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Research Article

Smoking Quit Attempts in Turkey: An Analysis of Gender Differences

Türkiye'de Sigarayı Bırakma Girişimleri: Toplumsal Cinsiyet Farklılıklarının Analizi

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Abstract

This study investigates gender differences in cigarette smoking quit attempts in Turkey. Utilizing the Turkish Health Survey of 2016, logistic regression models are estimated for quantification of correlates of cigarette smoking quit attempts at individual level. Empirical findings indicate that women are less likely to attempt quitting smoking in Turkey. Differences in risk factors of quitting attempts between men and women samples are also found. In both men and women in Turkey, the remarkable correlates of smoking quit attempts are use of hand-rolled cigarettes, number of cigarettes consumed per day, start of smoking owing to family issues, being married, self-rated health status, having heart disease, and alcohol use. In Turkish women only, the remarkable risk factors of quitting attempts are age of smoking start, obesity, start of smoking owing to personal problems, and smoking via effects of friends. In Turkish men only, age, education level, household income level, being divorced, having depression, having asthma, and physical activity level are the remarkable correlations with smoking quit attempts.

Keywords

Gender • Smoking Quit Attempts • Cigarettes • Sociodemographics • Turkey

Öz

Bu çalışma, Türkiye'de sigarayı bırakma girişimlerindeki toplumsal cinsiyet farklılıklarını araştırmaktadır. Türkiye Sağlık Araştırması'nın 2016 yılına ait verileri kullanılarak, lojistik regresyon modelleri yardımıyla sigarayı bırakma girişimlerinin bireysel düzeydeki değişkenlerle ilişkileri tahmin edilmiştir. Ampirik bulgular, Türkiye'de kadınların sigarayı bırakma girişiminde bulunma ihtimallerinin erkeklere oranla daha az olduğunu göstermektedir. Erkek ve kadın örneklemleri arasında sigarayı bırakma girişimine ait risk faktörlerinde farklılıklar da bulunmaktadır. Sarma sigara kullanımı, günlük içilen sigara miktarı,

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aile sorunları nedeniyle sigaraya başlama, evli olma, kişisel beyanı dayalı sağlık durumu, kalp hastalığına sahip olma ve alkol kullanımı sigarayı bırakma girişimlerinde hem kadın hem erkekler için dikkat çeken risk faktörleri olarak ortaya çıkmıştır. Sadece Türk kadınları için sigarayı bırakma girişimlerinde dikkat çeken risk faktörleri sigaraya başlama yaşı, obezite durumu, kişisel sorunlar nedeniyle sigaraya başlama ve arkadaşların etkisiyle sigaraya başlama olarak gözlemlenmektedir. Yaş, eğitim durumu, hanehalkı gelir seviyesi, boşanmış olma, depresyonda olma, astım olma ve fiziksel aktivite seviyesi sadece Türk erkeklerinin sigarayı bırakma girişimlerinde risk faktörleri olarak bulunmuştur.

Anahtar Kelimeler

Toplumsal cinsiyet • Sigarayı bırakma girişimleri • Sigara • Sosyodemografik özellikler • Türkiye

Introduction

Triggering many diseases, such as lung cancer, cardiovascular diseases, and other illnesses, smoking is a leading cause of mortality worldwide (Britton, 2017). More than 8 million people die owing to tobacco use or being a passive smoker each year (World Health Organization (WHO), 2019). Cigarette smoking affects both smokers and their networks regarding health outcomes, economic decisions, and social life (Centers for Disease Control and Prevention (CDCP), 2002; U.S. Department of Health and Human Services (DHHS), 2014; Mercken, 2009). Smokers of low- and middle-income countries constitute almost 80% of 1.1 billion smokers worldwide (WHO, 2019). In many countries, shares of men who are smoking are higher than that of women (Roser & Ritchie, 2019).

