



Waterpipe tobacco smoking among university students in Turkey

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ABSTRACT

Introduction: Waterpipe tobacco smoking is common among adults in numerous Mediterranean countries. Waterpipe cafes where people are allowed to smoke waterpipe tobacco are an increasingly popular venue for socializing among young people. The aim of this study was to assess the frequency and patterns of waterpipe tobacco smoking among university students in Turkey, as well as their perception on the health-risk of smoking the waterpipe.

Method: A total of 411 university students in Turkey participated in this study. Participants completed a set of questionnaires to measure frequency, behaviours, and perceptions of the health risks related to waterpipe tobacco smoking.

Results: Less than half (38.4%) of the participants smoke waterpipe. Female participants tend to smoke more waterpipe than male participants. The mean age of first smoking waterpipe was 17 years. Waterpipe tobacco smokers perceived the health risks of smoking the waterpipe to be less addictive and exaggerated compared to non-users; smokers also regarded smoking waterpipe tobacco to help them to relax.

Conclusion: This study provided support that waterpipe tobacco smoking is common among young people in Turkey. There was poor awareness about the risk of waterpipe tobacco smoking among students. Our findings could inform tobacco control in Turkey, especially among young people.

1. Introduction

Waterpipe tobacco smoking, commonly called Hookah pipe, used to be common only among men living in numerous Mediterranean countries. Since the 1990s, waterpipe tobacco smoking is very popular in different geographical regions in Europe among males and females, especially among young people. Waterpipe cafes, where people are allowed to smoke waterpipe tobacco, are increasingly popular venues for socializing among young people. This increase in popularity was believed to be related to the introduction of sweetened hookah tobacco into the market (Maziak et al., 2004). Another reason for the popularity of hookah smoking is related to the use of social media platforms which portray hookah smoking as fashionable among young people (Maziak et al., 2015). Furthermore, in many countries there is a lack of specific policies and regulations in the marketing of hookah smoking among young people (Maziak et al., 2015).

In Turkey, waterpipe tobacco smoking/hookah (these two terms will be used interchangeably in this article) is a traditional method of tobacco use and is commonly seen among adults (Subasi et al., 2005).

Similar to other European countries, waterpipe, particularly sweetened waterpipe, has recently been marketed predominantly toward young population in Turkey. As a result, waterpipe is becoming increasingly popular among young adults (Poyrazoglu et al., 2010; Subasi & Bilir, 2005). Cevik Akyil, Kahraman, and Erdem (2018) conducted a study to determine the factors affecting the hookah use among university students in Turkey. Most of the students reported smoking hookah to relax and to socialize; 70.9% of them enjoyed smoking hookah and 63.6% regarded hookah as not harmful. Hookah was used more frequent in the 18–29 age group. It was argued that the waterpipe use among young people was related to social interactions (Cevik Akyil et al. 2018).

Several studies on the waterpipe smoking have also been conducted in the U.S. For example, in a study by Dugas et al. (2012), 23% of the participants have reported smoking waterpipe tobacco in the past year. Of all the sociodemographic factors examined, younger age, male gender, and not living with parents increased the odds of waterpipe use. Waterpipe smoking was also significantly higher among participants who consumed other substances such as smoking cigarettes, drinking alcohol, and consuming marijuana and other illicit drugs in the past

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year. In another study conducted in the U.S. (Primack, Shensa, Kim et al., 2013), which involved 105,012 respondents, 30.5% of the university students reported ever using a waterpipe tobacco smoking. Rates for current waterpipe tobacco smoking were much lower, being 8.4%. Waterpipe tobacco smoking was associated with younger age, being male, White race, fraternity/sorority membership, and were not affiliated to any religious institutions.

In a study in Jordan (Dar-Odeh, Bakri & Al-Omiri, 2010), 36.8% of the participants were reported as smokers, and of this, almost half of them (42%) reported waterpipe as the preferred smoking methods among male students. Among female students, 53% preferred to smoke waterpipe than other methods of smoking. Among university students in South Africa (Daniels & Roman, 2013), 70% of the waterpipe tobacco smokers smoked on a daily basis (70%) and 90% of them indicated that the tobacco mix was easily available. The most common reason for smoking the waterpipe was to relax; smoking usually took place in a social setting such as on campus, in the family home and at a party.

