



Master of Public Health

Master de Santé Publique

**Pleasure and practice: a representative study of hookah use and perceptions
among young adults in Sarajevo**

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Table of contents

Table of contents	1
Acknowledgements	2
List of acronyms	3
Abstract – English	4
Abstrait – Français	5
Introduction	6
The situation in Sarajevo, Bosnia and Herzegovina	9
The main objectives of the study	9
Methodological framework	10
Methods	10
Data collection and data analysis	11
Ethical considerations	11
Results	12
Knowledge about hookah	12
Hookah attitudes	12
Hookah practice	13
Beliefs about hookah	15
Discussion	16
Strengths and limitations	19
Conclusion	20
References	21
Supplementary	27
• Table 1. Knowledge about hookah smoking	27
• Table 2. Attitudes / opinions toward hookah smoking	28
• Table 3. The overall frequency of hookah use	29
• Table 4. Beliefs about hookah smoking.....	29
• KAPB questionnaire in Bosnian	30
• KAPB questionnaire in English	46
• Consent from parents / custodians in Bosnian	58

Acknowledgements

The idea about a second master started in one small kitchen in Magdeburg where I had long conversations with my flatmates about the future. Today, almost four years later, I would like to thank one small international group of volunteers who were my family for one year. These people inspired me, and their incredible life stories gave me faith that nothing is impossible, to a willing heart.

I am sincerely thankful to the Campus France for choosing my application for the scholarship without which my study in Paris wouldn't have been possible. Also, I want to thank all staff from the French Embassy in Bosnia and Herzegovina, Campus France offices in Sarajevo and in Paris for their support during this year. I felt safe since I knew I had someone to rely on.

I am expressing my deepest gratitude to the MPH coordinator, Prof. Dr. Martine Bellanger for giving me the chance to start a new master in Paris, for all her help, friendly advices, and a huge amount of understanding. It is totally clear now why previous generations (including our) say that you were like a mother to them. Thank you very much.

I want to thank my academic advisor, Prof. Dr. Aymery Constant, for his continuous support and guidance throughout each and every step of this research project. It was a pleasure working with him and having him as a mentor.

I am thankful to Amir Hasanović, executive director of the Association for addiction prevention NARKO-NE, and to Andrea Mijatović, my professional advisor. Thank you for giving me the opportunity to return back home and do my internship in Sarajevo, for your optimism during the lockdown, and for useful advices and suggestions for the research project. A special thanks to Melvisa Miskiđ who was like another professional advisor to me. I truly appreciated her help with statistics and data interpretation.

I am thankful to You. I still remember that summer night in August last year when I was on my way from Hamburg to Paris. Under strong emotions and in my own thoughts, I was watching the sunset from the bus and thinking about the city I am leaving, and all the beautiful moments I experienced there. Then I noticed a huge billboard with a sentence that I would never walk alone. Reading it gave me a sudden sense of calmness and gratitude. Thank You for the feeling of hope in my chest when I faced personal challenges in Paris, for the feeling that everything happened for my own good and for my personal and spiritual growth, for all the great people I met, and for valuable life lessons I experienced during this academic year. I couldn't have done it without You.

List of Acronyms

US – United States

E-cigarettes - Electronic cigarettes

EU – European Union

BH – Bosnia and Herzegovina

KAPB survey model – Knowledge, attitude, practices, and beliefs survey model

COVID-19 - Coronavirus disease

PAH – Polycyclic aromatic hydrocarbons

CO – Carbon monoxide

NO – Nitric oxide

WHO – World Health Organization

Abstract – English

Introduction: Hookah smoking is an ancient, but recently popular way of tobacco consumption that carries the same consequences on health like cigarette smoking, well known cause of cancer, respiratory, and cardiovascular diseases.

Objectives: Providing qualitative and quantitative data by exploring the knowledge, attitudes, practices, and beliefs about hookah smoking among young adults in Sarajevo (Bosnia and Herzegovina).

Methods: This was a KAPB survey carried out in randomly chosen schools and faculties in Sarajevo. 435 individuals were interviewed on their knowledge, attitudes, practice and beliefs of hookah using an online questionnaire, and results were analyzed in SPSS statistical software.

Results: The mean age of participants was 17.37 (SD= 1.93) at the time of study conduction; 76.3 % were females. Of those who tried smoking hookah (36.3 %), most of them (18.4 %) were between 13-15 years old when they did it for the first time; the highest percentage (16.1 %) smoke hookah at least once in a month, but not weekly. According to participants, top three reasons for hookah's popularity in Sarajevo are peer pressure (57 %), using hookah as an activity that provides pleasure (52.7 %), and increased availability (50%). Most participants (62.8 %) strongly support banning of hookah smoking for underage individuals (< 18 years old).

Conclusion: Hookah smoking has become a challenging health concern around the globe. Although the majority claimed they hadn't tried hookah, many stated that peer pressure was an important motivational factor why young people decided to smoke hookah. Therefore, there is a serious concern over the strong influence of peers on negative social behaviors. Greater efforts should be put toward education of teachers about hookah smoking and promoting discussions about hookah in classes. Public health interventions, together with complete ban of consuming tobacco products in restaurants and cafes, should be implemented.

Keywords: hookah, hookah smoking, Sarajevo, youngsters, knowledge, attitudes, practice, beliefs

Abstrait - Français

Introduction: L'usage du narguilé, ou chicha, est une ancienne mais récemment très populaire façon de consommer du tabac, avec les mêmes conséquences pour la santé que les cigarettes, et une cause bien documentée de cancer, et de maladies respiratoires et cardiovasculaires.

Objectifs: Fournir des données qualitatives et quantitatives sur les connaissances, pratiques, attitudes, et croyances sur la consommation sur l'usage du chicha parmi les jeunes habitants de Sarajevo (Bosnie-Herzégovine).

Méthodes: un questionnaire en ligne adapté du modèle KAPB (Knowledge, attitude, practice and belief) a été diffusé dans les écoles et universités à Sarajevo. Les réponses ont été analysées avec le logiciel SPSS

Résultats: Les résultats ont été obtenus auprès de 435 répondants d'un âge moyen de 17.37 ans (SD = 1.93) et comprenant 73% de femmes. Parmi ceux ont déjà essayé le chicha (36.3 %), 18.4% ont commencé entre 13 et 15 ans, et 16.1 % en ont une consommation mensuelle. Selon les participants, les trois raisons principales de l'usage de la chicha à Sarajevo étaient la pression des pairs (57%), le sentiment de plaisir (52.7 %) et la grande disponibilité (50%). La majorité des participants (62.8%) ont recommandé fortement l'interdiction de consommation pour les mineurs (<18 ans).

Conclusion: L'usage de la chicha est devenu un problème majeur de santé dans le monde. Bien qu'une minorité de nos répondants ait déjà essayé, beaucoup ont désigné la pression des pairs comme facteur motivationnel et raison principale de consommation chez les jeunes. Des efforts devraient être entrepris auprès des enseignants pour sensibiliser les jeunes et encourager les discussions à l'école. Des interventions de santé publique, avec l'interdiction complète des produits du tabac dans les restaurants et cafés devrait être mis en œuvre.

Mots clés : Shisha, consommation de shisha, Sarajevo, les jeunes, connaissance/savoir, attitude, entraînement/pratique, croyances

Introduction

Hookah smoking is a threatening problem for public health, especially when considering its increasing practice among young adults worldwide. This growing trend has not left Bosnia and Herzegovina and its capital Sarajevo behind. The number of hookah smokers among young adults in Sarajevo indicates the importance of research study on this population.

Hoffman R. et al (2018.) defines hookah as „an oriental pipe containing tobacco often mixed with molasses and fruit flavors connected by a long flexible tube that draws the smoke to the bowl of water“ (1). With its origins in India, it has been proposed by royal physicians as a method of reducing the harmful effects of tobacco smoking, and therefore it has been smoked for more than 400 years (2). In the 1990s, this technique of smoking tobacco was gradually limited to older men and linked to the Middle Eastern region (3,4). Use of hookah started to spread among young adults worldwide in the 1990s after spreading among the same population in the Middle East at first (5).

Hookah smokers inhale the smoke from a hookah – a semi-solid combination of molasses and tobacco, which is frequently infused with other flavors that are burned by using charcoal (Figure 1). The process of hookah smoking is very simple: consumers inhale through the mouthpiece, the air passes through the hookah mixture, and this air is heated by charcoal to produce smoke. As an outcome, this smoke contains products from the tobacco mixture and charcoal. Polycyclic aromatic hydrocarbons (PAH), volatile aldehydes, carbon monoxide (CO), nitric oxide (NO), furans, nicotine, and nanoparticles could also be included as an integral part of the smoke (6). Significant levels of cancer compounding chemical PAH have been found in both tobacco and tobacco-free molasses (7).

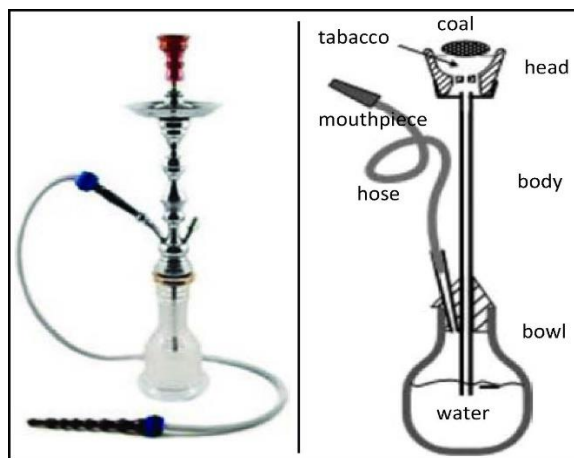


Figure 1. The hookah apparatus (left) and a labeled schematic of the main parts (right) (6)

Some studies show that more than 100 million people smoke hookah daily on the global level (6,7). A global epidemic of hookah use started in the 21st century. Firstly, it started to spread in the Middle East and then in the United States (US) and Europe (8,9). The common knowledge was that hookah was „more robust“ alternative because people were convinced that toxic substances got „filtered“ out by water (10,11), although scientific evidence provided by systematic reviews and meta-analyses showed that hookah smoking had similar harmful consequences to human health as cigarettes (12,13). The data from the US show that the use of traditional cigarettes has been decreasing during the last 30 years while consumption of hookah, is on the rise (14). In the US hookah is seen as a new way of tobacco consumption and has been attractive to youth in the last 20 years (15). While the majority of US hookah users consume tobacco on a regular basis, a sizeable portion are non-smokers (16,17). Results from the national youth tobacco survey showed that 7.3% of all middle school and high school students reported ever consuming hookah (18). Data obtained from 2011 to 2016 showed that the percentage of youth who reported current hookah use (which is defined as past 30-day-use) was estimated at 4.8 % (18). Hookah consumption among youth is an increasing issue in Canada as well. In addition, data from the national survey conducted in 2012/2013 showed that 14.3% of students in 9-12 grades reported regular hookah consumption whereas 5.4% reported consuming hookah in the last 30 days. That is an increase of 1.4% when compared to data from a survey in 2010 / 2011 where 4.0% of students reported using hookah in the last 30 days (19). In the European Union (EU), hookah consumption varied significantly across EU member states. Northern and north-eastern EU countries had predominantly higher prevalence estimates. Focusing on France, the prevalence of hookah use among youth varied between 2009 and 2017. The data collected in 2009 showed a prevalence of 15.6%. In the coming years, the number was increasing and reached 24.3% in 2014. The percentage decreased for 7.9% in 2017 (20).

