

WATERPIPE TOBACCO SMOKING AMONG FEMALES ATTENDING CAFES IN HELIOPOLIS – CAIRO – EGYPT

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ABSTRACT

Background: The increase in waterpipe tobacco smoking threatens the public health. **Objective:** The purpose of this cross-sectional study was to investigate behavioral, sociodemographic factors and beliefs associated with waterpipe tobacco smoking (WTS) among Egyptian females. **Subjects and Methods:** This study was conducted in ten different cafes and restaurants in Heliopolis – Cairo - Egypt, in which WTS females (n=291) were interviewed using a structured questionnaire. **Results:** The mean age \pm SD of the female participants in this study was 31.65 ± 7.79 years. 8.2% smoked cigarettes only, 35.1% smoked waterpipe only, and 56.7% smoked both types of tobacco. The most common reasons for tobacco smoking by females in this study were curiosity, following the example of their friends and to look mature. Most of the subjects were encouraged to start smoking waterpipes by friends (86%). Among the reasons given for choosing waterpipes over cigarettes were the better smell of the shisha smoke (52%), the belief of its less harmful effect (19%), and to be with friends (19%). 92% of the waterpipe female smokers had high education level, and 90% of them used flavored muassel ($P < 0.05$). 39.3% of the female participants reported wanting to quit waterpipe smoking, but only 34.8% had some quit attempts. The major motivating factors for these unsuccessful trials to quit were health, the expense of smoking and physician advice. Approximately, 50% of the female smokers were unaware that waterpipe smoking causes health hazards. **Conclusion:** Inclusion of waterpipe tobacco smoking in tobacco control interventions may help reduce spread before it becomes an epidemic threatens the health of the society.

Keywords: Waterpipe tobacco smoking, female smokers, Heliopolis – Cairo, public health.

INTRODUCTION

Waterpipe (hookah, shisha, narghile, arghila, goza) is becoming an increasingly popular way of tobacco use worldwide, especially among adolescents and young adults (Jensen *et al.*, 2010; Mzayek *et al.*, 2012; McKelvey *et al.*, 2013; Primack *et al.*, 2013 and Barnett *et al.*, 2014), despite accumulating evidence indicating its adverse health effects (Shaikh *et al.*, 2008; Hakim *et al.*, 2011 and Maziak, 2013).

Many studies reported that there is a remarkable increase in the waterpipe tobacco smoking among young girls and women (Labib *et al.*, 2007; Samet & Yoon, 2010; Koura *et al.*, 2011 and Khalil *et al.*, 2013).

Waterpipe has been considered as a global threat and gives the status of an epidemic (Maziak, 2011). Tobacco smoking using shisha is emerging as a “virulent strain” in the tobacco “epidemic” (Hafiz *et al.*, 2014). It is widely accepted and many cafes and restaurants in the Eastern Mediterranean region including Egypt serve it (Maziak, 2011; Auf *et al.*, 2012 and Haseebullah, 2012). In the United States, 10–20% of some young adult populations are current waterpipe users (Cobb *et al.*, 2010).

Studying the reasons behind the rise in waterpipe tobacco use is important if proper control, prevention, and policy for interventions to be performed. Therefore, this work aimed to

investigate behavioral, socio-demographic factors and beliefs associated with waterpipe tobacco smoking (WTS) among females attending coffee shops and restaurants.

SUBJECTS AND METHODS

For the purpose of this study, an anonymous, self-administered questionnaire, previously developed and evaluated (Labib *et al.*, 2007) was distributed during 2014 in ten waterpipe cafes and restaurants in Heliopolis, Cairo, Egypt. The owners of these cafes were approached for permission to converse to their female customers about smoking and health. A total of 291 females participated in this study. All of them agreed to share in the study and their consents were obtained. The questionnaire included 60 questions that gathered information about demographic factors as well as attitudes, knowledge, and practice of waterpipe and cigarette smoking. The frequency of smoking, age at initiation, reasons for smoking, and quitting attempts were evaluated. The questionnaire presented eight tobacco-health related statements, and participants indicated whether they believed each statement to be true or false.

