, family smoker, friend smoker, socioeconomic status, attitude toward smoking, field of study, general risk-taking behavior, and previous year average

controlling potential confounding factors, the moderate family psychological function compared to the strong function increased the chance of progress in the stages of cigarette smoking by about four times and the weak family psychological function compared to the strong function increased the chance of progress in the stages of cigarette smoking by about 11 times. The moderate level of perceived social support compared to the high level increased the chance of progress in the stages of cigarette smoking by about two times and the low level of perceived social support compared to the high level increased the chance of progress in the stages of cigarette smoking by about seven times.

Discussion

Regarding the stages of cigarette smoking, the results showed that the highest inclusion of the students was in the regular stage. So that the prevalence of this stage was increased from 2.9% at the beginning of the study to 4.3% at the end. According to the British National Health Service (NHS Digital), the percentage of regular smokers had a decreasing trend among high school students in 1982–2016, which was 3% in the age range 11–15 and 7% at the ages of over 15 years old. In this report, a regular smoker was defined as smoking at least one cigarette per week.[27] According to Ataeiasl *et al*. 5.9% of the students were regular smokers.[28] Strong *et al*. showed that regular smoking in adolescence significantly increased the chance of using marijuana, alcohol abuse, and drug addiction in adulthood.[29] Therefore, preventing adolescents from reaching this stage would play an important role in preserving and promoting health in adulthood.

According to the results of our study, the highest exclusion of the students was from the Immotive stages, so that the prevalence of this stage was decreased from 6.6% in the first phase to 5.1% in the second phase. Results of this study also showed that, after 6 months, students in the committer stage, who were sure they would never smoke, was reduced from 64.4% to 63.2%. In the study by Mohammadpoorasl *et al*. 75.1% of the students were in the committer stage, which was dropped to 66.8% after 12 months.[30] The immotive stage is one of the motivational stages for the starting of cigarette smoking, in which the first decision for cigarette smoking in the future begins from this stage. Kremers *et al*. demonstrated that progress in nonsmoker stages increased the risk for the onset of cigarette smoking and transition to the regular stage.[31] Therefore, the preventing interventions of cigarette smoking must be carried out from the first stage of cigarette smoking to prevent the intention of starting cigarette smoking in adolescents and even in children to avoid the onset and continuous progress in the stages of cigarette smoking.

As the findings of this study reiterated, there is a significant relationship between family psychological function and progress in the stages of cigarette smoking. These findings indicate that the family with strong psychological function is one of the important protective factors in transition through stages of cigarette smoking. However, no study can be seen regarding the role of this variable in transition through stages of cigarette smoking, but it has been shown in several studies that family function is effective for drug use in adolescents. Weiss *et al*. found that high and positive family function was a preventive factor for the onset of cigarette smoking in Chinese and Korean/American adolescents.[32] Wagner *et al*. showed that family function is effective for the behavior of drug use in Spanish-Latin adolescents.[33] Mulic *et al*. reported that family function can reduce the probability of tendency among adolescents to deviant behaviors including drug use.[34] The undesirable family function prevents the proper decision-making of family members for having a healthy and safe life so that they might choose high-risk behaviors such as cigarette smoking. In the study by Ebrahimi *et al*. with the aim to investigate the risk factors, onset, and continuation of cigarette smoking, the following cases can be mentioned: poor family management, feeling of loneliness in the family, poor family relationships, and many conflicts in the family.[21] The human psychological aspects are one of the most important aspects of its existence. Providing mental health and its promotion, as well as providing the necessary grounds for normal psychological growth of human beings is one of the important tasks of the family. Every family should be managed to present psychologically healthy, grown, and efficient human beings.[12]

The results of this study showed that a low level of perceived social support increased the chances of progress

in the stages of cigarette smoking. Mendel *et al*. reported that low the perception of social support from family in adolescence is one of the predictors of continued cigarette smoking.[35] Cigarette smoking has social aspects, like many high-risk behaviors associated with health. The network of social relations and social support plays an important role in the tendency toward cigarette smoking.[36] Family and friends are the main sources of social support. Csibi *et al*. demonstrated that the perceived social support from family significantly affected the onset of cigarette smoking in adolescents.[37] The network of friendly relationships can be effective for both tendencies toward cigarette smoking and smoking cessation.[38] Mohammadpoorasl *et al*. revealed that one of the important predictors of transition in cigarette smoking stages is having a friend smoker.[30] On the other hand, the study by Fagan *et al*. showed those who were consistently smoking were more encouraged for smoking cessation by their friends.[39] Therefore, the perceived social support from important predictors is the onset, and progress in the stages of cigarette smoking.

It seems that when family members have positive reactions in interacting with each other and the family atmosphere is quiet and tension-free, the tendency toward cigarette smoking and the likelihood of progress in the stages of cigarette smoking would be reduced. Those who perceive less social support are more vulnerable to stresses and tensions of life, so they turn to cigarette smoking to reduce the pressures of life, and they also might begin cigarette smoking with the motivation to achieve approval and respect from others, especially their friends. Given that the cigarette smoking process is multistage, the attention to family psychosocial function and perceived social support is required in tobacco control policies to increase the effectiveness of primary and secondary prevention interventions.