The increase in hookah use is highly concerning for public health. Furthermore, a single hookah user during a single vaping occasion inhales the same quantity of smoke as he or she would by smoking 100 cigarettes (21). A carcinogenic role of hookah smoking is reported in several studies. Results from these studies showed that using hookah increased the risk of the lung (22,23), esophageal and gastric (24), and bladder cancer (25). There were also two cases of squamous cell carcinoma and one case of keratoacanthoma that were linked to hookah smoking (26). A decrease in pulmonary function was found at a higher prevalence among hookah smokers as compared to cigarette smokers (27). Given the fact that smokers often share the same mouthpiece and pipe, and due to hookah's intrinsic pathogenic ability, infectious diseases could also be spread such as herpes simplex virus, Epstein-Barr virus, and respiratory viruses (28).

A couple of studies found that hookah smoking has an influence on sexual and reproductive health as well. A case-control study conducted among Egyptian infertile women whose husbands were hookah smokers found the association between their husbands' smoking with infertility of the couple (29). Low birth weight was also reported among Lebanese women who smoked hookah (30). Cardiovascular disturbances in terms of elevations in heart rate, diastolic, systolic, and mean arterial blood pressure was found among healthy Jordanians who were smoking hookah (31), while individuals with a recent diagnose of ischemic heart disease had predominantly higher rates among those who had ever tried hookah smoking (32). Hemostatic changes and enduring oxidation injury that results in impaired thrombocyte function have also been reported (33) together with changes in white blood cells count meaning that individuals who smoked hookah had higher total leukocyte counts along with the higher production of superoxide anion (34). Genotoxic effects were also noted by hookah smokers where chromosomal aberrations, sister chromatid changes, satellite associations, and increases in the mitotic index appeared (35). Hookah is supposed to have a serious habit-forming potential due to its nicotine content which can lead to addiction (36).

Many hookah smokers believe hookah has a low potential for health harms and addiction (17, 37, 38). Results obtained in a systematic review about knowledge, attitudes, and perceptions towards hookah tobacco smoking amongst college or university students identified motives for initiating hookah use. The main motives included peer pressure, curiosity, and socializing (39). Participants in one Israeli study claimed they started smoking hookah by reasons of having a pleasurable experience, intimacy in social occasions and dealing with pressure (40). While the negative perceptions of hookah use were linked to the smoke produced, pollution, and harmful health effects, the common positive perceptions were associated with its smell and flavor (41).

The situation in Sarajevo, Bosnia and Herzegovina

Generally, the problem of addiction in Bosnia and Herzegovina (BH) is overlooked because it is not systematically, continuously, and scientifically assessed. Children and young people are at particular risk, especially when considering their vulnerability to addictive behaviors (alcohol, internet, gaming, tobacco). Data obtained from 3 BH cantons from 2015 / 2016 showed that 51.8 % of youngsters aged 13-17 have experienced smoking hookah (42). However, there is a lack of information on the types of tobacco used, and about the content of mixtures that are distributed and available in hookahs. Furthermore, the study did not contain any data about the knowledge, attitudes, and awareness of the harmful effects caused by hookah. The hookah's popularity has spread among youth in BH, especially in its capital city Sarajevo. In recent years, most newly open cafes are those that offer hookahs and attract young people, while in many brochures and tourist guides hookah is described and promoted as a special ritual offered by Sarajevo.

The main objectives of the study

Despite the rising popularity of hookah smoking among BH youths, little research has been done to date on hookah use and perceptions in Bosnia and Herzegovina. Therefore, the study population were youngsters aged 13-21 in Canton Sarajevo, and the objectives of this study were focused on the target audiences' range of behavior and perceptions, and to understand the reasons that govern such behavior. To be more specific, the objectives of this study were the following:

- To explore the knowledge, attitudes, practices, and beliefs towards hookah smoking among young adults in Sarajevo
- To collect quantitative and qualitative data to prepare future research on hookah smoking among young adults in Sarajevo as well as in Bosnia and Herzegovina

Methodological framework

The KAPB survey model (knowledge, attitudes, practices, and beliefs) was the methodological framework used for data collection and analysis. It is a quantitative method that contains predetermined questions formatted in standardized questionnaires that deliver access to quantitative and qualitative data. These kinds of surveys reveal misconceptions and misunderstandings that may represent obstacles to the activities that are about to be implemented and potential barriers to behavior change. Despite its other uses, in this particular case, a KAPB survey was used to enhance the knowledge, attitudes, and practices of hookah use among youth in Sarajevo. Additionally, there was some space for respondents to write a comment or to answer questions with an open-end. The questionnaire consisted of 37 questions in total.

Methods

The study has been conducted by the Association for addiction prevention NARKO – NE, a non-governmental organization that has headquarters in Sarajevo and operates and implements a variety of projects across Bosnia and Herzegovina since 2002. On its way to become an institute for addiction prevention, the organization is continuously working on its vision to create a healthy society where children and young people can successfully cope with the challenges of growing up and at the same time develop a life quality in their communities.

Canton Sarajevo has 9 municipalities. Students of primary and secondary schools and the University of Sarajevo, whose age was 13 - 21 years old, were asked to take part in the study. Cantonal Ministry of Education, Science, and Youth granted an approval for data-collection which was needed to allow such a study in schools by directors. On the other hand, the parents of underage participants also had to give a consent to include their children in the study. A KAPB survey was carefully designed with help from the professional and academic advisor and was anonymous. Before launching online survey link,, ethical considerations were taken into account and the KAPB questionnaire was pre-tested with the sample of 25 individuals in order to ensure that the questions were relevant and nothing important had been missed out.

Data collection and data analysis

A current epidemiological situation regarding coronavirus disease (COVID-19) outbreak caused a huge delay for the study conduction. All educational institutions were closed and face-to-face education was switched to online teaching. Therefore, it was not possible to perform data collection in schools and faculties. As an alternative, the KAPB questionnaire was created by using Google Questionnaire. Moving back to underage participants, the links for the survey and parents' consent was sent to school directors' who forwarded links to the participants' parents / custodians. Activating the link for KAPB survey meant that parent / custodian agreed that their child took part in the survey. Participants who were 18+ years old were also contacted through school and faculty staff meaning that the link was not posted online in order to minimize the chances of biases.

Data collection started in March 2020 and ended by the end of June 2020. During that time, emails containing the link for study activation and approval from the Ministry of youth, science, and education were sent to schools and faculties in Sarajevo. Data was properly coded and analyzed in IBM SPSS Statistics software.

Ethical considerations

Every participant had to read information about the study before the actual process of giving answers began. The information consisted of the purpose of the project, which organization was conducting it, how the results would be used, if there were any possible adverse influences of their participation, and who would have access to the obtained results. It was also clearly stated that the questionnaire was completely anonymous and that participants were not required to give any personal data. In addition, participation in this study was on a voluntary basis meaning that taking part in the study was their decision and there were no incentives given. They also had a possibility to stop giving answers and end the questionnaire at any time.

Results

Based on concepts of the previous KAPB surveys, four themes, including knowledge about hookah, hookah attitudes, hookah use, and beliefs about hookah were utilized in the analysis. Additionally, respondents had the opportunity to write their own answers on some questions.

The final sample consisted of 435 participants in total, with 332 females (76.3 %) and 103 males (23.7 %). The mean age of participants was 17.37 (SD= 1.93).

Knowledge about hookah

The knowledge about hookah and health hazards related to hookah smoking (Supplementary, Table 1) was tested with five statements where participants had to click whether they strongly agree / agree / disagree / strongly disagree with the statement. 227 (52.2 %) respondents agreed that hookah smoking was associated with infectious diseases such as Herpes simplex virus, Helicobacter pylori infection and fungal infections followed by 142 (32.6 %) who strongly agreed with this statement. With regards to its carcinogenic effects, respiratory and heart / blood-vessel problems 194 respondents (44.6 %) strongly agreed that hookah smoking has an association with mentioned health hazards. When participants were asked to compare whether smoking hookah was more addictive than smoking cigarettes, 130 (29.9 %) indicated that they strongly agreed with the statement, 125 (28.7 %) agreed, 135 (31 %) disagreed, and finally, 45 (10.3 %) strongly disagreed. On the other hand, 160 (36.8 %) respondents strongly agreed that hookah smoking is more dangerous for health than cigarette smoking, 158 (36.3) agreed, 100 (23 %) disagreed, and 17 (3.9 %) strongly disagreed. 8 (1.8 %) respondents strongly agreed with a statement that hookah smoking was a healthier option than cigarette smoking, 87 (20 %) agreed, 231 (53.1 %) disagreed, and 109 (25.1 %) strongly disagreed. The last question in this section was related to how the respondents inform themselves about hookah. The greatest number of them does not inform themselves at all (157, 36.1 %), 127 respondents (29.2 %) get information about hookah on the internet, 92 (21.1 %) inform themselves through conversations with friends, 31 (7.1 %) from parents / custodians, 15 (3.4 %) in school from teachers, and 13 (3 %) from other family members.

Hookah attitudes

Attitudes / opinions regarding hookah smoking (Supplementary, Table 2) were tested with 13 statements where participants had to click whether they strongly agree / agree / disagree / strongly disagree with the statement. Their attitudes varied toward hookah smoking. When participants were asked whether hookah smoking was a good way to spend free time, the majority of them (205, 47.1%) strongly disagreed. Although greater part did not agree with the previous statement,

176 (40.5 %) agreed that flavor of hookah was very attractive, but the majority of them disagreed when stated that hookah smoking was a safe habit (165, 37.9 %). A large number of respondents strongly supported banning the hookah use by minors under the age of 18 (273; 62.8 %) while 241 (55.4 %) of them strongly disagreed when hookah smoking was associated with high social status. The vast majority of participants strongly disagreed with a statement that hookah smoking added intimacy among people (205, 47.1%) as well as with the statement that a person's braveness was shown with smoking hookah (273; 62.8%). Interestingly, 238 (54.7 %) agreed that hookah use was more acceptable by society than cigarette smoking, and 219 (50.3 %) agreed that hookah bars and cafes were exclusively made for young people. Lastly, when stated whether it was accepted when children smoke hookah with their parents / custodians, more than half of respondents strongly disagreed (222; 51%).