Statistical analysis was done using statistical package for the social science (SPSS) version 17. Data were presented as mean \pm standard deviation for quantitative variables and percentage for qualitative variables. Association between variables were done using Chi-square

test for qualitative variables. P -value less than 0.05 was considered statistically significant.

RESULTS

The mean age \pm SD of the female participants in this study was 31.65 ± 7.79 years with a range of 16 – 49 years, 42% single, 42% married and 54% employed (Table 1). Self-reported smoking behaviors and socioeconomic characteristics for the studied females were summarized in Table (2). A total of 24 females (8.2%) reported smoking cigarettes exclusively, whereas 102 (35.1%) smoked tobacco using waterpipe exclusively, and 165 (56.7%) used both types of tobacco smoking methods. The mean age of exclusive cigarette smokers was 30.8 ± 8.7 years, compared with 29.5 ± 6.6 years for exclusive waterpipe smokers, and 33.0 ± 8.0 years for smokers who used both types of tobacco products. The mean age \pm SD at initiation of smoking cigarette only was 20.9 ± 5.4 years. For waterpipe only was 21.5 ± 6.3 years, and for both types of tobacco smoking was 21.4 ± 5.9 years. 67% of the single and divorced females (n=165) reported that their fathers did not supervise their time at home. 69% did not participate in sports, and 64% reported that some or all of their friends were current smokers.

The most common reasons for tobacco smoking by females in this study were curiosity (34%), following the example of their friends (20%), and to look mature (19%, Table 3). Other reasons included pleasure, to relieve stress, and desire to look attractive. 63% of the participants females reported smoking primarily outside the home. 98% reported that their smoking habit was known to their friends, and 43% to their colleagues. Approximately, 50% of the female smokers had knowledge that smoking causes health hazards such as cancer lung, bronchial asthma, heart disease, hypertension and tooth color.

Table (4) showed the characteristics and believes of waterpipe female smokers. 25% of them only owned a waterpipe at home. Frequency of smoking in the past year had increased in a 31.5%, decreased in 15.7%, and stayed the same in 49.4%. Most of the subjects were encouraged to start smoking waterpipes by friends (86%). Among the reasons given for choosing waterpipes over cigarettes were its better smell (52%), the belief that waterpipes were less harmful than cigarettes (19%), and the desire to be with friends in the cafes (19%).

Table (5) showed that females who smoked waterpipe only or cigarette and waterpipe were approximately equal at age 16-25 years. In contrast, significant increase in cigarette and waterpipe group was observed at the age groups 26-36 years and >36-49 years, $P = 0.004$.

92% of waterpipe female smokers had high education level (university certificate, Table 1). 85.7% of them started waterpipe smoking at 15-30 years (Table 6). 92% of them visited the café 2 - 7 days per week, once daily (79.1%), and 16.1% used waterpipe daily (Tables 7&8). Table (9) showed that flavored muassel was the type of waterpipe muassel smoke significantly used by 90% of all age groups. Also, 90% of university educated females used flavored muassel.

44.6% (n=119) of the female participants believed that they could quit whenever they want. 39.3% (n=105) of them reported wanting to quit waterpipe smoking, but only 34.8% (n=93) had some quit attempts (Table 10). The major motivating factors, for these unsuccessful trials to quit were health, the expense of smoking, physician advice and religious believes. The duration of these quit attempts showed that 29% managed to be smoke free for only 1–6 days, and another 45% remained free of smoking for 1 week to 1 month.