The negative health impact of waterpipe has been well documented, including acute increased heart rate and high blood pressure, impairment of lung function, lung cancer, poor periodontal health (Ali & Jawad, 2017). Furthermore, if waterpipe is shared among infected smokers, waterpipe often contributes to the spreading of tuberculosis, viruses and bacteria due to the transmission of oral secretions (Daniels & Roman, 2013). Several studies have also reported higher frequency and longer sessions of smoking to be addictive due to development of nicotine dependence (Aboaziza & Eissenberg, 2015; Mostafa, 2020). Yet, some other studies have shown smoking waterpipe to be associated with mental health problems such as anxiety and depression (Berg et al., 2011).

Given the negative impact of waterpipe smoking on health, several studies have examined young people's risk perceptions related to smoking waterpipe. For example, in a study by Cevik Akyil et al. (2018), 42.7% of the students stated that hookah is not harmful when smoked occasionally but not every day, 42.7% of them stated that hookah is not addictive, 41.8% of them stated that hookah is more harmful than cigarettes, 62.7% of them stated that hookah can cause acute physiological and health problems. A study by Akpinar, Akpinar, and Gulhan (2010) showed that young people considered hookah as less addictive than cigarettes; the rate of those who knew that hookah was harmful was lower than those who knew that smoking was harmful (72.2% vs. 92.9%).

The rate of use of hookah differs according to age. In the past two decades, waterpipe smoking has increased among adolescents and young adults, especially among university students (Jawad, 2014). A recent study in the USA, for examples, found that the use of hookah among university students was 28.6% (Islam, Salloum, Nakkash et al., 2016). The finding that an increasing number of university students are using hookah might be due to peer influence and the presence of hookah cafes around the university (Jawad, 2014). A recent review concluded that the main motivations for water pipe smoking are socialization, relaxation, pleasure, and entertainment, and users believed that hookahs were less harmful, less addictive, and more socially acceptable than cigarettes (Akl et al., 2013; Haddad, Kelly, Weglicki, Barnett, Ferrell & Ghadban, 2016).

According to the Global Youth Tobacco Survey (2012), the prevalence of waterpipe use among adolescents was 24.6%; the prevalence of waterpipe use among high school and university graduates was higher than among adolescents (53.1%; The Republic of Turkey Ministry of Health, 2014). In the UK, the rate of hookah use among the 11–16 year olds was 13.7% in 2013 and 14.6% in 2015 (Akl et al., 2013).

There has been a lack of recent studies that explore the frequency of waterpipe use among university students in Turkey despite a recent rise in problematic substance use problem (Nakkash & Khalil, 2010), in the country. Therefore, the main aim of this study was to examine the frequency and patterns of waterpipe use, and risk perceptions associated with waterpipe use. Further, we also examined the roles of depression,

anxiety, stress, loneliness, and self-esteem in predicting waterpipe use among university students in Turkey. Due to the exploratory nature of the current study, we did not develop a priori hypotheses.

2. Methods

2.1. Participants

A total of 411 students (330 females and 81 males) in a middle-size public university in Ankara, Turkey participated in this study. Of these, 62.3% and 37.7% of the participants were doing their undergraduate and graduate studies, respectively. Their mean age was 22.15 years ($SD = 4.57$) and most of the participants were unmarried. Most (78.3%) of the participants indicated Islam as their religion.

2.2. Procedure

After receiving approval from Ethics Committee at Ankara University, Turkey, the current study was conducted through an online survey using Google Forms. The participants were first informed about the study aims and procedures before they completed the consent form. To be eligible to participate in this study, the participants needed to be 18 years and older. The consent form clearly stated that participation in this study was voluntary, and they can stop participating in the study or withdraw the data by closing their browser. Furthermore, the participants were informed that the data were completely anonymous as no personal identifying information was collected. The link to the online survey was sent to all the departments across the university.

2.3. Measures

The participants completed a set of questionnaires:

2.3.1. Waterpipe tobacco smoking

The Waterpipe Tobacco Smoking Scale (Daniels & Roman, 2013) was used to measure the participant's use of hookah pipe. The scale consists of 5 sections: The first section ("perceptions of hookah pipe use") was used to measure participants' perceptions of the health risks of the hookah pipe. Some examples of items include "Smoking the hookah pipe helps one to relax" and "Smoking the hookah pipe helps people stay thin". The items were rated on a 5-point scale, ranging from "1 = Strongly disagree" to "5 = Strongly agree". The second section ("Health risks of hookah pipe use") was used to measure the chances of getting one of the illnesses listed below if they were to continue smoking: lung cancer; lung disease other than lung cancer; heart disease; and premature death. These items were rated on a 5-point scale, ranging from "1 = No Chance" to "5 = I don't know".