Quitting smoking would bring remarkable health and economic benefits (Lightwood & Glantz 1997; Samet, 1992; Taylor, Hasselblad, Henley, Thun, & Sloan, 2002; Taylor, McNeill, Girling, Farley, Lindson-Hawley, & Aveyard, 2014). Nevertheless, success rates of smoking intervention programs by policy makers and individual-level efforts for quitting smoking may depend on a variety of conditions. Earlier studies reveal that predictors of quit attempts and smoking cessation may differ (Smit, Hoving, Schelleman-Offermans, West, & de Vries, 2014; Rafful, García-Rodríguez, Wang, Secades-Villa, Martínez-Ortega, & Blanco, 2013; Vangeli, Stapleton, Smit, Borland, & West, 2011). Mixed results for gender differences in smoking behaviors are documented by researchers (Bjornson et al., 1995; Smith, Zhang, Weinberger, Mazure, & McKee, 2017; Waldron, 1991; Wetter, Kenford, Smith, Fiore, Jorenby, & Baker, 1999). Some studies reveal that women are more likely to attempt quitting (Davila et al., 2009; Rafful et al., 2013; Rose, Chassin, Presson, & Sherman, 1996; Zhou, Nonnemaker, Sherrill, Gilsenan, Coste, & West, 2009), whereas others indicate men to be more likely to make an attempt to quit (Hakim, Chowdhury, & Uddin, 2018; Srivastava, Malhotra, Harries, Lal, & Arora, 2013). Some studies suggest that gender is not associated with smoking quit attempts (Diemert et al., 2013; Fidler & West, 2011; Goren et al., 2014; Hagimoto, Nakamura, Morita, Masui, & Oshima, 2010; Hellman, Cummings, Haughey, Zielezny, & O'Shea, 1991; Li et al.,

2011; West, McEwen, Bolling, & Owen, 2001). Nevertheless, the literature does not reach a consensus on the relationship between gender and smoking cessation (Smith, Bessette, Weinberger, Sheffer, & McKee, 2016) A branch of literature indicates that women are more likely to be successful in quitting smoking (Çelik et al., 2015; Fidler & West, 2011), whereas some researchers find that males are more likely to quit smoking cigarettes (Osler et al, 1999). Another line of research exhibits no relationships between gender and successful quit attempts (Hagimoto et al., 2010; Hellman et al., 1991; Li et al., 2010; Li et al., 2011; Rafful et al., 2013; Rose, Chassin, Presson, & Sherman, 1996; West, McEwen, Bolling, & Owen, 2001; Zhou et al., 2009).

In Turkey, 41.1% of men and 14.1% of women aged 15 years and over smoked tobacco products in 2016 (Roser & Ritchie, 2019). Researchers reveal that gender differences in determinants of smoking status and cigarette consumption prevail in Turkey (Kilic & Ozturk, 2014; Pekkurnaz & Elitas, 2018). Moreover, 45.1% of men and 48.8% of women had a quit attempt within the last year and overall 55.2% of the smokers have reported a desire to quit (Global Adult Tobacco Survey (GATS, 2013). Çelik et al. (2015) show that women have higher success rates in nationwide smoking cessation treatment support program in Turkey. The purpose of this study is to explore gender differences in cigarette smoking quit attempts in Turkey. Cross-sectional data from the Turkish Health Survey of 2016 are used to determine individual-level factors associated with making an attempt to quit smoking within the past 12 months. Logistic regression models are employed for quantification of risk factors of quit attempts. Estimation results reveal that women are less likely to have a cigarette smoking quit attempt in Turkey. For both female and male samples, use of hand-rolled cigarettes, number of cigarettes consumed per day, start of smoking owing to family issues, being married, self-rated health status, having heart disease, and alcohol use are remarkably associated with smoking quit attempts. In Turkish women only, age of smoking start, obesity measures, start of smoking owing to personal problems, and smoking via effects of friends are remarkable correlates of quit attempts. In Turkish men only, age, education level, household income level, being divorced, having depression, having asthma, and physical activity level are remarkable risk factors of smoking quit attempts.

Smoking cessation has potential to enhance an individual's health outcomes and make remarkable contributions to the public health. Policy makers design and continuously refine smoking cessation programs in many countries. The process of quitting smoking is highly complex with involvement of many different factors ranging from individual characteristics to social and environmental conditions. Analysis of quit attempts provides essential information in the design of public health policies. This study confirms that gender is a remarkable correlate of smoking quit attempts; therefore, policy makers should be aware of the fact that men and women may need different approaches in smoking cessation programs.

Method

Data

The data set of this study is derived from the Turkish Health Survey (THS) of 2016, which is a nationally representative household survey designed and operated by the Turkish Statistical Institute (TSI) (TSI, 2016). THS obtains a variety of individual-level information on health outcomes, lifestyle, and habits. This study focuses on participants aged ≥15 years and current cigarette smokers, and it has an effective sample of 4,683 individuals. The data set of this study is derived from anonymous survey data which do not include any confidential and private information of participants. Since the current study uses a data set collected by TSI based on its official procedures, informed consent is not required. This study is conducted in compliance with international standards and principles of the Declaration of Helsinki.