Table (1): Demographic characteristics of the female participants (N=291)

Demographic characteristics	Number of subjects	%
Age groups (years)		
16-25	75	25.8
26-36	123	42.2
>36-49	93	32.0
Range	16 - 49	
Mean \pm SD	31.65 \pm 7.79	
Marital status		
Single	123	42.3
Married	123	42.3
Divorced	42	14.4
Widowed	3	1.0
Occupation		
Employed	159	54.6
Unemployed	108	37.1
Students	24	8.3
Educational level		
Primary school	6	2.3
Secondary school	15	5.7
University	240	92.0
Total	261	100

Table (2): Female smoking and social behavior (N=291).

Characteristics	Mean age \pm SD	Number of subjects	%
Type of smoking			
Cigarettes only	30.8 \pm 8.7	24	8.2
Water pipes only	29.5 \pm 6.6	102	35.1
Both types	33.0 \pm 8.0	165	56.7
Age of initiation			
Cigarettes only	20.9 \pm 5.4		
Water pipes only	21.5 \pm 6.3		
Both types	21.4 \pm 5.9		
Parental supervision			
Father not at home		111	67
Mother not at home		42	25
Involved in sports			
Yes		89	30.9
No		202	69.1
Friends smoking			
None are smokers		83	28.5
Some or all smoke		187	64.3
Not sure		21	7.2

Table (3): Attitudes toward tobacco smoking among female participants (N=291).

Attitude of smokers	Number of subjects*	%
Reasons for smoking		
Sign of maturity	57	19.6
Curiosity	99	34.0
Pleasure	48	16.5
To look attractive	21	7.2
To relieve stress	48	16.5
Example in father or older brother	18	6.2
Example in friends	60	20.6
Place of Smoking (n=189)		
At home with family members in the same room	24	12.7
At home in another room	12	6.3
At home close to the window	30	15.9
At home on the balcony	81	42.9
Outside the home	120	63.5
Who knows you are smoking? (n=189)		
Family members	42	22.2
Friends	186	98.4
Colleagues	81	42.9
Nobody	6	3.2
Knowledge that smoking causes health hazards (N=291)		
Cancer lung	168	57.7
Bronchial asthma	168	57.7
Otitis	117	40.2
Hypertension	135	46.4
Heart disease	150	51.5
Tooth color	150	51.5
Impotence	114	39.2

* Multiple responses per subject allowed.

Table (4): Waterpipes smoking characteristics of females smoking water-pipes alone or along with cigarettes (N=267).

Behavior	Number of subjects	(%)
Using water pipe in the home	69	25.8
Pattern of smoking during the last year		
Increased smoking	84	31.5
Decreased smoking	42	15.7
Stayed the same	132	49.4
Do not know	9	3.4
Introduced to water pipe smoking by		
Relatives	25	9.4
friends	230	86.1
Nobody	12	4.5
Reasons for choosing water pipes over cigarettes		
It is less harmful	51	19.1
To decrease smoking hours	21	7.9
It is fashionable	33	12.4
It has a better smell	141	52.8
To be with my friends	51	19.1
Other reasons	6	2.2

Table (5): Association between age and type of smoking.

Age groups (years)	Type of smoking		Total
	Water pipes only	Cigarettes & Water pipes	
16 -25	34	33	67
26-36	45	62	107
>36-49	23	70	93
Total	102	165	267

P = 0.004

Table (6): Association between educational level and age of starting waterpipe smoking.

Educational level (certificate)	Age of starting waterpipe smoking (years)					Total
	10 – 14	15 – 19	20 – 24	25 – 30	>30	
Primary school	3	3	0	0	0	6
Secondary school	0	7	5	3	0	15
University	12	44	106	30	18	210
Total	15	54	111	33	18	231

P < 0.001

Table (7) : Association between education level and days of water- pipe smoking per week.

Education level (certificate)	Days of waterpipe smoking per week							Total
	1	2	3	4	5	6	7	
Primary school	0	0	3	3	0	0	0	6
Secondary school	0	3	3	3	3	0	2	14
University	9	15	24	15	30	6	19	118
Total	9	18	30	21	33	6	21	138

P < 0.02

Table (8) : Association between education level and times of waterpipe smoking per day.