Hookah practice

Among 435 participants, 36.3 % reported they had tried smoking a hookah (even for one or two puffs). Therefore, they were separately asked some questions related to their personal experiences with hookah smoking. Regarding the overall frequency of use, results (Supplementary, Table 3) showed that the largest number smoked hookah at least once a month, but not weekly (70; 16.1 %) followed by 51 (11.7 %) who reported they had only tried smoking hookah. Furthermore, most of the respondents were between 13-15 years old when they tried smoking hookah for the first time (80; 18.4 %) and the greatest number of them was in a hookah bar when they first time tried smoking hookah (135; 31 %). The majority was accompanied either with more than one friend when they smoked hookah for the first time (95; 21.8 %) or one friend (40; 9.2 %). On the other hand, when they were asked, if they had ever tried to stop smoking hookah, the largest number answered with yes (116; 26.7 %) but 12 (2.8 %) reported that their intention to stop smoking hookah was unsuccessful. They also stated the reasons why they decided to stop smoking hookah. Most of them were worried for their health (55; 12.6 %), 16 (3.7 %) experienced breathing difficulties, 18 (4.1 %) did not like it, 13 (3 %) was encouraged to stop by their parents / custodians, 10 (2.3 %) lacked the money to provide hookah, and 1 (0.2 %) switched to cigarettes.

One participant wrote how her sister's diagnose with Legionella pneumonia motivated her to stop smoking hookah.

„ My sister was diagnosed with Legionella pneumonia because she smoked hookah. At least, doctors told us that she got legionella via hookah. After seeing how sick she was, I decided to never smoke hookah again.“ (Female, 20).

Another participant mentioned headaches after smoking hookah.

„I decided to quit smoking hookah because I got a horrible headache after smoking. Once, I almost lost my consciousness.“ (Female, 19)

All participants were asked if they had ever used hookah to smoke any other, non-tobacco product.

Among 435 participants, 11.5 % did use hookah to smoke any other non-tobacco product (even for one or two puffs). Those who claimed to have smoked non-tobacco products via hookah were asked to indicate which ones and they had been given an opportunity to either write their own answer or opt for *I do not want to answer*. Results showed that many did not want to answer (38; 8.7 %). The rest reported to smoke flavors / aromas (8; 1.8 %) following 4 (0.9 %) who smoked marijuana.

Moving forward to reasons for hookah popularity in Sarajevo, participants got the opportunity to opt for multiple answers and / or to write their own opinion why was hookah so popular in the Bosnian capital. The highest number claimed that peer pressure was the leading cause of hookah popularity (270; 57 %) followed by using hookah as an activity that provided pleasure (250; 52,7 %). The rest reported increased availability (237; 50%), lack of other entertainment sources (233; 49,2 %), boredom (219; 46.2 %), flavor of hookah (203; 42.8%), need for relaxation (129; 27.2%), a high number of cigarette smokers (82; 17.3%), the influence of immigrants (11; 2.3%).

One participant wrote how hookah helped her to forget her problems.

„Hookah helps me to forget about my problems, makes me feel better, and calms me down. Last summer I smoked hookah for almost 12 hours at the hookah bar. I just enjoyed it and chilled. “ (Female, 16).

Another one wrote about her fascination with the smoke that comes out of her mouth.

„I just love the smoke that comes out of my mouth when I smoke a hookah. Owners of the hookah bars just want the money. That is why I sometimes put make-up on my face in order to look older. It helps to get hookah easier.“ (Female, 15).

The next one reported a new trend that grew among youth.

„Smoking hookah is a trend. If you don't smoke, you don't socialize and you are usually left behind. I and my friends hang out with people who go to hookah bars, who follow the trend. Also, we don't want to hang out with people who don't wear the same clothes we are wearing. It may sound rude or impolite, but we don't care.“ (Female, 15).

One participant considered that hookah is popular due to religious reasons.

„Sarajevo is the city where the majority of people follow Islam. Islam prohibits the consumption of alcohol and cigarettes, but hookah has nowhere been mentioned. Many youngsters are religious and that is why they choose to go to a hookah bar and smoke since that doesn't violate religious rules. You can see many women wearing hijab in a hookah bar.“ (Male, 16).

The next one wrote how youngsters just want to fit in and feel accepted by their peers.

„Young people think they are cool because they smoke hookah, listen to trash music, put their photos from the hookah bar on Instagram in order to fit in. They assume they will be popular in their circle of friends if they do stuff like this. It is always interesting to observe people in the hookah bar. Most of them don't even talk, they are just on their phones and laugh.“ (Male, 17).

Beliefs about hookah

Beliefs about hookah (Supplementary, Table 4) were tested with seven statements where participants had to opt whether they assumed the statement was true or false. The greatest number did not believe that hookahs had an efficient filtration mechanism (342; 78.6 %) followed by 360 (82.8 %) who did not believe that fruit flavor in hookah detoxifies the smoke. In addition to

cancerous substances, 305 (70.1 %) did not believe that the amount of cancerous substances was lesser in hookah smoke compared to those in cigarette smoke. Also, 230 (52.9 %) considered that the amount of nicotine was lesser in hookah smoke as compared to cigarette smoke while a higher number did not consider hookah to be less toxic to human organism in comparison to cigarettes (352; 80.9 %). Moving back to hookah practice, 328 (75.4 %) perceived that hookah smokers practiced this habit more than once per day. Interestingly, 346 (79.5 %) believed that it was possible to stop smoking hookah anytime.

Discussion

Despite the fact that most studies on hookah smoking and its perceptions have been done among students in high schools or universities with a couple of those from hookah bars, there still appears to be a pattern between the users with reference to age, gender, and perception of its consequences on health. Because the hookah use is spreading among the mentioned population and due to its rising popularity among school-age children, it was important to explore their knowledge, attitudes, practice, and beliefs in regard to hookah. The results showed that most of the participants were between 13 and 15 years old when they first time used hookah to smoke tobacco (18.4 %) whereas the study conducted by Aslam et al. (2014) showed that 21.6 % of youngsters from Iran, 12.5 % of youngsters from Canada, 59.8% of youngsters from Lebanon, and 20% of youngsters from Malaysia who reported ever smoking hookah, were between 13 and 17 years old (43). A study conducted in the eastern region of Saudi Arabia among medicine male students showed that 63.8% began with hookah smoking at the ages of 16 to 18 years (44).

Only one participant reported they tried smoking hookah when they were 9 or less than 9 years old which is opposite to the findings from the US where many confessed they had tried smoking hookah before the age of 10 years (45). Most participants reported smoking hookah at least once a month, but not weekly (16.1%) which is less than reported in a study done by Geneticist association in Bosnia and Herzegovina where 73% of respondents reported smoking hookah at least once a week (46). Findings from a study done in California showed that 70.8% of the population reported smoking every week, most likely depended on the smokers' addiction to tobacco or social habits (47). In comparison to the same study where 25.3% reported smoking hookah daily (47), only two participants (0.5%) in this study reported smoking hookah at least once a day, or most days in the month. The results demonstrated that the majority of participants who had smoked hookah reported they were with more than one friend (21.8%) and they were in a hookah bar (31%) when they first used hookah to smoke tobacco. The findings are consistent with the study conducted by Holtzman et al. (2013) which also demonstrated that the majority of

hookah smokers were with more than one friend (85 %) and they were in a hookah bar (46 %) when they first time used hookah to smoke tobacco (48). Moving further to ever smoking any other non-tobacco product via hookah, the vast majority did not want to answer (8.7 %) while 0.9% admitted they used hookah to smoke marijuana which is less when compared to the findings from the data obtained in the study from North Carolina where 66% of current hookah smokers had also smoked marijuana (49). Although participants were not asked to indicate why they did not want to answer, there are several possible reasons why they might have decided not to give their answer. The question might have been too sensitive for them, and despite the fact that the questionnaire was completely anonymous, they still might have feared social stigma and judgment, if they admitted which non-tobacco products they have smoked. Also, there is a possibility of family pressure, especially considering the fact that their parents / custodians might have been observing them while they were answering the questionnaire. Participants showed the awareness and knowledge of the known associated risks of hookah smoking like cancer, infectious diseases, respiratory and cardiovascular complications. Results from a study conducted by Braun et al (2012) have also associated top three health hazards such as cancer, respiratory and cardiovascular complications that might result from hookah smoking (50). Similar findings were identified by Jawid et al (2008) where participants besides health risks mentioned in this study, linked pregnancy hazards, and hematological impairments as well (51). In contrast with results from Jawid et al (2008) and Noonan and Patrick (2013) where most participants (71.1 %, Jawid et al; 60 %, Noonan and Patrick) indicated that cigarette smoking was more addictive than hookah smoking (51, 52), the majority in this study indicated they either strongly agreed (29.9 %) or agreed (28.7 %) that hookah smoking was more addictive than cigarette smoking. Speaking about the harmfulness of hookah smoking and its comparison to cigarette smoking, the greatest percentage of participants (36.8 % strongly agreed, 36.3 % agreed) indicated that hookah smoking was more dangerous to health than cigarette smoking which followed the findings from the studies in Saudi Arabia and Jordan where 50 % of participants from Saudis and 62.2 % of Jordanians considered the same (44, 53). On the other hand, results are opposite to the findings from Jawid et al (2008) where 60% of participants perceive cigarette smoking more harmful (51). Assessing the social acceptance of hookah in comparison to cigarettes 54.7 % agreed that hookah smoking was more socially acceptable than cigarette smoking. In a diverse group of students who participated in one US study, 50 % of them reported that hookah smoking was more socially acceptable when compared to cigarette smoking (54). According to the study results, 57 % consider friends and peer pressure as a relevant motivational factor for starting hookah smoking. The exposure to modern society and reduced control of families over their youngsters increase

the probability of being affected by friends, mostly in terms of anti-social behaviors, for instance, smoking hookah. The previous studies validated the influence of others as effective social components in regard to the incidence and prevalence of unhealthy social behaviors (55-58). Many reported boredom (46.2 %) and lack of other entertainment sources (49.2 %) as motivational factors for smoking hookah. Similar results were found in other studies done in the US, UK, Saudi Arabia, Syria, and India whose participants claimed the main reason to smoke hookah was to pass time (63-68). The results indicate the need for creating significant strategies and alternative activities to prevent youngsters from smoking hookah. 17.3 % participants have also mentioned a high number of cigarette smokers as a reason for hookah smoking which can be justified by the data got from the WHO survey in 2018 where tobacco use prevalence in Bosnia and Herzegovina was 39.3 % among men, and 27.1 % among women, aged 15-49 (59). Despite this, the fact that hookah is easy to get was another reason why 50 % of participants think youngsters decide to smoke a hookah. It implicates the need for policymakers to create preventive programs against hookah smoking and related institutions to avoid the establishment of such facilities in the society. An outstanding measure to decrease consumption of tobacco products, such as hookah, might be expanding the price of tobacco, and putting more taxes on its production. It is worth mentioning that 64.1 % of participants support legally banning hookah consumption for underage individuals (< 18 years old). Interestingly, one participant wrote that many youngsters smoke hookah due to religious reasons. In his opinion, smoking hookah does not violate Islamic religious views, and therefore, according to him, religion may be a reason why young people decide to smoke hookah. However, some other studies have shown that religion actually plays a protective role when it comes to consuming tobacco products and reduces the likelihood of getting addicted to them (61-63). When compared to the results obtained in the study done by Jawaid et al (2008) where most participants believed that hookah has an efficient filtration mechanism, less nicotine than cigarettes and fewer carcinogens than cigarettes (51), results from this study showed the opposite – 78.6 % does not believe that hookah has an efficient filtration mechanism, 52.9 % believes that cigarettes have higher nicotine levels and 70.1 % do not believe that hookah has fewer carcinogens than cigarettes. 97 % of hookah smokers who took part in the study done by Sutfin et al (2011) claimed they could stop hookah smoking at any time (69). Additionally, 79.5 % participants in this study also believe it is possible to stop smoking hookah at any time meaning that they would stop smoking hookah, and not for instance leave hookah bar and come back another day to smoke.