The survey includes various questions on smoking habits of the participants. This study considers the following question in measuring (failed) cigarette smoking quit attempts of Turkish individuals who are current smokers: "In the last 12 months, have you ever attempt quitting cigarette smoking?" 1, yes; 2, no. A binary variable is constructed to indicate whether the respondent tried quitting smoking cigarettes or not. If an individual attempted to quit smoking, the binary variable for "quit attempt" reads one; otherwise, it is equal to zero. Successful quit attempts are not considered in this study, which means that quitters are not included in the operating sample of the study. Explanatory variables for empirical investigation include demographic information, socioeconomic conditions, disease conditions, smoking habits, and indicators for health-related behavior of individuals. Details on the measurement of all variables of interest for this study are found in Table 1.

The frequency distributions of variables for men and women are found in Table 2. A total of 33.3% of men and 32.8% of women attempted to quit cigarette smoking within the last 12 months. A total of 6.2% of women and 9.2% of men use hand-rolled cigarettes. On average, men smoke 18 cigarettes per day whereas women consume 11.6 cigarettes per day. The average age of start of smoking is 17.6 for men and 20.5 for women. Effect of friends, imitation, and curiosity are leading reasons for start of smoking in both men and women. Nevertheless, the shares of women who start smoking owing to family and personal problems (11.7% and 10.2%, respectively) are higher than those of men (3.4% and 5.1%, respectively), in Turkey. Age distribution is similar across male and female subsamples in Turkey. Nevertheless, the share of women in lower education levels is higher. In Turkey, 6.2% of women are illiterate, whereas only 2% of men are illiterate. A total of 5.2% of women do not have official diploma, whereas that of men is at 2.8%. Furthermore, 20.5% of men hold secondary school diploma, whereas that of women is at 15%. Nevertheless, the shares of men

Table 1.
Description and measurement of variables for empirical analysis

Variables	Description
Quit Attempt	Indicator of the respondent's failed quit attempt for smoking in the past year. 1=Made a quit attempt; 0=Did not make a quit attempt
Hand-Rolled Cigarette User	Indicates whether the respondent smokes hand-rolled cigarettes or manufactured cigarettes. 1=The respondent uses hand-rolled cigarettes; 0=The respondent uses manufactured cigarettes
Cigarettes per Day	Measures the average number of cigarettes smoked by the respondent per day.
Age of Smoking Start	Measures the age at which the respondent started to smoke tobacco products.
Reason for Smoking Start	Indicates the reported reason of the respondent for starting smoking. 1 = Curiosity; 2=Imitation/Affectation; 3=Family Problems; 4 = Personal Problems; 5 = Effect of Friends; 6 = Other
Female	0=Male; 1=Female
Age Level	Age group of the respondent. 1=15–24; 2=25–34; 3=35–44; 4=45–54; 5=55–64; 6=65–74; 7=75+
Education Level	Highest educational attainment of the respondent. 0=Illiterate; 1=No Official Diploma; 2=Primary School; 3=Secondary School; 4=High School; 5=Associate Degree; 6=Bachelor's Degree; 7=Graduate Degree
Employed	Employment status of the respondent. 1=Employed; 0=Otherwise
Marital Status	Marital status of the respondent. 1=Single (Never Married); 2=Married 3=Widowed; 4= Divorced
Household Income	Monthly household income level category of the respondent (in Turkish Liras). 1=0–1264 TL; 2=1265–1814 TL; 3=1815–2540 TL; 4=2541–3721 TL; 5=3722+ TL.
Self-Rated Health Status	Subjective health status of the respondent. 1=Very Bad; 2=Bad; 3=Fair; 4=Good; 5=Very Good
Body Mass Index (BMI)	BMI (kg/m^2) group of the respondent. 0=Underweight: BMI < 18.50; 1=Normal weight: 18.50 ≤ BMI < 25; 2=Overweight: 25 ≤ BMI < 30; 3=Obesity Class 1: 4=30 ≤ BMI < 35; Obesity Class 2: 35 ≤ BMI < 40; 5=Obesity Class 3: BMI ≥ 40
Heart Disease	Indicates whether the respondent had a heart attack or coronary heart disease or angina pectoris in the last year. 0= No; 1=Yes.
Hypertension	Indicates whether the respondent had chronic hypertension in the last year. 0= No; 1=Yes.
Depression	Indicates whether the respondent had chronic depression in the last year. 0= No; 1=Yes.
Asthma/Bronchitis	Indicates whether the respondent had chronic asthma or chronic bronchitis or chronic obstructive pulmonary disease or emphysema in the last year. 0 = No; 1=Yes.
Alcohol User	Indicates whether the respondent uses alcohol. 0=No; 1=Yes
Physical Activity	Indicates whether the respondent spent more than 10 minutes on continuous walking at least one day during a typical week. 0=No; 1=Yes