The strengths of the current study were its longitudinal design and sufficient sample size and representativeness of sample to adolescents in Tabriz. However, our study has some limitations, too. In this study, measures were taken to validate the obtained data, but the smoking status was measured using the self-reporting method, which can lead to underestimation than reality. The family psychological function and the perceived social support in the first phase of the study were measured and the changes related to them have not been considered over time. Another problem of this study was the time-consuming completion of questionnaires in the first phase of the study, which could distort the results of the study. However, to reduce the possibility of mistakes or lack of interest in answering the questions, the questionnaires were given to the participants in the most suitable time to have the highest accuracy in completing the questionnaires.

According to the results of the study, it is suggested performing an intervention study aimed to promote various dimensions of family psychological function and perceived social support with the focus on social support resources and its impact on the transition in cigarette smoking stages was examined in adolescents.

Conclusion

Given that the desirable family psychological function and high level of social support are very strong predictors in passing through cigarette smoking stages, it is necessary to perform an organized, precise, and operational planning for strengthening the family psychological functions and providing an appropriate social support condition among adolescents to prevent the tendency toward cigarette smoking and its more advanced phases.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflicts of interest

There are no conflicts of interest.

References

1. GBD 2015 Tobacco Collaborators. Smoking prevalence and attributable disease burden in 195 countries and territories, 1990-2015: A systematic analysis from the global burden of disease study 2015. Lancet (London, England) 2017;389:1885-906.
2. Cantrell J, Bennett M, Mowery P, Xiao H, Rath J, Hair E, *et al*. Patterns in first and daily cigarette initiation among youth and young adults from 2002 to 2015. PLoS One 2018;13:e0200827.
3. Centers for Disease Control and Prevention [CDC]. Smoking and Tobacco use. Data and statistics. CDC; 2017. Available from: https://www.cdc.gov/tobacco/data_statistics/index.htm. [Updated on 2017 Sep 05].
4. World Health Organization. WHO report on the global tobacco epidemic 2017: Monitoring tobacco use and prevention policies. Available from: https://www.who.int/tobacco/global_report/2017/en/. [Publication on 2017 Jul 19].
5. Baška T, Warren CW, Bašková M, Jones NR. Prevalence of youth cigarette smoking and selected social factors in 25 European countries: Findings from the Global Youth Tobacco

Survey. Int J Public Health 2009;54:439-45.

6. Kapetanovic S, Skoog T, Bohlin M, Gerdner A. Does one size fit all?-Linking parenting with adolescent substance use and adolescent temperament. J Res Adolesc 2019;30(Suppl 2) 443-57.

7. Hwang JH, Park SW. Age at smoking initiation and subsequent smoking among Korean adolescent smokers. J Prev Med Public Health 2014;47:266-72.

8. Ho SY, Chen J, Leung LT, Mok HY, Wang L, Wang MP, *et al*. Adolescent smoking in hong kong: Prevalence, psychosocial correlates, and prevention. J Adolesc Health 2019;64:S19-27.

9. Zucker RA, Gonzalez R, Feldstein Ewing SW, Paulus MP, Arroyo J, Fuligni A, *et al*. Assessment of culture and environment in the adolescent brain and cognitive development study: Rationale, description of measures, and early data. Dev Cogn Neurosci 2018;32:107-20.

10. Horner P, Grogan-Kaylor A, Delva J, Bares CB, Andrade F, Castillo M. The association of family and peer factors with tobacco, alcohol, and marijuana use among Chilean adolescents in neighborhood context. Subst Abuse Rehabil 2011;2:163-72.

11. Kimiaee S, Khademian H, Farhadi H, Ghimati A. Develop and study of preliminary psychometric and validation characteristic of Iranian family psychological function scale. Quarterly J Modern Psychol Res 2012;7:145-82. [Persian].

12. Miller IW, Ryan CE, Keitner GI, Bishop DS, Epstein NB. The McMaster approach to families: Theory, assessment, treatment and research. J Fam Ther 2000;22:168-89.

13. Brook JS, Zhang C, Brook DW. Psychosocial factors related to smoking: The midlife study. Am J Addict 2014;23:423-28.

14. Hummel A, Shelton KH, Heron J, Moore L, Bree M. A systematic review of the relationships between family functioning, pubertal timing and adolescent substance use. Addiction 2013;108:487-96.

15. Kelly SA, Melnyk BM, Jacobson DL, O'Haver JA. Correlates among healthy lifestyle cognitive beliefs, healthy lifestyle choices, social support, and healthy behaviors in adolescents: Implications for behavioral change strategies and future research. J Pediatr Health Care 2011;25:216-23.

16. Wang RAH, Davis OSP, Wootton RE, Mottershaw A, Haworth CMA. Social support and mental health in late adolescence are correlated for genetic, as well as environmental, reasons. Sci Rep 2017;7:13088.

