A pre-evaluation of psychological factors may positively affect the outcomes of smoking cessation treatments: A comparison in terms of smoking behavior

Sebahat Gücük[1], Burcu Rahşan Erim[2], Mehmet Kayhan[1]

ABSTRACT

INTRODUCTION The aim of this study was to compare smoking behavior in out-patients in terms of psychological factors with a view to supporting cessation treatment.
METHODS We conducted a cross-sectional and analytical study through face-to-face interviews by the primary care physician with 765 volunteer participants who applied to our hospital for any reason between March and July 2019. The questionnaire administered had two parts: questions about sociodemographic characteristics and usage of tobacco and tobacco products, and questions of the UCLA Loneliness Scale, Multidimensional Scale of Perceived Social Support (MSPSS), Warwick-Edinburgh Mental Wellbeing Scale (WEMBS), and Fagerström Test for Nicotine Dependence (FTND).
RESULTS The study was completed with 765 participants of which 53.1% (n=406) were female and 46.9% (n=359) male. Multidimensional perceived social support scale mean score of the participants was 69.9±15.2 (min=12, max=84). There was a significant relation between mean MPSS and mean WEMBS (p<0.05). As nicotine scores increased, the mean scores both in MPSS and WEMBS decreased (p<0.05).
CONCLUSIONS We suggest that the results of the psychometric preliminary evaluations should be customized for individuals applying to smoking cessation clinics and that including the individual's close social connections in the process can facilitate the decision to quit, thus increase smoking cessation rates.

AFFILIATION
1 Department of Family Medicine, Faculty of Medicine, Abant İzzet Baysal University, Bolu, Turkey
2 Department of Psychiatry, Faculty of Medicine, Bolu Abant Izzet Baysal University, Bolu, Turkey

CORRESPONDENCE TO
Sebahat Gücük. Department of Family Medicine, Faculty of Medicine, Abant İzzet Baysal University, 14030, Bolu, Turkey. E-mail: sebahatgu@yahoo.com

INTRODUCTION

According to the data published by World Health Organization (WHO), smoking-related health problems are among the most important preventable causes of mortality and morbidity. In Turkey, 42.7% of the male and 13.5% of the female population are smokers. These proportions vary according to country, but are still significant worldwide[1]. It is one of the most important health problems today. People do not or cannot quit in spite of their knowledge of the serious diseases it may cause. Even following medical advice to definitely quit, many people believe they cannot live without smoking out of a fear of feeling emptiness, losing ability to focus, compromising work efficiency, or experiencing difficulty in self-expression[2,3].

It is assumed that nicotine addiction and the difficulty of smoking cessation are based on genetic and environmental factors, besides the psychopharmacological effects of nicotine[4]. Other important factors influencing inability to quit include personal characteristics, such as socioeconomic status and personality traits[4,5]. With its stimulating properties, nicotine is particularly attractive to persons who may trade immediate smaller rewards, due to the increase in alertness and taste value it provides, for long-term better health. Addiction is based on the fact that individuals who choose to

smoke ignore a healthier and more valuable life in the future for these immediate effects of nicotine[6]. Loneliness is a situation anyone can experience at some point in life and it should also be considered in preventive medicine. After all, studies show that individual loneliness can take its toll on society as well as on the individual as far as health sciences are concerned[7].

Studies focusing on smoking cessation have found that the social support and social network available to the individual plays a part in the decision to quit and the long-term success of smoking cessation. The source of the social support, the number of supporters and their degree of closeness to the receiving individual are important for the success of social support[8,9].

Subjective wellbeing is connected to a variety of other factors including general lifestyle, health, and social and economic conditions[10,11].

The reason why the rate of success is lower than expected, in spite of the desire to quit smoking, is primarily associated with unplanned, repetitive attempts at cessation without appropriate treatment support. In the examination of applications to health centers, it was observed that smokers generally have social circles consisting of other smokers with whom they shared a sense of belonging away from unwanted life circumstances[8] . It was found that a new social circle with non-smokers or ex-smokers may boost confidence and help structure the social and medical support appropriately, which in turn would reflect positively on the success and duration of the smoking cessation process[9].