Strengths and limitations

This KAPB study is the first KAPB study done on hookah in Bosnia and Herzegovina and provides the first insights about the knowledge, attitudes, practice, and beliefs about hookah among youngsters in Sarajevo. The study was done via an online questionnaire and data collection did not cause any financial cost while the respondents answered questions on their own schedule at a pace they chose. Answers were automatically stored, easy to analyze, and put into statistical software. The findings can form the basis for future qualitative and quantitative studies in regard to hookah smoking in Bosnia and Herzegovina.

The first aim was to perform the study in schools with educated interviewers who would collect data from participants but due to COVID-19 outbreak, it was not possible to perform that kind of data collection. An online questionnaire was an alternative way to collect data. Since parents / custodians of underage participants had to give their consent for their child's participation, they might have had an influence on the way the children were answering. It is also considerable that participants did not want to give an honest answer if someone was observing them. There is a possibility of social desirability where some respondents tend to report an answer in a way, they present themselves more socially acceptable by avoiding negative evaluations. Therefore, further studies, if not done online, should be implemented in more controllable conditions in order to minimize the chances of biases, and to ensure that participants answer questions in anonymity without someone observing them. Although the survey did not have restrictions on parameters on gender, a non-response bias was seen in the fact that most participants were females. It is worth mentioning for the future studies that this kind of bias may be avoided by increasing the response rate. Also, it might have happened that some participants became overly aware that they were part of this survey, making them double over their answers.

It is recommended to conduct another survey in more controllable conditions when the epidemiological situation regarding COVID-19 disease becomes better. Other Bosnian cities should also be surveyed about hookah smoking. The obtained results will help by having a better insight about the hookah smoking on a country's level as well as in performing follow-up studies in the future.

Conclusion

This study provides insights about the knowledge, attitudes, practices, and beliefs about hookah smoking among youngsters in Sarajevo. It was found that 36.3 % of participants have tried smoking hookah. The participants who smoked hookah reported that they mostly smoked hookah at least once in a month, but not weekly. Some smokers have also tried smoking other non-tobacco products via hookah but the majority did not want to indicate which ones. Although they were not asked why they refused to give their answer, the family pressure or fear of social stigma may be considered as possible reasons. According to participants' opinions, peer pressure, boredom, increased availability, lack of other entertainment sources, the need for relaxation were the most common reasons for hookah's popularity in Sarajevo. Surprisingly, 62.8 % strongly supports hookah-ban for underage individuals (< 18 years old). Since only 3.4 % of participants claimed they get information about the hookah in school, it is necessary to educate teachers about the harmful consequences of hookah and encourage discussions about hookah in classes. Apart from that, public health interventions, together with a complete ban on consuming tobacco products in restaurants and cafes, should be implemented. By using health promotion theories, it would be possible to plan preventive interventions and implement them at the social or ecological level. Also, the role of non-governmental organizations should not be forgotten in ways they can contribute to the prevention of tobacco consumption. Increased monitoring and additional research are needed to address this dangerous threat to public health.

References

1. Hoffman R. et al, Hematology: Basic Principles and Practice, 7th edition, Elsevier, 2018, pp. 1071-1105
2. Reddy K.S., Gupta P.C., Historical records and anecdotes: from the middle ages to the modern times - Report on Tobacco Control in India, Ministry of Health and Family Welfare, Government of India, 2004, pp. 7-18. Available at: www.whoindia.org/SCN/Tobacco/Report/TCI-Report.htm [accessed Feb 19 2020].
3. Maziak W, Ward K, Soweid RAA, et al, Tobacco smoking using a waterpipe: a re-emerging strain in a global epidemic. *Tob Control* 2004;13:327–33. Available at: <https://tobaccocontrol.bmj.com/content/13/4/327> , [accessed Feb 19 2020].
4. Maziak W, Ward KD, Eissenberg T, Interventions for waterpipe smoking cessation. *Cochrane Database Syst Rev* 2007;(4):CD005549. Available at: <https://www.cochranelibrary.com/cdsr/doi/10.1002/14651858.CD005549.pub2/full> [accessed Feb 19 2020].
5. Maziak W, Taleb ZB, Bahelah R, et al, The global epidemiology of waterpipe smoking, *Tobacco Control* 2015. Available at: https://tobaccocontrol.bmj.com/content/24/Suppl_1/i3.info, [accessed Feb 19 2020].
6. Wolfram RM, Chehne F, Oguogho A, Sinzinger H. Narghile (water pipe) smoking influences platelet function and (iso-)eicosanoids. *Life Sci*.2003;74 :47– 53, Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0024320503008154?via%3Dihub>, [accessed Feb 20 2020].
7. Ward KD, Hammal F, VanderWeg MW, Eissenberg T, Asfar T, Rastam S, Maziak W. Are waterpipe users interested in quitting?, *Nicotine & Tobacco Research*, Volume 7, Issue 1, February 2005, Pages 149–156
8. Knishkowsky B, Amitai Y. Water-Pipe (Narghile) Smoking: An Emerging Health Risk Behavior, *Pediatrics*, 2005;116(1): pp. 113-119. Available at: <https://pediatrics.aappublications.org/content/116/1/e113> [accessed Feb 20 2020].
9. American Lung Association. An emerging deadly trend: waterpipe tobacco use. United States: Tobacco Policy Trend Alert; 2007. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3215592/>, [accessed Feb 20 2020].
10. Khalil J, Heath RL, Nakkash RT, Afifi RA, The tobacco health nexus? Health messages in narghile advertisements, *Tobacco Control*, 2009;18(5): 420–421. Available at: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-11-315>, [accessed Feb 20 2020].
11. Wilson, N., Weerasekera, D., Peace, J., Edwards, R., Thomson, G., & Devlin, M. (2009), Misperceptions of "light" cigarettes abound: National survey data. *BMC Public Health*, 9(1):126. Available at: <https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-9-126>, [accessed Feb 20 2020].
12. Waziry R, Jawad M, Ballout RA, et al. The effects of waterpipe tobacco smoking on health outcomes: an updated systematic review and meta-analysis, *International Journal of Epidemiology*, 2017; 46:32–43. Available at: <https://academic.oup.com/ije/article/46/1/32/2617157>, [accessed Feb 20 2020].
13. Raad D, Gaddam S, Schunemann HJ, et al. Effects of water-pipe smoking on lung function: a systematic review and meta-analysis. *Chest* 2011; 139:764–74 Available at:

- [https://journal.chestnet.org/article/S0012-3692\(11\)60175-X/fulltext](https://journal.chestnet.org/article/S0012-3692(11)60175-X/fulltext), [accessed Feb 20 2020].
14. Lauterstein D, Hoshino R, Gordon T, Watkins BX, Weitzman M, Zelikoff J. The changing face of tobacco use among United States youth. *Curr Drug Abuse Rev.* 2014;7(1):29–43. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4469045/?report=reader>, [accessed Feb 20 2020].
 15. Martinasek MP, McDermott RJ, Martini L. Waterpipe (hookah) tobacco smoking among youth. *Curr Probl Pediatr Adolesc Health Care.* 2011;41(2):34–57. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/21232693> , [accessed Feb 20 2020].
 16. Ward KD, Eissenberg T, Gray JN, Srinivas V, Wilson N, Maziak W, Characteristics of U.S. waterpipe users: a preliminary report, *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*, 2007, (12):1339-46
 17. Primack BA, Sidani J, Agarwal AA, Shadel WG, Donny EC, Eissenberg TE, Prevalence of and associations with waterpipe tobacco smoking among U.S. university students, *Annals of behavioral medicine : a publication of the Society of Behavioral Medicine*, 2008. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3004534/>, [accessed Feb 21 2020].
 18. Cooper, M., Pacek, L. R., Guy, M. C., et al (2019). Hookah Use Among US Youth: A Systematic Review of the Literature From 2009 to 2017. *Nicotine & tobacco research : official journal of the Society for Research on Nicotine and Tobacco*, 21(12), 1590–1599. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6861827/#_ffn_sectitle, [accessed Feb 20 2020].
 19. Minaker LM, Shuh A, Burkhalter RJ, Manske SR, Hookah use prevalence, predictors, and perceptions among Canadian youth: findings from the 2012/2013 Youth Smoking Survey, 2015. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4438198/#_ffn_sectitle , [accessed Feb 20 2020].
 20. Filippidis F, Jawad M, Varvadas CI, Trends and correlates of waterpipe use in the European union: Analysis of selected Eurobarometer surveys (2009 – 2017). Available at: https://www.researchgate.net/publication/321149292_Trends_and_Correlates_of_Waterpipe_use_in_the_European_Union_Analysis_of_Selected_Eurobarometer_Surveys_2009-2017, [accessed Feb 20 2020].
 21. Shihadeh A, Azar S, Antonios C, Haddad A, Towards a topographical model of narghile water-pipe café smoking: a pilot study in a high socioeconomic status neighborhood of Beirut, Lebanon, *Pharmacology, biochemistry, and behavior*, 2004, (1):75-82., Available at: <https://www.sciencedirect.com/science/article/pii/S009130570400214X?via%3Dihub>, [accessed Feb 21 2020].
 22. Koul PA, Hajni MR, Sheikh MA, Khan UH, Shah A, Khan Y, Ahangar AG, Tasleem RA, Hookah smoking and lung cancer in the Kashmir valley of the Indian subcontinent, *Asian Pacific journal of cancer prevention : APJCP*, 2011;12(2):519-24. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/21545223>, [accessed Feb 21 2020].
 23. Akl EA, Gaddam S, Gunukula SK, Honeine R, Jaoude PA, Irani J, The effects of waterpipe tobacco smoking on health outcomes: a systematic review, *International Journal of epidemiology*, 2010, (3):834-57. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/20207606>, [accessed Feb 21 2020].