Source: Turkish Statistical Institute (TSI). (2016). Turkey Health Survey Micro Data Set.

and women who hold high school and higher education-level diplomas are similar. Moreover, there exists a gender gap in employment status in Turkey. A total of 68.6% of men are employed, whereas only 30.4% of women are employed in this sample. A total of 73% of men and 69.7% of women are married. Men are more likely to be

Table 2.
Frequency distributions of variables for male and female samples

Variables		Males (N=3,134)		Females (N=1,549)	
		N	% or Mean (SD)	N	% or Mean (SD)
Quit Attempt:	No	2,091	66.72	1,041	67.20
	Yes	1,043	33.28	508	32.80
Hand-Rolled Cigarette User:	No	2,845	90.78	1,452	93.74
	Yes	289	9.22	97	6.26
Cigarettes per Day		3,134	18.07 (10.11)	1,549	11.65 (7.74)
Age of Smoking Start		3,134	17.67 (5.56)	1,549	20.58 (7.15)
Reason for Smoking Start:	Curiosity	682	21.76	292	18.85
	Imitation/Affectation	972	31.01	350	22.60
	Family Problems	107	3.41	182	11.75
	Personal Problems	160	5.11	159	10.26
	Effect of Friends	973	31.05	415	26.79
	Other	240	7.66	151	9.75
Age Level:	15–24	420	13.40	159	10.26
	25–34	666	21.25	356	22.98
	35–44	795	25.37	483	31.18
	45–54	648	20.68	342	22.08
	55–64	392	12.51	159	10.26
	65–74	164	5.23	43	2.78
	75+	49	1.56	7	0.45
Education Level:	Illiterate	65	2.07	96	6.20
	No Official Diploma	89	2.84	81	5.23
	Primary School	1,122	35.80	524	33.83
	Secondary School	644	20.55	233	15.04
	High School	732	23.36	367	23.69
	Associate Degree	185	5.90	85	5.49
	Bachelor's Degree	258	8.23	146	9.43
	Graduate Degree	39	1.24	17	1.10
Employed:	No	984	31.40	1,077	69.53
	Yes	2,150	68.60	472	30.47
Marital Status:	Single/Never Married	693	22.11	206	13.30
	Married	2,288	73.01	1,081	69.79
	Widowed	109	3.48	169	10.91
	Divorced	44	1.40	93	6.00
Household Income:	0–1264 TL	603	19.24	275	17.75

Table 2.
Frequency distributions of variables for male and female samples (continued)

Variables		Males (N=3,134)		Females (N=1,549)	
		N	% or Mean (SD)	N	% or Mean (SD)
	1265–1814 TL	899	28.69	403	26.02
	1815–2540 TL	609	19.43	284	18.33
	2541–3721 TL	561	17.90	294	18.98
	3722 + TL	462	14.74	293	18.92
Self-Rated Health Status:	Very Bad	24	0.77	11	0.71
	Bad	191	6.09	170	10.97
	Fair	786	25.08	524	33.83
	Good	1,795	57.28	772	49.84
	Very Good	338	10.78	72	4.65
Body Mass Index (BMI):	Underweight: BMI < 18.50	70	2.23	90	5.81
	Normal weight: 18.50 ≤ BMI < 25	1,408	44.93	662	42.74
	Overweight: 25 ≤ BMI < 30	1,210	38.61	487	31.44
	Obesity Class 1: 30 ≤ BMI < 35	359	11.46	212	13.69
	Obesity Class 2: 35 ≤ BMI < 40	73	2.33	68	4.39
	Obesity Class 3: BMI ≥ 40	14	0.45	30	1.94
Heart Disease:	No	2,930	93.49	1,430	92.32
	Yes	204	6.51	119	7.68
Hypertension:	No	2,835	90.46	1,292	83.41
	Yes	299	9.54	257	16.59
Depression:	No	2,938	93.75	1,251	80.76
	Yes	196	6.25	298	19.24
Asthma/Bronchitis:	No	2,872	91.64	1,278	82.50
	Yes	262	8.36	271	17.50
Alcohol User:	No	1,482	47.29	1,084	69.98
	Yes	1,652	52.71	465	30.02
Physical Activity:	No	451	14.39	250	16.14
	Yes	2,683	85.61	1,299	83.86