Consequently, this study was conducted with the aim of comparing smoking behavior in out-patients in terms of psychological factors with a view to supporting cessation treatment studies.

METHODS

This is a cross-sectional and analytical study conducted through face-to-face interviews by the primary care physician with 765 consenting volunteer participants who applied to our hospital in the city center of Bolu, Turkey, for any reason between March and July 2019.

The questionnaire filled in through face-to-face interviews consisted of two parts: 1) 16 questions on sociodemographics and consumption of tobacco and tobacco products, and 2) questions of the

UCLA Loneliness Scale, Multidimensional Scale of Perceived Social Support (MSPSS), Warwick-Edinburgh Mental Wellbeing Scale (WEMBS), and the Fagerström Test for Nicotine Dependence (FTND).

Smoking status was defined as follows.

Non-smoker: smoked <100 cigarettes in total in their lifetime.

Ex-smoker: smoked ≥100 cigarettes in total in the past, but quit more than 1 year ago.

Smoker: regardless of regular or irregular consumption, those who smoked ≥100 cigarettes in total were accepted as smokers[12].

The categories formed in classifying the household members were: 'alone', 'partner', 'extended family', and 'roommate'; people living as part of the same family except for the partner (own children, elderly in the family, sibling[s] of a partner, etc.) were defined as the 'extended family'.

Our study was conducted on a voluntary basis and individuals excluded from the study were: those with a severe communication problem that could interfere with responding to the questionnaire, those who avoided answering some questions due to their content or who were not able to complete all questions for lack of time (n=122), and those receiving psychiatric treatment for any reason. Ethical approval was obtained from the Bolu Abant Izzet Baysal Clinical Ethics Committee (Resolution No: 2018\25).

UCLA Loneliness Scale

UCLA Loneliness Scale consists of 20 items, 10 of which are reverse-scored. Each item is scored between 1–4. Loneliness score is calculated by reverting the points given in the reverse-scored items. Possible scores are between 20–80. Higher scores indicate loneliness, lower scores are indicative of not being lonely[13].

Multidimensional Scale of Perceived Social Support (MPSS)

This is a scale consisting of 12 items. It is arranged in 3 groups (each subdivided into 4 items) about the source of support: family, friends, and a significant other. Each item is rated using a 7-degree scale. In this study, the scores for the 4 items in each subscale were added to obtain the subscale scores, which were then summed to

obtain the total score of the scale. A high score indicates a high level of perceived social support[14].

Warwick–Edinburgh Mental Wellbeing Scale (WEMBS)

This consists of 14 items and is about the positive mental health of individuals, covering both psychological and subjective wellbeing. It is a 5-point Likert-type scale with a possible minimum score of 14 and maximum of 70. The scale is: 1=definitely disagree, 2=disagree, 3=somewhat agree, 4=agree, and 5=completely agree[15].

Fagerström Test for Nicotine Dependence (FTND)

This consists of 6 questions. The lowest score is 0 and the highest is 10 points, with higher scores indicating higher levels of dependence. Degrees of dependence according to FTND score are: very low (0–2), low (3–4), medium (5–6), high (7–8), and very high (9–10)[16].

Statistical analysis

The analyses were performed using the Statistical Package for Social Sciences 25.0 for Windows (SPSS Inc. Chicago, Illinois, US). Continuous data are expressed as mean ± standard deviation and categorical variables are presented as frequency and percentage. Demographic variables and scale scores were compared according to the participant's smoking status using different statistical tests. The categorical variables were analyzed using chi-squared or Fisher's exact tests. As the continuous variables were not normally distributed non-parametric Kruskall-Wallis and Mann-Whitney U tests were applied. In addition to the univariate analysis, multivariate analysis was conducted using multiple logistic regression model and risk factors for smoking were assessed with odds ratios (ORs). The results were assessed at a level of p<0.05 significance.

RESULTS

The study was completed with 765 participants. Mean age was 36.02±15.23 years in females and 34.84±17.07 years in males. Of the participants, 53.1% were female (n=406) and 46.9% (n=359) were male; 50.7% (n=359) were high school graduates; while 70.2% (n=537) were married; and 65.1% were in active employment (n=498). Table 1 shows the sociodemographic characteristics of the participants.