Education level (certificate)	Times of waterpipe per day					Total
	1	2	3	4	8	
Primary school	6	0	0	0	0	6
Secondary school	7	6	0	0	2	15
University	95	9	6	6	4	120
Total	108	15	6	6	6	141

P < 0.01

Table (9): Association between age, education and type of muassel smoke.

Age and Education level	Type of waterpipe smoke			Total	P value
	Ordinary Muassel	Flavoured Muassel	Tombak		
Age groups (years):					
16 -25	3	64	0	67	< 0.05
26-36	15	92	0	107	
>36-49	9	84	0	93	
Total	27	240	0	267	
Education level					
Primary school	0	6	0	6	< 0.05
Secondary school	5	10	0	15	
University	22	218	0	240	
Total	27	234	0	261	

Table (10): Quitting behavior among waterpipe female smokers (N=267)

Aspect of quitting	Number of subjects	%
Wants to stop smoking	105	39.3
Thinks she would be able to stop smoking	119	44.6
Had some quit attempts in the past	93	34.8
Reasons for trying to quit (n=93)		
Health	74	79.6
Expense of smoking	62	66.6
Family pressures	12	12.9
Doctors' advice	21	22.6
Religious reasons	18	19.4
A friend stopped	9	9.7
Duration of quit attempts (n=93)		
< 1week	27	29.0
1week to 1month	42	45.2
1month to 6 months	18	19.4
> 6 months	6	6.4

DISCUSSION

Waterpipe tobacco smoking has become a global public health problem (*Maziak, 2013*). The prevalence of WPT in the Middle East region and worldwide is increasing (*Maziak, 2011; Nakkash et al., 2011 and Khattab et al., 2012*). The aim of this study was to investigate the causes behind the rapid rise of waterpipe smoking among females attending cafes and restaurants in Egypt.

The most common reasons for initiation of tobacco smoking by females in this study were curiosity (34%), influences from friends (20%), and to look mature (19%). Other reasons included pleasure (16%), to relieve stress (16%), desire to look attractive and following the examples of their fathers. *Labib et al. (2007)* study reported that the most common factors for initiation of smoking among female students were pleasure (48%), curiosity (43%), and following the example of their friends (41%). *Portnoy et al. (2014)* found that youth curiosity about cigarette was 28.8%, and curiosity was associated with various forms of tobacco advertising. Pleasure (*Binnal et al., 2013*), peer pressure (*Harakeh and Vollebergh, 2012*), to be attractive (*Salameh et al., 2008*) and smoking of the parents (*Scherrer et al., 2012*) has been reported as dominant factors that initiated tobacco smoking among adolescents.

The present results revealed that the majority of waterpipe smoking females preferred the use of waterpipe due to the better smell of its smoke. These findings were similar to those of *Maziak et al. (2004 & 2007)* who reported that many young waterpipe users are attracted to the aromatic smell of waterpipe smoke. The flavored waterpipe muassel was the type of smoke significantly used by the university educated females and all age groups in this study. Muassel or ma'assel is a moist, sweetened, and flavored tobacco mixture. Any flavor as fruit (e.g., strawberry, apple, peach), or candy flavors (e.g., vanilla, chocolate) were available.

A common belief among waterpipe female smokers in this study is that shisha use is less harmful than cigarettes. Other reasons given for smoking shisha instead of cigarettes were the desire to be with friends in the cafes and the perception of the water pipe as fashionable. These findings were in agreement with the studies of *Labib et al. (2007)*, *Khalil et al. (2013)*, *Klassen et al. (2013)* and *Griffiths & Ford (2014)*.

In the present study, 86% of the female participants were introduced to water-pipe smoking by their friends. Similar studies highlighted the important effect of friends for starting shisha smoking. The study of *Labib et al. (2007)* in Egypt showed that 56.6% of female students encouraged by their friends to smoke waterpipe. 87% of Jordanian students smoked hookah with their friends (*Dar-Odeh et al. 2010*). Other investigators stated that most of shisha consumers started smoking for the first time with their friends in cafes (*Alzyoud et al., 2013 and Mohammad Poorasl et al., 2014*).