2.3.2. Depression, anxiety, and stress

Depression and Anxiety Stress Scale-21 (DASS-21; Lovibond & Lovibond, 1995) was used to measure depression, anxiety, and stress. The Turkish version of the DASS-21 was used in the present study (Yilmaz, Boz, & Arslan, 2017), which has been reported to have good validity and reliability.

Participants were asked to indicate how much each of the items apply to them over the past week over a 4-point scale, ranging from "0 = Did not apply to me at all" to "3 = Applied to me very much or most of the time". Depression subscale includes 7 items (e.g., "I couldn't seem to experience any positive feeling at all"; Cronbach's Alpha = 0.91); anxiety subscale includes 7 items (e.g., "I experienced breathing difficulty [e.g., excessively rapid breathing, breathlessness in the absence of physical exertion]"; Cronbach's Alpha = 0.87), and stress subscale includes 7 items (e.g., "I tended to over-react to situations"; Cronbach's Alpha = 0.90).

2.3.3. Loneliness

A short-form of the UCLA Loneliness Scale was used to assess participants' loneliness (Hays & DiMatteo, 1987) on a 4-point scale, with values ranging from "1 = Hardly ever" to "3 = Often". The short version of the scale contains 8 items (e.g. "How often do you feel left out?"; Cronbach's Alpha = 0.88). The Turkish version of the UCLA Loneliness scale was used in this study, which has been reported to show good validity and reliability (Yildiz & Duy, 2014).

2.3.4. Self-esteem

A short version of the Rosenberg Self-esteem Scale was used to measure self-esteem (Lewinsohn, Hoberman, & Rosenberg, 1988). The short version of the scale contains 3 items (e.g., "I feel that I have a number of good qualities.") which were extracted from the original Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965). This scale can be rated on a 4-point scale ranging from "1 = Strongly disagree" to "4 = Strongly agree". In the present study, the Cronbach's Alpha for this measure was 0.90. The Turkish version of the RSE was used in the present study; previous study has shown RSE to have good validity and reliability (Cuhadaroglu, 1986).

3. Results

Results showed that 38.4% of the participants are waterpipe users. There was significantly more females (70.9%) than males (29.1%) who smoked waterpipe ($\chi^2 = 14.350; p < .001$). The mean onset of hookah smoking was 17.73 years. Further analysis showed significant age differences in waterpipe use ($\chi^2 = 9.691; p = .008$), with those in the age group 20–29 years having the highest rate of waterpipe use (74.1%), followed by those aged 18–19 (14.6%) and participants aged 30 and over (11.4%).

To examine the possible predictors of waterpipe use, logistic regression analysis was conducted. Possible predictors that were explored in this study were anxiety, depression, stress, self-esteem, loneliness level, educational status, gender and age groups. As seen in Table 1, educational status, gender, and age group of 20–29 years old significantly predicted waterpipe use. Regarding educational status, the use of waterpipe among undergraduate students was OR = 0.632 times lower ($p = .049$) than graduate students. Furthermore, the use of waterpipe in female participants was OR = 0.382 times higher ($p < .001$) than in men. Additionally, the use of waterpipe in participants who were between 20 and 29 years of age were significantly higher ($p = .039$) than

Table 1
Predictors of Waterpipe Use.

Variables	β	S.E.	Wald Test	p	OR	95% C.I. for OR
Anxiety	0.034	0.041	0.665	0.415	1.034	0.954, 1.122
Depression	-0.010	0.036	0.081	0.776	0.990	0.922, 1.063
Stress	0.025	0.037	0.457	0.499	1.025	0.954, 1.101
Self-esteem	-0.001	0.023	0.002	0.962	0.999	0.956, 1.044
Loneliness	-0.001	0.027	0.001	0.982	0.999	0.949, 1.053
Education (Undergraduate)	-0.459	0.233	3.885	0.049	0.632	0.401, 0.997
Gender (Female)	-0.962	0.263	13.340	0.000	0.382	0.228, 0.640
Age Groups (20–29)	0.574	0.279	4.244	0.039	1.776	1.028, 3.068
Age Groups (≥ 30)	0.907	0.469	3.734	0.053	2.476	0.987, 6.209
Constant	-0.099	0.985	0.010	0.920	0.905	

Note. OR indicates Odds Ratio; 95% C.I. for OR indicates 95% confidence intervals for odds ratio.

participants who were between 18 and 19 years of age.