Source: Turkish Statistical Institute (TSI) (2016). Turkey Health Survey Micro Data Set.
SD: standard deviation.

never married (22.1%) than women (13.3%), whereas women are more likely to be widowed (10.9%) than men (3.4%). Nevertheless, distributions of household income levels are similar across genders. The mostly observed income group is 1265–1814

TL with 28.6% for men and 26% for women. Women report lower health status than men. A total of 57.2% of men report good health, whereas 49.8% of women report the same. Furthermore, 6% of men report of having bad health status, whereas 10.9% of women reported the same. Moreover, shares of overweight and underweight participants were higher for the female sample. A total of 6.5% of men and 7.6% of women reported having heart-related problems, and 16.5% of women and 9.5% of men have hypertension. A total of 19.2% of women and 6.2% of men reported that they have depressive symptoms, and 8.36% of men and 17.5% of women have asthma or bronchitis. Also, 52.7% of men and only 30% of women consume alcohol, and 85.6% of men and 83.8% of women are physically active.

The summary statistics of all the variables for the whole sample are found in Table 3. The women constitute 33% of the operating sample for this study. A total of 33% of the sample attempted to quit smoking cigarettes in the past year. Furthermore, 8% of the respondents use hand-rolled cigarettes. On average, the cigarette smokers consumed almost 16 cigarettes per day during 2016 in Turkey. The average age for start of smoking is 18.6, and the lowest reported age is 6. The average age level of the

Table 3.
Summary statistics for variables of interest

Variables	N	Mean	SD	Min	Max
Quit Attempt	4,683	0.33	0.47	0	1
Hand-Rolled Cigarette User	4,683	0.08	0.27	0	1
Cigarettes per Day	4,683	15.94	9.86	1	80
Age of Smoking Start	4,683	18.64	6.28	6	80
Reason for Smoking Start	4,683	3.21	1.75	1	6
Female	4,683	0.33	0.47	0	1
Age Level	4,683	3.16	1.40	1	7
Education Level	4,683	3.13	1.49	0	7
Employed	4,683	0.56	0.50	0	1
Marital Status	4,683	1.92	0.60	1	4
Household Income	4,683	2.85	1.35	1	5
Self-Rated Health Status	4,683	3.63	0.78	1	5
BMI	4,683	25.75	4.66	14.04	56.81
Heart Disease	4,683	0.07	0.25	0	1
Hypertension	4,683	0.12	0.32	0	1
Depression	4,683	0.10	0.31	0	1
Asthma/Bronchitis	4,683	0.11	0.32	0	1
Alcohol User	4,683	0.45	0.50	0	1
Physical Activity	4,683	0.85	0.36	0	1

Source: Turkish Statistical Institute (TSI). (2016). Turkey Health Survey Micro Data Set.
SD: standard deviation; BMI: body mass index.

sample ranges from 35-44, and the average education level corresponds to secondary school diploma. A total of 56% of the operating sample is employed. The average household income level falls into 1265-1814 TL category. The average self-rated health status indicates "fair." The maximum body mass index is 56.8 and its minimum is 14. The average body mass index (25.7) corresponds to overweight category. Chronic diseases, such as heart problems (7%), hypertension (12%), depression (10%), and asthma or bronchitis (11%), are prevalent. Moreover, a total of 45% of the participants reported alcohol consumption, and 85% are physically active and spend 10 minutes of continuous walking for at least one day during a week.

Estimation Methodology

Because the dependent variable of this study is a binary indicator, logistic regression framework is utilized for empirical analysis. An individual's decision for smoking quit attempt (q_i) is theoretically defined by the following equations:

$$q_i^* = \beta X_i + u_i$$

$$q_i = 1 \text{ if } q_i^* > 0 \text{ and } q_i = 0, \text{ otherwise.}$$

where q_i^* is the latent variable and q_i is the observed outcome for individual's quit attempt of cigarette smoking. X_i corresponds to vector of explanatory variables, which includes demographics, socioeconomic conditions, health-related measures, and smoking characteristics. β is the vector of parameters for coefficients, and u_i is the error term of the model.