As for the smoking status, 27.5% (n=210) were smokers and 19.6% (n=150) were ex-smokers. Among males, the proportion of smokers was significantly (p=0.03) higher than for females, at 30.1% (n=108). Mean FTND score was 8.31±1.62. Of the participants, 53.7% (n=411) were in the same space as smokers during their breaks at work.

Smoking was more prevalent among married people, males, and others as the level of education increased (p<0.001, p=0.003, p<0.001, respectively). Table 2 shows other comparisons regarding smoking status.

Assessing the groups in terms of smoking status, non-smokers had a higher mean score than the other two groups in MPSS (p<0.002). As for the subgroups, the significant other sub-score was higher in non-smokers than the other two groups (p=0.027) (Table 3).

There was a significant relation between mean MPSS and mean WEMBS (p<0.05). As nicotine scores increased, the mean scores both in MPSS and WEMBS decreased (p<0.05).

Coding the participants according to smoking status as smokers and non-smokers (including

Table 1. Sociodemographic characteristics of participants

Characteristics	Categories	n	%
Sex	Female	406	53.1
	Male	359	46.9
Education	Primary school	113	14.8
	High school	388	50.7
	Undergraduate or higher	264	34.5
Marital status	Married	537	70.2
	Single	228	29.8
Employment status	Active employment	498	65.1
	No active employment	208	27.2
	Student	59	7.7
Household	Alone	117	15.3
	Partner	347	45.4
	Extended family	201	26.3
	Roommate	100	13.1
Continuous illness status	Yes	127	16.6
	No	637	83.4

Table 2. Comparison of characteristics based on smoking status

Characteristics	Categories	Smoker (N=210) n (%)	Ex-smoker (N=150) n (%)	Non-smoker (N=405) n (%)	p*
Sex	Female	102 (25.1)	66 (16.3)	238 (58.6)	0.003
	Male	108 (30.1)	84 (23.4)	167 (46.5)	
Education	Primary school	32 (28.3)	12 (10.6)	69 (61.1)	<0.001
	High school	83 (21.4)	120 (30.9)	185 (47.7)	
	Undergraduate or higher	95 (27.5)	18 (19.6)	151 (52.9)	
Marital status	Married	177 (33.0)	132 (24.6)	228 (42.5)	<0.001
	Single	33 (14.5)	18 (7.9)	177 (77.6)	
Employment status	Active employment	161 (32.3)	96 (19.3)	241 (48.4)	0.001
	No active employment	39 (18.8)	42 (20.2)	127 (61.1)	
	Student	10 (16.9)	12 (20.3)	37 (47)	
Household	Alone	62 (53.0)	0 (0)	55 (13.6)	<0.001
	Partner	90 (25.9)	115 (33.1)	142 (40.9)	
	Extended Family	43 (21.4)	18 (9.0)	140 (69.7)	
	Roommate	15 (15.0)	17 (17.0)	68 (68.0)	
Continuous illness status	Yes	50 (39.1)	18 (14.1)	60 (46.9)	0.004
	No	160 (25.1)	132 (20.7)	345 (54.2)	
Passive smoking	Yes	155 (37.7)	132 (32.1)	124 (30.2)	<0.001
	No	55 (15.5)	18 (5.1)	281 (79.4)	
Alcohol consumption	Yes	25 (100)	0 (0.0)	0 (0.0)	<0.001
	Ex-consumer	146 (21.0)	144 (20.7)	405 (58.3)	
	No	39 (86.7)	6 (13.3)	0 (0.0)	

*p<0.05.