24. Gunaid AA, Sumairi AA, Shidrawi RG, et al, Oesophageal and gastric carcinoma in the Republic of Yemen, *British Journal of cancer*, 1995, 71(2):409-10. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/7841062?dopt=Abstract>, [accessed Feb 21 2020].
25. Bedwani R, el-Khwsy F, Renganathan E, et al. Epidemiology of bladder cancer in Alexandria, Egypt: tobacco smoking, *International Journal of cancer*, 1997, 73:64– 67. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/9334811?dopt=Abstract>, [accessed Feb 21 2020].
26. El-Hakim IE, Uthman MA ,Squamous cell carcinoma and keratoacanthoma of the lower lip associated with "Goza" and "Shisha" smoking, *International Journal of dermatology*, 1999, 38(2):108-10. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/10192158?dopt=Abstract>, [accessed Feb 21 2020].
27. Al-Fayez SF, Salleh M, Ardawi M, Zahran FM, Effects of sheesha and cigarette smoking on pulmonary function of Saudi males and females, *Tropical and geographical medicine*, 1988, 40(2):115-23. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/3407000?dopt=Abstract>, [accessed Feb 21 2020].
28. Habib M, Mohamed MK, Abdel-Azis F, et al, Hepatitis C virus infection in a community in the Nile Delta: risk factors for seropositivity, *Hepatology*, 33, Elsevier, 2001, pp. 248-253
29. Inhorn MC, Buss KA, Ethnography, epidemiology and infertility in Egypt, *Social science & medicine*, 1994, 39(5):671-86. Available at: <https://www.sciencedirect.com/science/article/abs/pii/027795369490023X?via%3Dihub>, [accessed Feb 21 2020].
30. Nuwayhid IA, Yamout B, Azar G, Kambris MAK, Narghile (hubble-bubble) smoking, low birth weight, and other pregnancy outcomes, *American Journal of Epidemiology*, 1998, 148 :375– 383. Available at: <https://academic.oup.com/aje/article/148/4/375/119096>, [accessed Feb 21 2020].
31. Shafagoj YA, Mohammed FI, Levels of maximum end-expiratory carbon monoxide and certain cardiovascular parameters following hubble-bubble smoking, *Saudi Medical Journal*, 2002, 23 :953– 958. Available at: https://www.researchgate.net/profile/Faisal_Mohammed/publication/11156125_Levels_of_Maximum_End-Expiratory_Carbon_Monoxide_and_Certain_Cardiovascular_Parameters_Following_Hubble-Bubble_Smoking/links/5535a6310cf20ea35f10dedf.pdf, [accessed Feb 21 2020].
32. Jabbour S, El-Roueiheb Z, Sibai AM, Narghile (water-pipe) smoking and incident coronary heart disease: a case-control study [abstract], 2003, *Annals of Epidemiology* 13(8):570-570. Available at: https://www.researchgate.net/publication/239953393_Nargileh_WaterPipe_smoking_and_incident_coronary_heart_disease_a_case-control_study, [accessed Feb 28 2020].
33. Wolfram RM, Chehne F, Oguogho A, Sinzinger H, Narghile (water pipe) smoking influences platelet function and (iso-)eicosanoids. *Life Sciences*, 2003;74:47– 53. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0024320503008154?via%3Dihub>, [accessed Feb 28 2020].
34. Sharma RN, Deva C, Behera D, Khanduja KL, Reactive oxygen species formation in peripheral blood neutrophils in different types of smokers. *Indian J Med Res.*1997;106 :475– 480

35. Maziak W, Ward KD, Eissenberg T, Factors related to frequency of narghile (waterpipe) use: the first insights on tobacco dependence in narghile users, *Drug Alcohol Depend.* 2004;76 :101– 106. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0024320503008154?via%3Dihub>, [accessed Mar 01 2020].
36. Maziak W, Ward KD, Eissenberg T, Factors related to frequency of narghile (waterpipe) use: the first insights on tobacco dependence in narghile users, *Drug Alcohol Depend.* 2004;76 :101– 106. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0376871604001000?via%3Dihub>, [accessed Feb 24 2020].
37. Smith-Simone S, Maziak W, Ward KD, et al. Waterpipe tobacco smoking: knowledge, attitudes, beliefs, and behavior in two U.S. samples, *Nicotine Tob Res*, 2008, vol. 10 (pg. 393-8). Available at: <https://academic.oup.com/ntr/article-abstract/10/2/393/1016150>, [accessed Feb 27 2020].
38. Smith JR, Novotny TE, Edland SD, et al. Determinants of hookah use among high school students, *Nicotine Tob Res*, 2011, vol. 13 (pg. 565-72). Available at: <https://www.ncbi.nlm.nih.gov/pubmed/21454909>, [accessed Feb 24 2020].
39. Arshad A, Matharoo J, Arshad K, et al, Knowledge, attitudes, and perceptions towards waterpipe tobacco smoking amongst college or university students: a systematic review, *BMC Public Health* 19, Article number 439, 2019.
40. Varsano S, Ganz I, Eldor N, Garenkin M. Water-pipe tobacco smoking among school children in Israel: frequencies, habits, and attitudes [in Hebrew]. *Harefuah*, 2003, 142 :736– 741. Available at: <https://www.ncbi.nlm.nih.gov/pubmed/14631902?dopt=Abstract>, [accessed Feb 24 2020].
41. Maziak W, Eissenberg T, Rastam S, et al. Beliefs and attitudes related to narghile (waterpipe) smoking among university students in Syria, *Ann Epidemiol.* 2004, 14 :646– 654. Available at: <https://pediatrics.aappublications.org/content/116/1/e113#xref-ref-40-1>, [accessed Mar 03 2020].
42. Kantonalna javna ustanova Porodično savjetovalište , Putokazi u zdravije društvo, Istraživanje o korištenju interneta, te navikama konzumiranja cigareta, alkohola i marihuane među djecom i mladima u tri kantona Federacije Bosne i Hercegovine, Udruženje za prevenciju ovisnosti NARKO-NE, Sarajevo, 2016
43. Aslam HM, Saleem S, German S, Qureshi WA. Harmful effects of shisha: literature review. *Int Arch Med.* 2014;7:16. Published 2014 Apr 4. doi:10.1186/1755-7682-7-16, 2014. Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4003490/>, [accessed Jul 19 2020].
44. Rice VH, Templin T, Kulwicki A. Arab American tobacco use: Four pilot studies. *Preventive Medicine.* 2003;37:492–498., Available at: <https://pubmed.ncbi.nlm.nih.gov/14572433/>, [accessed Jul 19 2020].
45. Haverić A, et al. Nargila – užitek ili prijetnja, Bilten Udruženja genetičara u Bosni I Hercegovini, Br. 10, Maj 2020. Available at: <http://www.genubih.ba/bilten/No10.pdf>, accessed [accessed Jul 19 2020].
46. Salvi S. The perils of waterpipe or hookah smoking: Time for action. *American Journal of Respiratory and Critical Care Medicine.* 194 (5):532-534, 2016., Available at: <https://pubmed.ncbi.nlm.nih.gov/27585378/>, [accessed Jul 19 2020].

47. Holzman et al, Knowledge and attitudes toward hookah usage among university students, *Journal of American College health*, 61(6):362-70, 2013. Available at: <https://pubmed.ncbi.nlm.nih.gov/23930750/>, [accessed Jul 20 2020].
48. Sutfin EL, McCoy TP, Reboussin BA, Wagoner KG, Spangler J, Wolfson M. Prevalence and correlates of waterpipe tobacco smoking by college students in North Carolina. *Drug Alcohol Depend*. 2011;115(1-2):131-136. doi:10.1016/j.drugalcdep.2011.01.018, Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3089695/?report=reader> [accessed Jul 20 2020].
49. Braun R. E., Glassman T., Wohlwend J., Whewell A., Reindl D. M. (2012). Hookah use among college students from a Midwest University. *Journal of Community Health*, 37, 294–298. 10.1007/s10900-011-9444-9, available at: <https://pubmed.ncbi.nlm.nih.gov/21805373/>, [accessed Jul 20 2020].
50. Jawaid A, Zafar AM, Rehman TU, et al (2008). Knowledge, attitudes and practices of university students regard waterpipe smoking in Pakistan. *Int J Tuberc Lung Dis*, 12, 1077-84. Available at: <https://pubmed.ncbi.nlm.nih.gov/18713508/>, [accessed Jul 20 2020].
51. Noonan D, Patrick Megan E, Factors associated with perceptions of hookah addictiveness and harmfulness among young adults, *Substance abuse*, 34(1):83-5, 2013. Available at: <https://pubmed.ncbi.nlm.nih.gov/23327511/>, [accessed Jul 25 2020].
52. Azab M, Khabour OF, Alkaraki AK, et al. Water pipe tobacco smoking among university students in Jordan. *Nicotine Tob Res* 2010; 12(6):606–12. Available at: <https://pubmed.ncbi.nlm.nih.gov/20418383/>, [accessed Jul 25 2020].
53. Heinz AJ, Giedgowd GE, Crane NA, Veilleux JC, Conrad M, Braun AR, et al. A comprehensive examination of hookah smoking in college students: use patterns and contexts, social norms and attitudes, harm perception, psychological correlates and co-occurring substance use. *Addict Behav* 2013; 38(11):2751-60. Available at: <https://pubmed.ncbi.nlm.nih.gov/23934006/>, [accessed Jul 25 2020].
54. Urberg KA, Luo Q, Pilgrim C, Degirmencioglu SM. A two-stage model of peer influence in adolescent substance use: individual and relationship-specific differences in susceptibility to influence. *Addict Behav* 2003; 28(7): 1243-56. Available at: <https://pubmed.ncbi.nlm.nih.gov/12915166/>, [accessed Jul 27 2020].
55. Habibi M, Besharat M A, Bahrami-Ehsan H, Rostami R, Ferrer-Wreder L. Predicting Substance use in adolescents based on risk indices and individual protective preventing, family, peers and location. *Journal of Clinical Psychology* 2012; 4(1): 43-53. Available at: <https://www.sid.ir/en/journal/ViewPaper.aspx?id=247152>, [accessed Jul 27 2020]
56. Sale E, Sambrano S, Springer JF, Turner CW. Risk, protection, and substance use in adolescents: a multi-site model. *J Drug Educ* 2003; 33(1): 91-105. Available at: <https://pubmed.ncbi.nlm.nih.gov/12773027/>, [accessed Jul 27 2020].
57. Mayberry ML, Espelage DL, Koenig B. Multilevel modeling of direct effects and interactions of peers, parents, school, and community influences on adolescent substance use. *J Youth Adolesc* 2009; 38(8): 1038-49., Available at: <https://pubmed.ncbi.nlm.nih.gov/19636769/>, [accessed Jul 27 2020].
58. WHO report on the global tobacco epidemic 2019, https://www.who.int/tobacco/surveillance/policy/country_profile/bih.pdf?ua=1, [accessed Jul 27 2020].