Logistic regression considers a nonlinear probability model, and it is estimated by maximum likelihood approach. Empirical estimations of the model are conducted in STATA 15 software (StataCorp LLC; 2017; College Station, Texas, The United States of America). Logistic models are estimated for the female, male, and full samples. Coefficients and corresponding odds ratios are computed for independent variables of all models.

Results

Results of estimations for logistic models are found in Table 4. Estimation results for full, male, and female samples are reported with coefficients and corresponding odds ratios. All models consider robust standard errors, and Wald's statistics indicate that they are overall significant. From the empirical findings, gender differences in failed cigarette smoking quit attempts prevail in Turkey. Turkish women are 20% less likely to attempt quitting smoking than men as found in Table 4.

Some risk factors of quit attempts are remarkable for both males and females in Turkey. Furthermore, hand-rolled cigarette users are 37.1% less likely to attempt

Table 4.
Logistic model estimation results for failed cigarette smoking quit attempt

	Full Sample		Males		Females	
Explanatory Variables	**Coefficients**	**Odds Ratios**	**Coefficients**	**Odds Ratios**	**Coefficients**	**Odds Ratios**
Female	−0.222***	0.801***				
	(0.0845)	(0.0677)				
Hand-Rolled Cigarette User	−0.464***	0.629***	−0.443***	0.642***	−0.505*	0.604*
	(0.132)	(0.0828)	(0.153)	(0.0979)	(0.265)	(0.160)
Cigarettes per Day	−0.0111***	0.989***	−0.00905**	0.991**	−0.0212***	0.979***
	(0.00364)	(0.00360)	(0.00417)	(0.00413)	(0.00803)	(0.00787)
Age of Smoking Start	−0.0109*	0.989*	−0.0109	0.989	−0.0201**	0.980**
	(0.00594)	(0.00588)	(0.00802)	(0.00793)	(0.00923)	(0.00905)
Reason for Smoking Start: Curiosity	–	–	–	–	–	–
Imitation/Affectation	0.132	1.141	0.0803	1.084	0.275	1.317
	(0.0928)	(0.106)	(0.109)	(0.118)	(0.181)	(0.238)
Family Problems	0.582***	1.789***	0.476**	1.609**	0.772***	2.163***
	(0.149)	(0.266)	(0.224)	(0.360)	(0.216)	(0.466)
Personal Problems	0.239	1.270	0.169	1.184	0.473**	1.605**
	(0.148)	(0.188)	(0.201)	(0.238)	(0.233)	(0.374)
Effect of Friends	0.149	1.160	0.0194	1.020	0.433**	1.542**
	(0.0926)	(0.107)	(0.110)	(0.112)	(0.175)	(0.270)
Other	−0.0793	0.924	−0.193	0.825	0.208	1.231
	(0.136)	(0.126)	(0.171)	(0.141)	(0.234)	(0.288)
Age Level	−0.136***	0.873***	−0.191***	0.826***	0.0477	1.049
	(0.0316)	(0.0276)	(0.0392)	(0.0324)	(0.0590)	(0.0619)
Education Level	0.0493*	1.051*	0.0608*	1.063*	0.0280	1.028
	(0.0261)	(0.0274)	(0.0329)	(0.0350)	(0.0450)	(0.0463)
Employed	−0.0530	0.948	−0.0612	0.941	−0.0490	0.952
	(0.0743)	(0.0705)	(0.0952)	(0.0896)	(0.133)	(0.126)
Marital Status: Single/ Never Married	–	–	–	–	–	–
Married	0.482***	1.619***	0.541***	1.719***	0.472**	1.603**
	(0.103)	(0.167)	(0.125)	(0.214)	(0.204)	(0.327)
Widowed	0.107	1.113	0.104	1.109	0.0534	1.055
	(0.171)	(0.190)	(0.250)	(0.277)	(0.264)	(0.279)
Divorced	0.503**	1.653**	0.669*	1.952*	0.179	1.196
	(0.232)	(0.384)	(0.381)	(0.744)	(0.335)	(0.400)
Household Income	0.0612**	1.063**	0.0891***	1.093***	−0.00910	0.991
	(0.0277)	(0.0294)	(0.0342)	(0.0374)	(0.0492)	(0.0487)
Self-Rated Health Status	−0.166***	0.847***	−0.112*	0.894*	−0.276***	0.759***

Table 4.
Logistic model estimation results for failed cigarette smoking quit attempt (continued)