Table 3. Comparison of the mean scores of the Multidimensional Scale of Perceived Social Support (MSPSS), UCLA Loneliness Scale, and Mental Wellbeing Scale, based on smoking status in patient groups

Scales	Smoker (N=210) Mean±SD	Ex-smoker (N=150) Mean±SD	Non-smoker (N=405) Mean±SD	p*
MSPSS	69.1±16.2	68.8±13.4	72.4±14.3	**0.002**
Family subscale	23.1±5.6	22.6±5.4	24.9±4.8	**<0.001**
Roommate subscale	22.6±5.8	22.6±5.0	23.4±5.2	0.101
Significant other subscale	23.4±5.8	23.6±4.2	24.1±5.31	**0.027**
UCLA Loneliness	41.2±10.4	38.1±9.4	38.9±8.3	0.037
Mental Wellbeing	57.1±10.0	57.7±9.5	58.6±9.9	0.119

*Statistically significant at p<0.05. SD: standard deviation.

ex-smokers), it was found that the probability of smoking among primary school graduates was higher than high school graduates, and 3.4 times higher for those married compared to single. Increased loneliness score significantly increased the probability of smoking (Table 4).

Table 4. Multiple logistic regression analysis results in the evaluation of the risk factors affecting smoking

Variables	B	S.E.	Wald	df	p	OR	95% CI
Age	0.000	0.006	0.000	1	0.997	1.000	(0.989–1.012)
Gender							
Male (Ref.)						1	
Female	-0.252	0.189	1.775	1	0.183	0.777	(0.537–1.126)
Education							
Primary school (Ref.)						1	
High school	-0.910	0.344	7.010	1	**0.008**	0.402	(0.205–0.789)
Undergraduate or higher	-0.692	0.352	3.863	1	**0.049**	0.501	(0.251–0.998)
Marital status							
Single (Ref.)						1	
Married	1.236	0.368	11.278	1	**0.001**	3.443	(1.673–7.083)
Employment status							
In active employment (Ref.)							
No active employment	-0.487	0.225	4.684	1	**0.030**	0.614	(0.395–0.955)
Student	-1.728	0.481	12.897	1	**<0.001**	0.178	(0.069–0.456)
Household							
Alone (Ref.)						1	
Partner	-1.628	0.301	29.245	1	**<0.001**	0.196	(0.109–0.354)
Extended family	-1.983	0.308	41.516	1	**<0.001**	0.138	(0.075–0.252)
Roommate	-1.120	0.439	6.519	1	**0.011**	0.326	(0.138–0.771)
Continuous illness							
No (Ref.)						1	
Yes	0.641	0.250	6.565	1	**0.010**	1.898	(1.163–3.098)
Family subscale score	-0.046	0.028	2.610	1	0.106	0.955	(0.904–1.010)
Roommate subscale score	0.059	0.039	2.264	1	0.132	1.061	(0.982–1.146)
Significant other subscale score	-0.012	0.038	0.100	1	0.752	0.988	(0.917–1.065)
UCLA Loneliness score	0.023	0.009	6.305	1	**0.012**	1.024	(1.005–1.042)

B: regression coefficient. Statistically significant at p<0.05. Ref.: reference category.

DISCUSSION

Successful smoking cessation is important for the prevention of tobacco-related diseases with high mortality and morbidity[17]. Cultural characteristics and perceptions of loneliness may hinder open expression of feelings and limit the subject matter into the realm of science, i.e. psychiatry and psychology[18].

In the general population, prevalence of loneliness is reported to be 15–30% and the mean score of loneliness is 40.5[18,19]. Lauder et al.[20] state that loneliness can be defined as a perception of social isolation, which poses serious health risks to the individual. In a study conducted in Australia, it was shown that lonely individuals tended to smoke more, have a higher body mass index, to be more overweight or obese, and less willing to make efforts for change[20]. Nausheen et al.[21] stated that the feeling of loneliness impaired individual's ability to cope with stress by damaging their self-worth and self-efficacy, which worsened the effects of stress on the body. In another study, it was shown that high loneliness score affected the variables of age, smoking or body mass index, as well as increasing diastolic blood pressure in women[22]. Stickley et al.[23] found that the feeling of loneliness was correlated with substance abuse and DeWall et al.[24] found a correlation with higher nicotine consumption. In our study, the mean loneliness scores were lower