59. Khader YS, Alsadi AA. Smoking habits among university students in Jordan: prevalence and associated factors. *East Mediterr Health J* 2008; 14(4): 897-904. Available at: <https://www.semanticscholar.org/paper/Smoking-habits-among-university-students-in-Jordan%3A-Khader-Alsadi/6924f0ff664d0fb92abcd0c3f06711da3c29982f> , [accessed Aug 01 2020].
60. Taremiyan F, Bolhari J, Pairavi H, Ghazi Tabatabaeii M. The prevalence of drug abuse among university students in Tehran. *Iran J Psychiatry Clin Psychol* 2008; 13(4): 335-42., Available at: http://ijpcp.iums.ac.ir/browse.php?a_id=365&sid=1&slc_lang=en , [accessed Aug 01 2020].
61. Gillum RF. Frequency of attendance at religious services and cigarette smoking in American women and men: the Third National Health and Nutrition Examination Survey. *Prev Med* 2005; 41(2): 607-13. Available at: <https://www.sciencedirect.com/science/article/abs/pii/S0091743505000344>, [accessed Aug 01 2020].
62. World Health Organization Study Group on Tobacco Product Regulation . Advisory note: Waterpipe tobacco smoking: Health effects, research needs and recommended actions by regulators. WHO Press Geneva; Switzerland: 2005. Retrieved from: http://www.who.int/tobacco/global_interaction/tobreg/Waterpipe%20recommendation_Final.pdf, [accessed Aug 01 2020].
63. Cobb et al., Waterpipe Tobacco Smoking: An Emerging Health Crisis in the United States, *Am J Health Behav.* 2010;34(3):275-285, available at <http://www.njgasp.org/wp-content/uploads/2014/05/Cobb-Am-J-Health-Behav-hookah-crisis-2010.pdf> [accessed Aug 01 2020].
64. Jackson, D., Aveyard, P. Waterpipe smoking in students: Prevalence, risk factors, symptoms of addiction, and smoke intake. Evidence from one British university. *BMC Public Health* 8, 174 (2008). Available at: <https://doi.org/10.1186/1471-2458-8-174>, [accessed Aug 10 2020].
65. Taha et al. 2010; Water pipe (shisha) smoking among male students of medical colleges in the eastern region of Saudi Arabia, *Ann Saudi Med*, May-Jun 2010;30(3):222-6. Available at: <https://pubmed.ncbi.nlm.nih.gov/20427939/>, [accessed Aug 10 2020].
66. Maziak W, The Waterpipe: Time for Action, *Addiction* 103 (11), October, 2008.
67. Rami et al., Knowledge, attitude and practices of hookah smoking among medical students in Gujarat, India: a cross sectional study, *International Journal of Advances in Medicine*, 2015 Nov;2(4):397-400. Available at: <https://pdfs.semanticscholar.org/f255/352a235efccab02f0a09c369a39e3f63ba98.pdf>, [accessed Aug 12 2020].
68. Sutfin EL, McCoy TP, Reboussin BA, Wagoner KG, Spangler J, Wolfson M. Prevalence and correlates of waterpipe tobacco smoking by college students in North Carolina. *Drug Alcohol Depend.* 2011;115(1-2):131-136. doi:10.1016/j.drugalcdep.2011.01.018, Available at: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3089695/> , [accessed Aug 15 2020].

Supplementary

Table 1. Knowledge about hookah smoking

STATEMENT	I strongly agree	I agree	I disagree	I strongly disagree	Average score	SD
	<i>Frequency (%)</i>	<i>Frequency (%)</i>	<i>Frequency (%)</i>	<i>Frequency (%)</i>		
Hookah smoking is associated with infectious diseases (Herpes simplex virus - a virus that causes an outbreak of small, usually painful blisters on the surface of the skin and mucuous membranes, Helicobacter pylori - bacterium that causes ulcers in the stomach)	142 (32.6 %)	227 (52.2 %)	56 (12.9 %)	10 (2.3 %)	0.85	0.725
Hookah smoking is associated with serious health hazards such as cancer, respiratory problems and heart / blood-vessel problems.	194 (44.6 %)	194 (44.6 %)	41 (9.4 %)	6 (1.4 %)	0.68	0.701
Hookah smoking is more addictive than cigarette smoking.	130 (29.9 %)	125 (28.7 %)	135 (31 %)	45 (10.3 %)	1.22	0.989
Hookah smoking is more dangerous for health than cigarette smoking.	160 (36.8 %)	158 (36.3 %)	100 (23 %)	17 (3.9 %)	0.94	0.867
Hookah smoking is healthier option than cigarette smoking.	8 (1.8 %)	87 (20 %)	231 (53.1 %)	109 (25.1 %)	2.01	0.725

Table 2. Attitudes / opinions toward hookah smoking

STATEMENT	I strongly agree	I agree	I disagree	I strongly disagree	Mean	SD
	<i>Frequency (%)</i>	<i>Frequency (%)</i>	<i>Frequency (%)</i>	<i>Frequency (%)</i>		
Hookah smoking is a good way to spend free time.	13 (3 %)	53 (12.2 %)	164 (37.7 %)	205 (47.1 %)	2.29	0.794
Flavor of hookah is very attractive.	38 (8.7 %)	176 (40.5 %)	118 (27.1 %)	103 (23.7 %)	1.66	0.936
Hookah smoking is a safe habit.	37 (8.5 %)	119 (27.4 %)	165 (37.9 %)	114 (26.2 %)	1.82	0.919
Hookah smoking is relaxing.	16 (3.7 %)	142 (32.6 %)	170 (39.1 %)	107 (24.6 %)	1.85	0.835
Hookah smoking makes one look attractive.	14 (3.2 %)	35 (8 %)	163 (37.5 %)	223 (51.3 %)	2.37	0.767
Hookah smoking should be forbidden for underage individuals (< 18 years old).	273 (62.8 %)	111 (25.5 %)	32 (7.4 %)	19 (4.4 %)	0.53	0.812
Hookah smoking makes one look relaxed.	10 (2.3 %)	97 (22.3 %)	200 (46 %)	128 (29.4 %)	2.03	0.781
Hookah smoking is a sign of high social status.	9 (2.1 %)	30 (6.9 %)	155 (35.6 %)	241 (55.4 %)	2.44	0.714
Hookah smoking shows that a person who smokes is brave.	4 (0.9 %)	7 (1.6 %)	151 (34.7 %)	273 (62.8 %)	2.59	0.574
Hookah smoking adds intimacy among persons.	10 (2.3 %)	47 (10.8 %)	173 (39.8 %)	205 (47.1 %)	2.32	0.756
Hookah smoking is more acceptable by society than cigarette smoking.	82 (18.9 %)	238 (54.7 %)	79 (18.2 %)	36 (8.3 %)	1.16	0.823
It is acceptable when children smoke hookah with their parents / custodians.	7 (1.6 %)	57 (13.1 %)	149 (34.3 %)	222 (51 %)	2.35	0.766
Hookah bars and cafes are made exclusively for young people.	72 (16.6 %)	219 (50.3 %)	105 (24.1 %)	39 (9 %)	1.26	0.838

Table 3. The overall frequency of hookah use

Which of the following statements best describes how often you smoke tobacco by using hookah?			
		Frequency	Percent
	I smoke hookah at least once a month, but not weekly	70	16.1
	I smoke hookah once in a couple of months	2	0.5
	I smoke hookah at least once a week, but not daily	24	5.5
	I have only tried smoking hookah	51	11.7
	I smoke hookah at least once a year, but not monthly	9	2.1
	I smoke hookah at least once a day or most days in month	2	0.5
	Total	158	36.3

Table 4. Beliefs about hookah smoking

STATEMENT	TRUE	FALSE
	<i>Frequency (%)</i>	<i>Frequency (%)</i>
Hookahs have an efficient filtration mechanism.	93 (21.4 %)	342 (78.6 %)
The fruit flavor in hookahs detoxifies the smoke.	75 (17.2 %)	360 (82.8 %)
The amount of cancerous substances is lesser in hookah smoke when compared to the amount of cancerous substances in cigarette smoke.	130 (29.9 %)	305 (70.1 %)
The amount of nicotine is higher in cigarette smoke as compared to hookah smoke.	200 (52.9 %)	205 (47.1 %)
Hookah smokers practice hookah smoking more than once per day.	328 (75.4 %)	107 (24.6 %)
Hookah smoking is less toxic to the human organism when compared to cigarette smoking.	83 (17.1 %)	352 (80.9 %)
It is possible to stop hookah smoking at any time (by stopping we mean that you do not smoke hookah anymore, and not that you for example leave hookah cafe or bar and come back another day to smoke).	346 (79.5 %)	89 (20.5 %)

KAPB QUESTIONNAIRE IN BOSNIAN

UŽITAK I NAVIKA: REPREZENTATIVNA STUDIJA O PERCEPCIJI I KORIŠTENJU NARGILE MEĐU MLADIMA U SARAJEVU

Upitnik o znanju, ponašanju, praksi i vjerovanjima o nargili i korištenju nargile

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Informacije o istraživanju

Studiju provodi Udruženje za prevenciju ovisnosti NARKO-NE. NARKO-NE je nevladina organizacija formirana u Sarajevu 2002. godine, koja svoje projekte sprovodi na području cijele Bosne i Hercegovine. S ciljem prelaska u institut za prevenciju ovisnosti, Udruženje kontinuirano radi na svojoj viziji kreiranja zdravog društva u kojem se djeca i mladi mogu uspješno nositi sa izazovima odrastanja, te da kroz volonterski rad rade na razvijanju bolje kvalitete života u svojim zajednicama.

Budući da se broj nargila kafića, barova i njenih konzumenata_ica drastično povećao, javila se potreba za relevantnim istraživanjem kako bi se dobili podaci o znanju, ponašanjima, praksi i vjerovanjima o nargili među mladima u Sarajevu. Podaci dobiveni iz ovog istraživanja bit će korišteni za svrhe NARKO-NE, te za izradu magistarske teze anketara.

Informacije o anketaru

Luka Gabrić, rođen 08.09.1992., Tomislavgrad, BiH

- **Februar 2020 – do danas:** *Stażist (internship), Udruženje za prevenciju ovisnosti NARKO-NE, Sarajevo*
- **August 2019 – do danas:** *Javno zdravstvo, Master studij, Francuska Škola javnog zdravstva, Pariz*
- **Februar 2019 - August 2019:** *Medicinsko-laboratorijski tehnolog, Klinički centar Asklepios, Hamburg*
- **Februar 2018 – Februar 2019:** *Asistent, Clipper Boardinghouses GmbH, Hamburg*
- **Oktoibar 2016 - Septembar 2017:** *Europski volonter u Njemačkoj, Europski Volonterski Servis, Magdeburg*
- **Oktoibar 2015 - Septembar 2016:** *Magistar laboratorijskih tehnologija, Univerzitet u Sarajevu, Fakultet zdravstvenih studija, Sarajevo*
- **Decembar 2015 - Juni 2016:** *Dipl.ing. medicinsko-laboratorijske dijagnostike, Klinički centar Univerziteta u Sarajevu, Sarajevo*
- **September 2011 - July 2015:** *Dipl. ing. medicinsko-laboratorijske dijagnostike, Univerzitet u Sarajevu, Fakultet zdravstvenih studija, Sarajevo*

O istraživačkom modelu

Model ankete “Znanje, ponašanja, prakse i vjerovanja” bit će metodološki okvir za prikupljanje i analizu podataka. Riječ je o kvantitativnoj metodi koja sadrži unaprijed postavljena pitanja u formi standardiziranih upitnika i na taj način omogućuje pristup kvalitativnim i kvantitativnim podacima. Ovakve ankete otkrivaju zablude ili nesporazume koji mogu predstavljati prepreke aktivnostima koje će se provoditi kao i potencijalne prepreke promjenama ponašanja. U ovom konkretnom slučaju, anketa “Znanje, ponašanja, prakse i vjerovanja” koristit će se za poboljšanje i bolje razumijevanje istih o korištenju nargile među mladima u Sarajevu. Uz to, ispitanicima_cama će biti ostavljen prostor za davanje vlastitih odgovora koji ne ograničavaju slobodu ispitanika_ce u odabiru već ponuđenih odgovora.