	Full Sample		Males		Females	
Explanatory Variables	**Coefficients**	**Odds Ratios**	**Coefficients**	**Odds Ratios**	**Coefficients**	**Odds Ratios**
	(0.0496)	(0.0420)	(0.0602)	(0.0538)	(0.0898)	(0.0681)
BMI:	0.0241	1.024	−0.157	0.854	0.277	1.319
Underweight: BMI < 18.50	(0.178)	(0.182)	(0.278)	(0.238)	(0.241)	(0.318)
Normal weight: 18.50 ≤ BMI < 25	–	–	–	–	–	–
Overweight: 25 ≤ BMI < 30	0.0734	1.076	0.0627	1.065	−0.0282	0.972
	(0.0728)	(0.0784)	(0.0879)	(0.0936)	(0.136)	(0.132)
Obesity Class 1: 30 ≤ BMI < 35	0.155	1.167	0.00523	1.005	0.285	1.330
	(0.103)	(0.121)	(0.130)	(0.130)	(0.176)	(0.234)
Obesity Class 2: 35 ≤ BMI < 40	−0.210	0.810	0.0528	1.054	−0.727**	0.483**
	(0.204)	(0.165)	(0.272)	(0.287)	(0.331)	(0.160)
Obesity Class 3: BMI ≥ 40	0.348	1.416	0.435	1.545	0.0925	1.097
	(0.332)	(0.471)	(0.596)	(0.921)	(0.390)	(0.428)
Heart Disease:	0.325**	1.383**	0.283*	1.327*	0.407*	1.502*
	(0.128)	(0.176)	(0.159)	(0.211)	(0.216)	(0.324)
Hypertension:	0.168	1.183	0.224	1.251	0.0156	1.016
	(0.108)	(0.127)	(0.141)	(0.177)	(0.169)	(0.172)
Depression:	0.363***	1.438***	0.504***	1.655***	0.187	1.205
	(0.106)	(0.152)	(0.158)	(0.262)	(0.145)	(0.175)
Asthma/Bronchitis:	0.261**	1.298**	0.279*	1.322*	0.223	1.250
	(0.104)	(0.136)	(0.145)	(0.191)	(0.156)	(0.194)
Alcohol User:	0.315***	1.370***	0.365***	1.440***	0.291**	1.338**
	(0.0676)	(0.0926)	(0.0804)	(0.116)	(0.135)	(0.181)
Walking Days	0.484***	1.623***	0.616***	1.851***	0.255	1.291
	(0.0948)	(0.154)	(0.121)	(0.223)	(0.156)	(0.201)
Number of Observations	4,683		3,134		1,549	
Pseudo R-square	0.0337		0.0390		0.0449	
Wald Chi-Square	190.34***		155.39***		78.98***	

Source: TSI (2016). Robust standard errors in parentheses.
*** p<0.01; ** p<0.05; * p<0.1.
BMI: body mass index

quitting cigarette smoking in Turkey. Consuming more cigarettes per day is negatively correlated with the probability of quit attempts for both males and females. For the full sample, on average, consuming one more cigarette per day is associated with

1.1% decline in the probability of quitting attempts. Turkish individuals who started smoking owing to family-related problems are 78.9% more likely to try quitting smoking cigarettes than those who started smoking for curiosity. Moreover, married individuals are 61.9% more likely to try quitting cigarette smoking than single (never married) individuals. Self-rated health status displays negatively remarkable correlations with probability of cigarette smoking quit attempts. On average, individuals who report a higher level of health status are 15.3% less likely to attempt quitting smoking than those in the next lower level of health status. Nevertheless, experiencing heart disease problems is positively associated with quitting attempts. Turkish individuals who had heart diseases are 38.3% more likely to attempt quitting cigarette smoking than those without heart disease. Also, alcohol users are 37% more likely to have a quit attempt than those who do not consume alcohol.

Age of start of smoking is negatively associated with probability of quit attempts for Turkish women. Women who start smoking at older ages are less likely to attempt quitting smoking cigarettes. Women who start smoking owing to personal problems are 60.5% more likely to have a quit attempt than those who first smoked because of curiosity. Similarly, women who smoke cigarette because of their friends are 54.2% more likely to try quitting than the curiosity starters of smoking. Furthermore, obesity level is remarkably correlated with smoking quit attempts for Turkish women. Women who are in obesity class 2 are 51.7% less likely to have a quit attempt than those in normal weight category.