17. Shruthi P, Niveditha B, Shetty P, Chaitanya K, Khargekar N. Role of social support in tobacco cessation. Int J Community Med Public Health 2017;4:3942-47.

18. Yang HK, Shin DW, Park JH, Kim SY, Eom CS, Kam S, *et al*. The association between perceived social support and continued smoking in cancer survivors. Jpn J Clin Oncol 2013;43:45-54.

19. Mohammadpoorasl A, Nedjat S, Yazdani K, Fakhari A, Foroushani AR, Fotouhi A. An algorithm of smoking stages assessment in adolescents: A validation study using the latent class analysis model. Int J Prev Med 2013;4:1304-11.

20. Wellman RJ, Dugas EN, Dutczak H, O'Loughlin EK, Datta GD, Lauzon B, *et al*. Predictors of the onset of cigarette smoking: A systematic review of longitudinal population-based studies in youth. Am J Prev Med 2016;51:767-78.

21. Ebrahimi H, Sahebihagh MH, Ghofranipour F, Tabrizi JS. Initiation and continuation of smoking in Iran: A qualitative content analysis. Int J Community Based Nurs Midwifery 2014;2:220-30.

22. Ayubi E, Sani M, Safiri S, Khedmati Morasae E, Almasi-Hashiani A, Nazarzadeh M. Socioeconomic determinants of inequality in smoking stages: A distributive analysis on

a sample of male high school students. Am J Mens Health 2017;11:1162-68.

23. Anbarlouei M, Sarbakhsh P, Dadashzadeh H, Ghiasi A, Ataieasl M, Dorosti A, *et al*. Cigarette and hookah smoking and their relationship with self-esteem and communication skills among high school students. Health Promot Perspect 2018;8:230.

24. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. J Pers Assess 1988;52:30-41.

25. Bruwer B, Emsley R, Kidd M, Lochner C, Seedat S. Psychometric properties of the multidimensional scale of perceived social support in youth. Compr Psychiatry 2008;49:195-201.

26. Hill AJ, Boudreau F, Amyot É, Déry D, Godin G. Predicting the stages of smoking acquisition according to the theory of planned behavior. J Adolesc Health 1997;21:107-15.

27. NHS Digital. Smoking, drinking and drug use among young people in England-2016. [Internet]. 2017. Available from: https://digital.nhs.uk/catalogue/PUB30132. [Publication on 2017 2 Nov].

28. Ataeiasl M, Sarbakhsh P, Dadashzadeh H, Augner C, Anbarlouei M, Mohammadpoorasl A. Relationship between happiness and tobacco smoking among high school students. Epidemiol Health 2018;40:e2018009.

29. Strong C, Juon H-S, Ensminger ME. Effect of adolescent cigarette smoking on adulthood substance use and abuse: The mediating role of educational attainment. Subst Use Misuse 2016;51:141-54.

30. Mohammadpoorasl A, Nedjat S, Fakhari A, Yazdani K, Fotouhi A. Predictors of transition in smoking stages in Iranian adolescents: Latent transition analysis. East Mediterr Health J 2014;20:330-9.

31. Kremers S, De Vries H, Mudde A, Candel M. Motivational stages of adolescent smoking initiation: Predictive validity and predictors of transitions. Addict Behav 2004;29:781-89.

32. Weiss JW, Garbanati JA, Tanjasiri SP, Xie B, Palmer PH. Effects of family functioning and self-image on adolescent smoking initiation among Asian-American subgroups. J Adolesc Health 2006;39:221-28.

33. Wagner KD, Ritt-Olson A, Chou CP, Pokhrel P, Duan L, Baezconde-Garbanati L, *et al*. Associations between family structure, family functioning, and substance use among Hispanic/Latino adolescents. Psychol Addict Behav 2010;24:98-108.

34. Mulic M, Ferković V, Kurtić A, Pašić IF. Tobacco, alcohol, drugs consumption, and perception about the family functioning among adolescents in Tuzla Canton. J Health Sci 2017;7:146-57.

35. Mendel JR, Berg CJ, Windle RC, Windle M. Predicting young adulthood smoking among adolescent smokers and nonsmokers. Am J Health Behav 2012;36:542-54.

36. Watt RG, Heilmann A, Sabbah W, Newton T, Chandola T, Aida J, *et al*. Social relationships and health related behaviors among older US adults. BMC Public Health 2014;14:533.

37. Csibi M, Csibi S, Denes M, Ábram Z. Smoking behaviour related to health status, self esteem, life satisfaction and perceived social support in an adolescent sample. Acta Medica Transilvanica 2018;23:1-5.

38. Blok DJ, de Vlas SJ, van Empelen P, van Lenthe FJ. The role of smoking in social networks on smoking cessation and relapse among adults: A longitudinal study. Prev Med 2017;99:105-10.

39. Fagan P, Eisenberg M, Stoddard AM, Frazier L, Sorensen G. Social influences, social norms, social support, and smoking behavior among adolescent workers. Am J Health Promot 2001;15:414-21.