Table 2 compares non-smokers with smokers in their perception of the health risks of smoking waterpipe. Significantly more smokers (17.1%) than non-smokers (3.6%) indicated their main reason for smoking waterpipe was for relaxation ($\chi^2 = 20.62; p < .001$). Further analyses showed that significantly more smokers than non-smokers believed that "the dangers of smoking the hookah pipe are exaggerated" (13.9% versus 5.1%; $\chi^2 = 8.54; p < .003$), "smoking a hookah pipe is not as addictive as smoking cigarettes" (25.3% versus 9.1%; $\chi^2 = 18.49; p < .001$), and "tobacco toxins are filtered by the water in the hookah" (27.8% versus 16.6%; $\chi^2 = 7.44; p < .006$). Significantly more smokers than non-smokers also indicated that "hookah pipe smokers can quit easily" (25.39% versus 9.9%; $\chi^2 = 18.43; p < .001$).

Most of the non-smokers, compared to smokers, considered "hookah pipe smoking takes years off a smokers' life" (65.6% versus 51.3%; $\chi^2 = 8.35; p < .004$), "hookah pipe smokers become more addicted the more they smoke" (71.1% versus 61.4%; $\chi^2 = 4.21; p < .040$), and "the hookah pipe is as addictive as cigarettes" (67.6% versus 53.2%; $\chi^2 = 8.59; p < .003$).

Slightly higher percentage of non-smokers compared to smokers believed that smoking waterpipe could lead to having health problems such as heart disease, lung cancer and lung disease, however, these differences failed to reach any significant level (Table 2).

Table 2
Perception of the health risk of waterpipe use among Non-Smokers and Smokers.

Perception of Waterpipe Use	Non-Smoker n (%)	Smoker n (%)	χ^2	p
"Smoking the hookah pipe helps one to relax"	9 (3.6%)	27 (17.1%)	20.622	<0.001
"Smoking the hookah pipe helps people stay thin"	42 (16.6%)	18 (11.4%)	1.719	0.190
"One gets less nicotine from a hookah pipe"	16 (6.3%)	14 (8.9%)	0.588	0.443
"The hookah pipe is as addictive as cigarettes"	171 (67.6%)	84 (53.2%)	8.593	0.003
"An occasional cigarette is more dangerous than smoking the hookah pipe"	34 (13.4%)	31 (19.6%)	2.346	0.126
"The dangers of smoking the hookah pipe are exaggerated"	13 (5.1%)	22 (13.9%)	8.542	0.003
"Sharing the hookah pipe is not harmful to one's health"	9 (3.6%)	12 (7.6%)	2.491	0.115
"Hookah pipe smokers become more addicted the more they smoke"	180 (71.1%)	97 (61.4%)	4.211	0.040
"Each inhalation of hookah smoking has an effect on the body"	196 (77.5%)	130 (82.3%)	1.371	0.242
"Hookah pipe smoking takes years off a smokers' life"	166 (65.6%)	81 (51.3%)	8.348	0.004
"Smoking a hookah pipe is not as addictive as smoking cigarettes"	23 (9.1%)	40 (25.3%)	18.498	<0.001
"Hookah pipe smokers can quit easily"	25 (9.9%)	41 (25.9%)	18.628	<0.001
"Smoke inhaled from the hookah pipe contains harmful chemicals"	201 (79.4%)	132 (83.5%)	1.062	0.303
"Tobacco toxins are filtered by the water in the hookah"	42 (16.6%)	44 (27.8%)	7.436	0.006
Health Risks of Waterpipe Use	n (%)	n (%)	χ^2	p
"The chances that a typical hookah pipe smoker will develop heart disease"	156 (61.7%)	96 (60.8%)	0.033	0.855
"The chances that a typical hookah pipe smoker will develop lung cancer"	162 (64%)	93 (58.9%)	1.104	0.293
"The chances that a typical hookah pipe smoker will develop lung disease"	178 (70.4%)	111 (70.3%)	0.000	0.982

4. Discussion

The purpose of this study was to examine the frequency, risk perceptions, and behaviours of waterpipe smoking among university students in Turkey. Our findings showed that 38.4% of the participants smoke waterpipe. This result was much higher than those reported among students between the ages 16 and 18 in South Africa (27.6%) (Combrink et al., 2010). The reason for the higher prevalence of waterpipe smoking in Turkey might be related to both the social acceptability and easy accessibility of waterpipe; furthermore, there is no policy to control the use of waterpipe which could explain for the high level of misperception about the harm of smoking waterpipe. We also found that the age of onset for waterpipe smoking was 17.73 years, which was older than those found in other studies (Daniels & Roman, 2013). Given that youth attend university around age 18 and start to have more autonomy, this finding might be related to the age of attending university in Turkey. Additionally, it might be possible that regular trainings and seminars on tobacco use given by the Ministry of Health and Green Crescent in high school in Turkey may have an impact on raising youths' awareness of the effects of tobacco use and the possible onset for the waterpipe smoking.