Age and education levels are remarkable risk factors of quit attempts for Turkish men. Older Turkish men are also less likely to have quit attempts. On average, obtaining a higher level of diploma is associated with 6.3% increase in the probability of quit attempts for Turkish men. Moreover, divorced Turkish men were 95.2% more likely to have a quit attempt than the singles (never married). Furthermore, household income level is remarkably correlated with the probability of quit attempts for Turkish men. On average, a level increase in household income is associated with 9.3% increase in probability of quit attempts for the male sample. Moreover, Turkish men with depression are 65.5% more likely to have a quit attempt for cigarette smoking than those without depressive symptoms. In addition, males with asthma or bronchitis problems are 32.2% more likely to try stopping cigarette consumption.

Being employed and having hypertension are not strongly correlated with quitting attempts in Turkey. Overall, empirical findings of this study indicate that determinants of cigarette smoking quit attempts display both similarities and differences across genders in Turkey.

There are a number of limitations for this study, and its findings should be interpreted accordingly. First, this study uses a cross-sectional data and did not consider

time variant nature of cigarette smoking behavior. Further research using panel data to analyze quit attempts with time dimension would remarkably contribute to the literature. Second, the survey data are self-reported at individual level and may be prone to reporting biases for variables of interest. Lastly, this study is able to provide only correlations for risk factors of cigarette smoking quit attempts. Additional studies are necessary to explore causal pathways between smoking quit attempts and its covariates.

Discussion

Gender differences in smoking behaviors are frequently presented by earlier studies. Researchers reveal that their gender is remarkably associated with smoking habits. Smoking cessation has many benefits for individuals and society at aggregate level. Public health policies offer various programs for smoking cessation. However, quitting smoking is a complicated process, which may include a variety of individual, behavioral, and environmental factors and a number of failures. Thus, understanding the risk factors of quit attempts may provide remarkable benefits in the development of public health policies.

This study analyzes gender differences in smoking quit attempts for the Turkish case. A nationally representative data set from the Turkish Health Survey of 2016 is utilized for this study. Logistic regression models are estimated for quantification of relationships between cigarette smoking quit attempt and its covariates. Empirical findings reveal that there is a gender gap in failed smoking quit attempts in Turkey. Turkish males are more likely to make a quit attempt in the last twelve months. Quantity of cigarettes consumed per day, consumption of hand-rolled cigarettes, start of cigarette smoking owing to family problems, being married, subjective health level, having heart-related diseases, and alcohol consumption are common risk factors of smoking quit attempts for both men and women in Turkey. Age of start of cigarette smoking, obesity level, start of smoking owing to personal problems, and effect of friends are correlates of quit attempts for only the Turkish women. Age, education, and household income levels are remarkably associated with probability of smoking quit attempts for only the Turkish men. Similarly, being divorced, having depressive symptoms, asthma, or bronchitis, and being physically active are associated with quit attempts for the Turkish men only.

This study contributes to research related with risk factors of smoking behavior. The findings of this study imply that gender and other individual-level characteristics may be crucial in smoking rate reduction in Turkey. Complementing price- and quantity-related policies of tobacco use and individual-level programs that consider heterogeneity of target populations may be influential in reducing cigarette smoking. Because men and women display differences in risk factors of cigarette smoking quit attempts, these sub-samples of the society should be treated differently in smoking

cessation programs. Public health interventions that effectively consider the different needs of both genders have potential to increase rates of quits for cigarette smoking in Turkey and other developing countries with similar conditions.

Ethics Committee Approval: Authors declared that the research was conducted according to the principles of the World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects", (amended in October 2013).

Informed Consent: The data set of this study is derived from anonymous survey data which do not include any confidential and private information of participants. Since the current study uses a data set collected by TSI based on its official procedures, informed consent is not required.

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Etik Komite Onayı: Yazarlar çalışmanın World Medical Association Declaration of Helsinki "Ethical Principles for Medical Research Involving Human Subjects", (amended in October 2013) prensiplerine uygun olarak yapıldığını beyan etmişlerdir.

Hasta Onamı: Bu çalışmanın verileri, katılımcıların gizli ve özel bilgilerini içermeyen anonim anket verilerinden elde edilmiştir. Mevcut çalışma, resmi prosedürlerine dayanarak Türkiye İstatistik Kurumu (TÜİK) tarafından toplanan veriler kullanıldığından, bilgilendirilmiş onam formu gerekli değildir.

Hakem Değerlendirmesi: Dış bağımsız.

Teşekkür: Yazar, bu çalışmada yer alan verilerin kullanımına izni verdiği için Türkiye İstatistik Kurumu'na (TÜİK) teşekkür eder.

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