Jensen et al. (2010) and Mzayek et al. (2012) studies suggested that waterpipe tobacco smoking may be, for some individuals, a precursor to cigarette smoking, likely because of its emphasis on flavored tobacco and social settings for use (*Smith-Simone et al., 2008 and Mzayek et al., 2012*). Results of the present study showed that the number of females who smoked waterpipe only or waterpipe and cigarette were approximately equal at age 16-25 years. In contrast, significant increase in waterpipe and cigarette group was observed at the age groups 26-36 years and >36-49 years. This suggests that young females attracted to waterpipe smoking may act as a precursor to cigarette smoking, because both methods of tobacco smoking contain nicotine and create dependence to nicotine (*Weglicki et al., 2008*).

The present results revealed a great frequency of use of waterpipe among young girls and women, with high education. The mean age \pm SD of females at initiation of waterpipe smoking only was 21.5 ± 6.3 years, and was 21.4 ± 5.9 years for smokers who used both waterpipe and cigarettes. They reported that they use waterpipe primarily outside the home in cafes (63%) with friends. The frequency of smoking in the past year had increased in a 31.5% and stayed the same in 49.4% of the female participants. 92% of the waterpipe female smokers had high education level (university certificate). 85.7% of them started waterpipe smoking at 15-30 years. 92% of them visited the café 2 - 7 days per week, once daily (79.1%). 16.1% used waterpipe daily. In consistent with the present findings, several studies reported daily waterpipe tobacco use among youth (*Parna et al., 2008; Primack et al., 2010 & 2013 and Hampson et al., 2013*). *El-Gilany et al. (2008)* reported 10.4% daily waterpipe use among youth in Egypt.

The present research showed that about 50% of female participants had no knowledge about the adverse health effects of waterpipe smoking as

cardio-vascular disease, chronic obstructive pulmonary disease, and lung cancer. The association of these cardiorespiratory hazards with shisha smoking were reported by *Shaikh et al. (2008)*, *Hakim et al. (2011)* and *Cobb et al. (2012)*. Waterpipes deliver tar, nicotine, and carbon monoxide in even higher doses than cigarette (*El-Nachef & Hammond, 2008* and *Eissenberg & Shihadeh, 2009*). Shisha smoke contains polyhydrocarbons, formaldehyde, acetaldehyde, nitrogen, nitric acid and nicotine (*Shihadeh and Saleh, 2005*), and other toxicants such as arsenic, chromium, lead and volatile aldehydes (*Al Rashidi et al., 2008; Katurji et al., 2010* and *Schubert et al., 2011*). Other health risks include the spread of infectious diseases such as tuberculosis due to the sharing of the waterpipe among smokers (*Steentoft et al., 2006* and *Chandir et al., 2010*), infertility (*Irene et al., 2011*), dental problems (*Dar-Odeh & Abu-Hammad, 2009* and *Akl et al., 2010*). Numerous studies suggest that people are unaware of these dangers and believe that shisha is less harmful and less addictive than cigarettes (*Roskin & Aveyard, 2009; Sutfin et al., 2011; Grekin & Ayna, 2012* and *Holtzman et al., 2013*).

Several studies indicated that most waterpipe smokers did not consider themselves nicotine addicted and believe that they can quit shisha smoking at any time (*Poyrazoglu et al., 2010, Amin et al., 2012* and *Akl et al., 2013*). The present work revealed that 44.6% of the interviewed waterpipe female smokers believed that they could quit smoking whenever they want, and 39.3% of them reported wanting to quit their smoking habit, but only 34.8% had tried some unsuccessful quit attempts. The duration of these quit attempts was rather brief, overall: 29% managed to be smoke free for only 1–6 days, and another 45% remained free of smoking for 1 week to 1 month. The major motivating factors to stop waterpipe smoking were health, the expense of smoking, physician advice and religious beliefs. Similar results were reported by *Labib et al. (2007)* and *Heinz et al. (2013)*. *Caponnetto and Polosa (2008)* reported that the longer a person smokes shisha, the greater is the nicotine dependency, and consequently is harder to quit tobacco smoking.