Instrukcije (molimo, pročitajte pažljivo)

Sudjelovanje u ovom istraživanju je dobrovoljno. Upitnik je **kompletno anonimn**¹ i ne trebaš biti zabrinut_a da će tvoj identitet² biti objavljen (ne trebaš dati nikakve lične podatke osim dobi i spola). Molimo, **klikni na kružić pored odgovora tvog izbora ili napiši odgovor u predviđeni prostor u slučaju takvog pitanja**. Cijeli intervju bi trebao trajati 15 – 20 minuta.

1. **Anoniman, anonimno** – napravljeno ili učinjeno od nekoga čije ime nije poznato niti objavljeno javno
2. **Identitet**– ko je osoba, ili osobine osobe ili grupe koje osobu ili grupu čine različitom od drugih

UPITNIK O KORIŠTENJU NARGILE MEĐU MLADIMA U SARAJEVU

Istraživanje o znanju, ponašanjima, praksi i vjerovanjima o nargili

Ovaj upitnik NE ZAHTIJEVA ime ili identitet osobe koja ga popunjava.

Ime anketara / Organizacija	Luka Gabrić / Udruženje za prevenciju ovisnosti NARKO-NE	Datum	Maj-Juni 2020
Lokalitet	Kanton Sarajevo	Država	Bosna i Hercegovina

1. Oblast br. 1: Demografske informacije

1.1. Koliko imaš godina:

- 13
- 14
- 15
- Drugo (molimo, napiši) _____

1.2. Spol

- Muški
- Ženski

Oblast 2: Upitnik o znanju, ponašanjima, praksi i vjerovanjima o nargili

Znanje o mladima u Sarajevu o pušenju nargile

Ovaj dio će te pitati o tvom znanju o pušenju nargile. Molimo, klikni na kružić pored odgovora tvog izbora ili napiši svoj odgovor u za to predviđeni prostor u slučaju takvog pitanja.

1. Pušenje nargile je povezano sa infektivnim bolestima (Herpes simplex virus – virus koji uzrokuje izbijanje malih, obično bolnih mjehura na površini kože i sluznica, Helicobacter pylori – bakterija uzročnik čireva na želucu i tankom crijevu, gljivične infekcije)

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

2. Pušenje nargile je povezano sa ozbiljnim opasnostima po zdravlje kao što su kancer, problemi dišnog sistema i problemi sa srcem i krvnim žilama.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

3. Pušenje nargile stvara veću ovisnost nego pušenje cigareta

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

4. Pušenje nargile je opasnije za zdravlje nego pušenje cigareta.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

5. Pušenje nargile je zdravija opcija od pušenja cigareta.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

6. Kako se informiraš o nargili?

- U školi od nastavnika_ica
- Od prijatelja_ica
- Od roditelja / staratelja
- Od drugih članova obitelji (braća, sestre, rođaci_ice...)
- Preko interneta
- Ne informiram se
- Drugo (molimo, napiši) _____

Ponašanja / mišljenja mladih u Sarajevu o nargili

Ovaj dio će te pitati o tvojim ponašanjima / mišljenjima o pušenju nargile.

Koliko se slažeš / ne slažeš sa svaku od sljedećih izjava (molimo, klikni na kružić pored izbora svog odgovora).

7. Pušenje nargile je dobar način provođenja slobodnog vremena.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

8. Aroma nargile je veoma privlačna.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

9. Pušenje nargile je sigurna navika.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

10. Pušenje nargile je opuštajuće.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

11. Pušenje nargile čini da osoba izgleda atraktivno.

- U potpunosti se slažem
- Slažem se

- Ne slažem se
- U potpunosti se ne slažem

12. Pušenje nargile čini da osoba izgleda opušteno.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

13. Pušenje nargile je znak visokog socijalnog statusa.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

14. Pušenje nargile pokazuje da je osoba hrabra.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

15. Pušenje nargile stvara intimnost među osobama.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

16. Pušenje nargile je više prihvatljivo od strane društva nego pušenje cigareta.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

17. Prihvatljivo je kada djeca puše nargilu sa svojim roditeljima / starateljima.

- U potpunosti se slažem
- Slažem se
- Ne slažem se

- U potpunosti se ne slažem

18. Nargila barovi i kafići su ekskluzivno napravljeni za mlade.

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

19. Pušenje nargile bi trebalo biti zabranjeno za maloljetne osobe (< 18 godina).

- U potpunosti se slažem
- Slažem se
- Ne slažem se
- U potpunosti se ne slažem

Praksa korištenja anrgile među mladima u Sarajevu

Ovaj dio će te pitati o tvojoj praksi i učestalosti korištenja nargile sa duhanskim i / ili neduhanskim produktima. Molimo, klikni na kružić pored izbora svog odgovora ili napiši odgovor u za to predviđeni prostor u slučaju takvog pitanja.

20. Jesi li IKAD koristio_la nargilu za pušenje duhana (čak i za jedan ili dva dima)?

- Da
- Ne (molimo, prijeđi na pitanje 28)

21. Koja od navedenih izjava najbolje opisuje koliko često pušiš duhan koristeći nargilu?

- Pušim nargilu najmanje jednom godišnje, ali ne mjesečno
- Pušim nargilu najmanje jednom mjesečno, ali ne tjedno
- Pušim nargilu najmanje jednom tjedno, ali ne dnevno
- Pušim nargilu najmanje jednom dnevno, ili većinu dana u mjesecu
- Drugo (molimo, upiši)

22. Koliko si imao_la godina kad si PRVI put koristio_la nargilu za pušenje duhana?

- 9 ili anje od 9 godina
- 10-12 godina
- 13-15 godina
- 16-18 godina
- 19 i više godina

23. Koja od sljedećih izjava najbolje opisuje gdje si bio_la kad si prvi put koristio_la nargilu za pušenje duhana?

- U kafiću
- U svom domu

- U domu člana_ice uže ili šire porodice
- U domu prijatelja_ica
- Drugo (molimo, upiši)

24. S kim si bio_la kad si PRVI put koristio_la nargilu za pušenje duhana?

- Sam / Sama
- Sa jednim prijateljem_icom
- Sa više prijatelja_ica
- Sa članom_icom porodice
- Sa više članova_ica porodice
- Sa novim poznanikom_icom

25. Jesi li ikada pokušao_la prestati pušiti nargilu (pod prestankom mislimo da si odlučio_la više ne pušiti nargilu, a ne da na primjer ne pušiš jedan dan ili da napustiš nargila bar/kafić i vratiš se neki drugi dan da pušiš)?

- Da
- Ne

26. Je li tvoja namjera o prestanku pušenja nargile bila uspješna?

- Da
- Ne

27. Zašto si odlučio_la prestati pušiti nargilu bez obzira je li tvoj pokušaj prestanka bio uspješan ili ne? Možeš izabrati više odgovora ili upisati svoj ako nije ponuđen.

- Doživio_jela sam poteškoće s disanjem
- Zabrinut_a sam za svoje zdravlje
- Roditelji / staratelji su me ohrabрили da prestanem
- Nisam imao_la dovoljno novca da priuštим nargilu
- Drugo (molimo, napiši) _____

28. Jesi li IKAD koristio_la nargilu za pušenje bilo kojeg drugog, neduhanskog produkta (čak i za jedan ili dva dima)?

- Da
- Ne (molimo, prijeđi na pitanje 30)

29. Koji neduhanski produkt si pušio_la preko nargile?

Molimo, upiši svoj odgovor. _____

Ne želim odgovoriti

30. Prema tvom mišljenju, koji je / su glavni razlog / razlozi za trenutnu popularnost nargile u Sarajevu? (Možeš izabrati više odgovora ili upisati svoj ukoliko nije već spomenut)

- Dosada
- Nedostatak drugih izvora zabave
- Veliki broj pušača_ica cigareta
- Korištenje nargile kao aktivnosti koja pruža zadovoljstvo
- Aroma nargile
- Utjecaj imigranata
- Potreba za relaksacijom
- Povećana dostupnost
- Pritisak vršnjaka_inja
- Drugi razlozi (molimo, upiši): _____

Vjerovanja mladih u Sarajevu o pušenju nargile

Ovaj dio će te pitati o tvojim vjerovanjima / uvjerenjima o nargili i pušenju nargile. Molimo, klikni na kružić pored izbora svog odgovora.

31. Nargile imaju efikasan filtracijski mehanizam.

- Tačno
- Netačno

32. Voćna aroma u nargilama čini dim manje štetnim / toksičnim.

- Tačno
- Netačno

33. Broj supstanci i hemijskih spojeva koje izazivaju kancer je manji u dimu nargile nego u dimu cigareta.

- Tačno

Netačno

34. Nivo nikotina je veći u dimu cigarete nego u dimu nargile.

Tačno

Netačno

35. Pušači_ice nargile prakticiraju pušenje nargile više od jednom dnevno.

Tačno

Netačno

36. Pušenje nargile je manje štetno / toksično za ljudski organizam.

Tačno

Netačno

37. Mogće je prestati sa pušenjem nargile bilo kad (pod prestankom mislimo da više ne konzumiraš nargilu, a ne da na primjer odeš iz nargila bara ili kafića i vratiš se da konzumiraš neki drugi dan).

Tačno

Netačno

Došao_la si do kraja. Hvala ti za sudjelovanje u ovom istraživanju. Ukoliko imaš bilo kakva pitanja o rezultatima studije, molimo te da kontaktiraš anketara ili Udruženje za prevenciju ovisnosti NARKO-NE.

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Udruženje za prevenciju ovisnosti NARKO-NE

KAPB QUESTIONNAIRE IN ENGLISH

PLEASURE AND PRACTICE: A REPRESENTATIVE STUDY OF HOOKAH USE AND PERCEPTIONS AMONG YOUNG ADULTS IN SARAJEVO

Knowledge, Attitude, Practice and Beliefs – KAPB survey

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Information about the survey

The study conducts the Association for addiction prevention NARKO–NE, a non-governmental organization that has headquarters in Sarajevo and implements a variety of projects across Bosnia and Herzegovina since 2002. On its way to become an institute for addiction prevention, the organization is continuously working on its vision to create a healthy society where kids and young people can successfully cope with challenges of growing up and at the same time develop a life quality in their communities. Since the number of hookah cafes, bars and smokers (especially youth) has drastically increased, a relevant research is needed in order to provide data about knowledge, attitudes, practices and beliefs about hookah among young adults in Sarajevo. The data obtained in this survey will be used for the purposes of NARKO-NE and for the interviewer's master thesis.