In terms of risk perception, our findings showed that students did not perceive waterpipe smoking to be a health risk, thus replicating previous studies (Daniels & Roman, 2013). To be successful in tackling waterpipe smoking use among young people, there is a need to focus on the misconceptions that waterpipe is less harmful and more attractive. Also, support should be given to healthy activities to provide some help to changing behavior patterns. Waterpipe smoking is a negative health-related habit common among university students. Our results suggested that there are misconceptions that waterpipe is not as harmful as cigarettes and is not addictive. Given this finding, it may be beneficial to organize campaigns against waterpipe smoking, such as raising awareness of university students about the harms of waterpipe smoking and imposing a smoking ban at least in the university.

There are studies showing that waterpipe use is a culturally constructed phenomenon and associated with cultural differences. For instance, in the Eastern Mediterranean countries, people traditionally use waterpipe (Kelishadi et al., 2006). For centuries, smoking waterpipe has been considered less embarrassing than smoking a cigarette among women. Smoking hookah is considered natural among parents, and some parents even use hookahs with their children. In East Mediterranean countries waterpipe smoking is socially accepted, therefore it is not surprising that waterpipe use is common in girls living in these countries (Kelishadi et al., 2006).

Our study has methodological limitations that need to be considered. The study used a convenience sample of university students and 80% of them were females. Thus, our sample may affect the generalizability of our findings. Furthermore, as the data were collected using self-report questionnaires, they might be subjected to social desirability. The cross-sectional research design of this study does not allow for testing causality.

Despite these limitations, our study has important implication for tobacco control and policies in Turkey. Recently, the increase in the young population and the tendency of the spread of drugs among the youth have become a threat for Turkey. In order to cope with this problem, the "High Council of Fight against Drugs" strategy was established in 2014, and 8 Ministries came together to combat drug addiction (Yüksel, 2017) to ensure cooperation and coordination between the relevant institutions; this Council was transformed into High Council of Fight against Addiction in 2017 by expanding the activity field.

In the National Action Plan for Fight against Drug 2016–2018, various activities were taken at school, family and street levels to protect society, especially children and youngsters, from engaging in drug-related activities and in consuming drugs. For this purpose, Ministry of National Education and Turkish Green Crescent Society developed programs in cooperation with training and education institutions. At the

same time, various centers were established by the Ministry of Health to provide counselling and support for those with drug problems.

Prior to the 'There is Death on the Tip' campaign on tobacco use, it was found that 7.3% of the young people between the ages of 18–24 used hookah, 88% of them preferred aromatic hookah, and they also used it as a means of socialization; 31% of the participants considered hookah as being less harmful to health than cigarettes, that the smoke from the hookah is filtered and cleaned while passing through the water, and that it does not create addiction compared to other substances such as cigarettes and alcohol (Turkish Green Crescent Society, 2021). Given these findings and the results of our present study, more research is needed to explore the prevalence of waterpipe smoking in other universities across Turkey. Such information is needed to develop or revise university policies regarding use of waterpipe and health educational program to raise awareness about the danger of waterpipe smoking.

CRedit authorship contribution statement

Neslihan Güney Karaman: Conceptualization, Data curation, Supervision, Writing – review & editing. **Çiğdem Ünlü Çeber:** Data curation, Formal analysis, Investigation, Writing – original draft. **Serife Eraslan:** Visualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