CONCLUSION

Waterpipe smoking is spreading rapidly, especially among young girls and women in Cairo, Egypt. Due to a widespread public perception that WTS is less harmful and addictive than cigarettes, waterpipe smoking was considered socially acceptable way to have fun

and entertainment among female friends. This wrong perception leads to dramatic increase in number of cafes that provide an attractive social atmosphere, enjoyment of the different flavors of smoke, perception of smoking in public as a fashion symbol and encouragement by seeing highly educated females using waterpipe. This misconception leads to difficulty to quit waterpipe due to early initiation of waterpipe smoking among youth, long duration of smoking, and nicotine dependency. Interventions should be rapidly done to stop the spread of shisha smoking before it becomes an epidemic threatens the health of the society.

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الملخص العربي
تدخين الشيشة بين الإناث المترددات على مفاهى
مصر الجديدة – القاهرة- مصر
ريهام يسرى الأمير
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خلفية البحث: تهدد الزيادة في تدخين الشيشة الصحة العامة.

هدف البحث: دراسة العوامل السلوكية والإجتماعية والمعتقدات المرتبطة بتدخين الشيشة بين الإناث في مصر.

مواد وطرق البحث: تمت هذه الدراسة في عام ٢٠١٤ ، حيث أجريت مقابلات وعمل إستبيان لعدد ٢٩١ من الإناث اللاتى يقمن بتدخين الشيشة في عشرة مفاهى ومطاعم مختلفة بمصر الجديدة – القاهرة – مصر.

النتائج: أظهرت نتائج البحث بأن متوسط عمر المشاركات في هذه الدراسة كان 31 ± 7 سنوات. وكانت نسبة المدخنات ٨ ٪ للسجائر فقط ، و ٣٥ ٪ للشيشة فقط ، و ٥٦ ٪ لكلا النوعين من التبغ. وكانت الأسباب الأكثر شيوعا لتدخين التبغ من قبل الإناث في هذه الدراسة الفضول ، ومثال أصدقائهن ، وأن تبدين ناضجات. وكان تشجيع معظم النساء للبدء في تدخين الشيشة من قبل الأصدقاء في ٨٦ ٪ من الحالات. وكان من بين أسباب اختيار و تفضيل تدخين الشيشة على السجائر ، رائحة دخانها الأفضل (٥٢ ٪)، والإعتقاد بأنها أقل ضررا (١٩ ٪) ومصاحبة الأصدقاء (١٩ ٪). ولقد وجد بدلالة إحصائية أن ٩٢ ٪ من المدخنات لديهن مستوى عالي من التعليم ، وأن ٩٠ ٪ منهن يستخدمن المعسل ذو النكهة. وأفادت ٣٩ ٪ من الإناث المشاركات عن رغبتهن في الإقلاع عن تدخين الشيشة ، ولكن ٣٤ ٪ منهن فقط خضعن لبعض المحاولات غير الناجحة للإقلاع. وكانت الصحة ، وتكاليف التدخين، ونصيحة الطبيب من العوامل الرئيسية المحفزة للإقلاع. وكان هناك ما يقرب من ٥٠ ٪ من المدخنات لايعلمن بأن تدخين الشيشة يسبب مخاطر صحية عليهن.

الإستنتاج: نخلص من هذه الدراسة أنه يجب إدراج تدخين تبغ الشيشة في تدخلات مكافحة التبغ مما قد يؤدي إلى تقليل إنتشاره قبل أن يصبح وباءً يهدد صحة المجتمع.