than in other studies, but higher in the smokers group compared to others. Humans are prone to change by nature, therefore, once an individual makes their mind to quit smoking, a cessation treatment should be started as soon as possible. Smoking cessation treatments can be tailored based on results of psychometric evaluations through: goal setting, self-monitoring, and skills training related to coping with smoking urge; social support (provision of encouragement, caring, and information); and motivational interviewing techniques to develop a personalized cessation plan[25]. Cessation therapy in outpatient clinics involves restructuring and reorganizing the lifestyle on an individual basis, therefore discussions and valid questionnaires on the theme of loneliness during interviews may help us to better connect with patients to find more effective ways to improve their health status. For example, if the reason behind the loneliness is in fact uncontrolled diabetes or another disease, by way of preventive and therapeutic interventions, solutions could be found for personal problems. Giving thought to how and why our patients are lonely may help us prescribe practical solutions to expand opportunities of finding social support and thereby ensure the continuation of the conversation. This in turn is expected to increase patient compliance with the smoking cessation treatment.

It was observed that support from family, friends, colleagues and group support meetings facilitated cessation[8,9]. While higher rates of smoking were found in circles with poor socioeconomic circumstances, meager social support, and chronic unemployment. Women were reported to smoke to cope with stress and relax[26]. It was observed that an individual's likelihood to continue smoking decreased from 67% to 25% after their partner, friend, or sibling quit[6]. It was found that smokers benefited more from the strength of a united family in difficult times, a vision of success and hope for the future, and support from the social environment[27]. The role of family and social environment are undoubtedly important both in smoking and quitting. Similarly, in our study, while the scores of social support were higher in non-smokers, their loneliness score was found to be lower than in smokers. Studies have demonstrated the long-term benefits of social support services through telephone

and internet counseling provided by healthcare workers[27,28]. Family and friends can support the use of drugs during smoking cessation (both a possible chronic disease and drugs given for smoking cessation), helping them cope with withdrawal symptoms, and providing emotionally effective support during smoking cessation, increasing the success of smoking cessation[29,30]. In terms of smoking cessation or considering a change in smoking habits, it might be beneficial to provide social support programs by healthcare workers, based on the individual needs defined with psychometric tests, especially for the success of tobacco control programs in developing countries.

In a large-scale study conducted in England, smoking cessation rates were found to be higher in individuals with no mental illness or receiving therapy for mental illness[31]. Another study found that scores decreased as the rate of smoking increased[32]. In our study, even though there was no significant difference in terms of smoking rates, the mean mental wellbeing score was found higher in non-smokers. In our study the mean FTND score was 8.31±1.62. As FTND scores increased, mean mental wellbeing scores decreased. Smoking cessation treatment is a process that requires long-term compliance and effort. Mental wellbeing can play an important role in helping people stay on this path. Perseverance is bound to increase smoking cessation rates.

Limitations

There were limitations in our study. The fact that it was restricted to the applicants of one hospital and that responses by individuals already applying with complaints would inevitably reflect instant negative emotions could bias the results. The same study conducted with home visits on a wider base might help people reveal their genuine emotions. In our study, those with chronic illness had higher smoking prevalence. This might have been an effect rather than a cause of their smoking habit. Our study population was relatively young so the patients might not yet have developed sufficiently serious health outcomes that could trigger quit attempts and result in a higher ex-smoker prevalence. Lack of basic details about smoking habits (the age the person started smoking, for how many years and how much they smoked,

etc.) and limiting the questions to information about smoking criteria are study characteristics in need of improvement. Passive smoking was defined as involuntary exposure to the smoking of others. Unfortunately, the presence of smokers in the household and their influence on the smoking status of the participants were not investigated. Our study can provide a different perspective on smoking cessation treatments and provide ideas for studies to be planned with a wider population.

CONCLUSION

Relations were explored between the tests performed for psychological evaluations in order to determine the smoking status and degrees of addiction of the participants. An individual's ability to effectively benefit from social support resources may be related to their success in social relations and how they evaluate their living conditions. In the centers providing smoking cessation support as part of tobacco control programs, customizing the cessation treatment with the help of psychometric evaluations according to the smoking status may produce positive results for the continuity of the treatment program. Customizing treatment based on the results of these preliminary evaluations and contact with the individual's close relations can increase the rate of success in smoking cessation programs by assisting decision-making processes.

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