- Aboaziza, E., & Eissenberg, T. (2015). Waterpipe tobacco smoking: what is the evidence that it supports nicotine/tobacco dependence? *Tobacco Control*, 24(1), 44–53.
- Akl, E. A., Jawad, M., Lam, W. Y., Co, C. N., Obeid, R., & Irani, J. (2013). Motives, beliefs and attitudes towards waterpipe tobacco smoking: A systematic review. *Harm Reduction Journal*, 2(10), 12. <https://doi.org/10.1186/1477-7517-10-12>
- Akpinar, E. E., Akpinar, S., & Gulhan, M. (2010). Smoking habits of university students and level of their knowledge about the topic. *Respiratory Journal*, 12(1), 1–6.
- Berg, C. R., Nehl, E., Sterling, K., Buchanan, T., Narula, S., Sutfin, E., & Ahluwalia, J. S. (2011). The development and validation of a scale assessing individual schemas used in classifying a smoker: Implications for research and practice. *Nicotine Tobacco Research*, 13(12), 1257–1322.
- Combrink, A., Irwin, N., Laudin, G., Naidoo, K., Plagerson, S., & Mathee, A. (2010). High prevalence of hookah smoking among secondary school students in a disadvantaged community in Johannesburg. *South African Medical Journal*, 100(5), 297–299. <https://doi.org/10.7196/samj.3965>. PMID: 20460022.
- Cevik Akyil, R., Kahraman, A., & Erdem, N. (2018). Determining factors affecting the use of narghile by university students. *Journal of Izmir Chest Hospital*, 32(3), 177–185.
- Cuhadaroglu, F. (1986). *Self-esteem in adolescents*. Specialization Thesis (pp. 1–50). Ankara: Hacettepe University Faculty of Medicine.
- Daniels, K. E., & Roman, N. V. (2013). A descriptive study of the perceptions and behaviors of waterpipe use by university students in the Western Cape, South Africa. *Tobacco Induced Diseases*, 11(1), 1–5.
- Dugas, E., Tremblay, M., Low, N. C. P., Cournoyer, D., & O'Loughlin, J. (2012). Waterpipe smoking among north american youths. *Pediatrics*, 125(6), 1184–1189.
- Hays, R. D., & DiMatteo, M. R. (1987). A short-form measure of loneliness. *Journal of Personality Assessment*, 51(1), 69–81.
- Kelishadi, R., Ardalan, G., Gheiratmand, R., Majdzadeh, R., Delavari, A., Heshmat, R., et al. (2006). Smoking behavior and its influencing factors in a national-representative sample of Iranian adolescents: CASPIAN study. *Preventive Medicine*, 42, 423–429.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335–343.
- Maziak, W., Ward, K. D., Afifi Soweid, R. A., & Eissenberg, T. (2004). Tobacco smoking using a waterpipe: A reemerging strain in a global epidemic. *Tobacco Control*, 13, 327–360.
- Maziak, W., Taleb, Z. B., Bahelah, R., et al. (2015). The global epidemiology of waterpipe smoking. *Tobacco Control*, 24(1), 3–12.
- Mostafa, A. (2020). Self-reported addiction to and perceived behavioural control of waterpipe tobacco smoking and its patterns in Egypt: policy implications. *Eastern Mediterranean Health Journal*, 26(1), 18–28.
- Nakkash, R., & Khalil, J. (2010). Health warning labelling practices on narghile (shisha, hookah) waterpipetobacco products and related accessories. *Tobacco Control*, 19, 235–239.

- Poyrazoglu, S., Sarli, S., Gencer, Z., & Gunay, O. (2010). Waterpipe (narghile) smoking among medical and non-medical university students in Turkey. *Upsala Journal of Medical Sciences*, 115, 210–216.
- Subasi, N., Bilir, N., Ilhan, E., et al. (2005). Knowledge, attitude and behaviors of narghile smokers on narghile smoking. *Turkish Thoracic Journal*, 6, 137–180.
- Turkish Green Crescent Society (2021). *Hookah awareness campaign "death at the end"*. Retrieved from <https://www.yesilay.org.tr/tr/kurumsal-projeler/nargile-farkindalik-kampanyasi-ucunda-olum-var>.
- Yildiz, M., & Duy, B. (2014). Adaptation of the short-form of the UCLA loneliness scale (ULs-8) to Turkish for the adolescents. *Dusunen Adam The Journal of Psychiatry and Neurological Sciences*, 2014(27), 194–203.
- Yilmaz, O., Boz, H., & Arslan, A. (2017). The validity and reliability of depression stress and anxiety scale (DASS21) turkish short form. *Research of Financial Economic and Social Studies*, 2(2), 78–92.
- Yuksel, E. (2017). What does it mean; drug addiction? practices and discussions on basic concepts of drug-based work. *Online Journal of the Faculty of Communication Sciences*, 25(2), 39–65.