About the interviewer

Luka Gabrić, born on September 08, 1992

- **February 2020 - ongoing:** *Student intern at the Association for addiction prevention NARKO-NE, Sarajevo*
- **August 2019 - ongoing:** *Master 2 in Public Health, The French School of Public Health, Paris*
- **February 2019 - August 2019:** *Medical-laboratory technologist, Asklepios Kliniken, Hamburg*
- **February 2018 - February 2019:** *Assistant, Clipper Boardinghouses GmbH, Hamburg*
- **October 2016 - September 2017:** *European Volunteer in Germany, European voluntary service, Magdeburg*
- **October 2015 - September 2016:** *Master of arts in Laboratory technologies, University of Sarajevo, Faculty of health sciences, Sarajevo*
- **December 2015 - June 2016:** *Medical-laboratory technologist, Clinical center University of Sarajevo, Sarajevo*
- **September 2011 - July 2015:** *Bachelor of arts in Laboratory technologies, University of Sarajevo, Faculty of health sciences, Sarajevo*

About KAPB survey model

The KAPB survey model (knowledge, attitudes, practices, and beliefs) will be the methodological framework used for data collection and analysis. It is a quantitative method which contains of predetermined questions formatted in standardized questionnaires that delivers access to quantitative and qualitative data. These kind of surveys reveal misconceptions or misunderstandings that may represent obstacles to the activities that are about to be implemented and potential barriers to behavior change. Despite its other uses, in this particular case a KAPB survey will be used to enhance the knowledge, attitude, practices and beliefs of hookah use among youth in Sarajevo. Additionally, there will be some space for respondents to write a comment or to answer questions with an open-end.

Instructions (please, read carefully)

The participation in this survey is voluntary. The questionnaire is **completely anonymous**¹ and you should not be worried that your identity² will be published (you do not have to give any personal data except your age and sex). Please put an **x in the box next to the answer of your choice or write in the space provided as the case may be**. Should you need help, or if there is something unclear, please raise your hand and the interviewer will come to your place to help you. The whole interview should last 15-20 minutes approximately.

3. **Anonymous** - made or done by someone whose name is not known or not made public
4. **Identity** - who a person is, or the qualities of a person or group that make them different from others

KAPB SURVEY ABOUT HOOKAH SMOKING AMONG YOUNG ADULTS IN SARAJEVO

Knowledge, attitudes, practice and beliefs survey

This questionnaire does NOT need the name and identity of the respondent.

Interviewer Name / Organization		Date	
Locality		State	

2. Section 1: Demographic information

1.1. How old are you:

- 13
- 14
- 15
- 16
- 17
- 18
- 19
- 20
- 21
- Other (please specify) _____

1.2. Sex

- Male
- Female

Section 2: KAPB survey

Knowledge about hookah smoking among youth in Sarajevo

This section will ask you about your knowledge about hookah smoking. Please click next to the answer of your choice or type your answer in the space provided as the case may be.

4. Hookah smoking is associated with infectious diseases (Herpes simplex virus - a virus that causes an outbreak of small, usually painful blisters on the surface of the skin and mucuous membranes, Helicobacter pylori - bacterium that causes ulcers in the stomach).

- I strongly agree
- I agree
- I disagree
- I strongly disagree

5. Hookah smoking is associated with serious health hazards such as cancer, respiratory problems and heart / blood-vessel problems.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

6. Hookah smoking is more addictive than cigarette smoking.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

7. Hookah smoking is more dangerous for health than cigarette smoking.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

8. Hookah smoking is healthier option than cigarette smoking.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

9. How do you inform yourself about hookah?

- In school from my teachers
- From peers
- On the internet
- I do not inform myself
- Other (please specify) _____

This section will ask you about your attitudes / opinions regarding hookah smoking.

For each statement given below please indicate where do you place hookah smoking. Please, click next to the answer of your choice.

10. Hookah smoking is a good way of spending free time.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

11. A pleasant flavor of hookah is very attractive.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

12. Hookah smoking is a safe habit.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

13. Hookah smoking is relaxing.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

14. Hookah smoking makes one look attractive.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

15. Hookah smoking should be forbidden for underage individuals (< 18 years old).

- I strongly agree
- I agree
- I disagree
- I strongly disagree

16. Hookah smoking makes one look relaxed.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

17. Hookah smoking is a sign of high social status.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

18. Hookah smoking shows that person is brave.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

19. Hookah smoking adds intimacy among persons.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

20. Hookah smoking is more socially acceptable than smoking cigarettes.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

21. It is acceptable when children smoke hookah with their parents.

- I strongly agree

- I agree
- I disagree
- I strongly disagree

22. Hookah bars and cafes are exclusively made for youngsters.

- I strongly agree
- I agree
- I disagree
- I strongly disagree

Hookah use practice

This section will ask you about hookah use practices. Please tell us about your hookah experiences using tobacco and any other non-tobacco products by putting an x next to the answer of your choice or write in the space provided as the case may be.

23. Have you EVER used hookah to smoke tobacco (even one or two puffs)?

- Yes
- No (please skip to question 28)

24. Which of the following statements best describes how often you smoke tobacco by using hookah?

- I smoke hookah at least once a year, but not monthly
- I smoke hookah at least once a month, but not weekly
- I smoke hookah at least once a week, but not daily
- I smoke hookah at least once a day, or most days each month
- Other (please, specify)

25. How old were you when you FIRST used a hookah to smoke tobacco?

- 9 or less than 9 years old
- 10-12 years old
- 13-15 years old
- 16-18 years old
- 19 +

26. Which of the following statements best describes where were you when you FIRST used a hookah to smoke tobacco?

- In a cafe, or restaurant
- In my own home (apartment, house)
- At a family member's home
- At a friend's home
- Other (please, specify)

27. Who were you with when you FIRST used a hookah to smoke tobacco?

- No one, I was alone
- With one friend
- With more than one friend
- With a family member
- With more than one family member
- With a new acquaintance

28. Have you ever tried to stop smoking hookah (by stopping we mean that you have decided not to smoke hookah anymore, and not, for example, not to smoke one day or to leave the hookah bar / cafe and come back another day to smoke)?

- Yes
- No

29. Was your intention to quit smoking hookah successful?

- Yes
- No

30. Why have you decided to stop smoking hookah no matter if your try was successful or not? You can choose more answers.

- I experienced breathing difficulties
- My parents / custodians encouraged me to stop
- I did not like it

- I did not have enough money to provide hookah
- I am worried for my health
- Other (please specify)

31. Have you EVER used hookah to smoke any other non-tobacco product (even one or two puffs)?

- Yes
- No (please, skip to question 30)

32. Which non-tobacco product have you smoked via hookah?

Please type your answer. _____

- I prefer not to say

33. In your opinion, what is / which are the main reason/s behind the current surge of hookah popularity in Sarajevo? (You can choose more than one answer that you think is applicable or write them if they are not already mentioned below)

- Boredom
- Lack of other entertainment sources
- Existing high prevalence of cigarette smoking
- Using hookah as „pleasure“ activity
- Flavor / aroma of hookah itself
- Influence of immigrants
- Need for relaxation
- Increased availability
- Peer pressure
- Other reasons: _____

Beliefs of hookah smoking among youth in Sarajevo.

This section will ask you about your beliefs about hookah smoking. Please, click the box next to the answer of your choice.

34. Hookahs have an efficient filtration mechanism.

- True
- False

35. The fruit flavor in hookahs detoxifies the smoke.

- True
- False

36. The amount of cancerous substances is lesser in hookah smoke compared to the amount of cancerous substances in cigarette smoke.

- True
- False

37. The amount of nicotine is lesser in hookah smoke compared to the amount of nicotine in cigarette smoke.

- True
- False

38. Hookah smokers practice hookah smoking more than once a daily.

- True
- False

39. Hookah smoking is less toxic to the human organism.

- True
- False

40. It is possible to stop hookah smoking at any time (by stopping we mean that you do not smoke hookah anymore, and not that you for example leave hookah cafe or bar and come back another day to smoke).

- True
- False

You have come to the end. Thank you for participating in this survey. Should you have any questions about the study results, do not hesitate to contact me or the Association for addiction prevention NARKO-NE (contact details are written on the first page).

Luka Gabrić, *Master of Public Health candidate*
Association for addiction prevention NARKO-NE

CONSENT FROM PARENTS / CUSTODIANS IN BOSNIAN

SAGLASNOST RODITELJA

Dragi roditelji/staratelji, Udruženje za prevenciju ovisnosti NARKO-NE provodi istraživanje o znanju, stavovima i upotrebi nargile. Podatke za istraživanje prikupljamo kroz online anketu koje će popunjavati 500-1000 mladih s područja Kantona Sarajevo. Molimo Vas za saglasnost da i Vaše dijete popuni ovu anketu. Anketa je u potpunosti anonimna i ne bilježi podatke po kojima bi ga_ju neko mogao prepoznati. Popunjavanje se vrši online, a traje 15 do 20 minuta. Aktiviranje linka ili prosljeđivanje linka svom djetetu podrazumijeva da ste saglasni da dijete sudjeluje u istraživanju. Teme koje će biti obuhvaćene istraživanjem su: znanje, stavovi i praksa upotrebe nargile. S obzirom da ne postoje jasni, aktuelni i sistematični podaci na osnovu kojih se mogu donijeti zaključci o ovoj temi, istraživanje bi predstavljalo prvi korak u dobivanju realne slike, na osnovu koje je moguće planirati mjere prevencije i intervencije. Za provedbu istraživanja imamo saglasnost Ministarstva za obrazovanje, nauku i mlade Kantona Sarajevo. Rezultati će biti na raspolaganju svim zainteresiranima, kroz publikaciju i javnu prezentaciju. Ukoliko su Vam potrebne detaljnije informacije, molim Vas da kontaktirate zamjenicu izvršnog direktora NARKO-NE-a, Andreu Mijatović putem mobitela 062 765 441 ili emaila andrea.mijatovic@prevencija.ba.

Jeste li saglasni da Vaše dijete sudjeluje u ovom istraživanju? (Ukoliko ste saglasni, molimo Vas da obavezno kliknete na link za aktivaciju ankete prije nego što kliknete na "Podnesi")

- Da, saglasan_a sam i prosljeđujem svome djetetu link za aktivaciju ankete: <https://docs.google.com/forms/d/e/1FAIpQLScxk93YQrEek0zdileTJK-N-0yn-sgpLS2o2lw2zU057mxYtQ/viewform>
- Ne, nisam saglasan_a