

RESEARCH ARTICLE

Prevalence of Dokha Use among Secondary School Students in Ajman, United Arab Emirates

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Abstract

Background: Dokha is a novel form of smoking in United Arab Emirates (UAE) on which there is very little published literature, especially among adolescents, and this form of smoking has been not been addressed adequately in the smoking cessation strategies in the UAE. **Objectives:** To assess the prevalence of dokha smoking among male secondary school students in Ajman UAE. **Materials and Methods:** A cross sectional survey was conducted among male secondary school students in Ajman, UAE. A total of 560 participants filled in self-administered questionnaires. **Results:** The prevalence of ever smokers was 39%; ever dokha smokers was 36% and current dokha smokers was 24%. The prevalence is very high when compared to other forms of smoking in the region and globally. Prevalence increased with increasing age and grade of students, prevalence of ever smokers, ever dokha smokers and current dokha smokers was lower in students in the science stream. 40% of the smokers used dokha, cigarettes and shisha, 30% used dokha and cigarettes, and 21% used dokha alone. 30% of the students smoked dokha on all days of the month. **Conclusions:** The prevalence of ever smokers, ever dokha smokers and current dokha smokers is very high. There is an urgent need for specific health promotion programs tailored to this age group on prevention of dokha smoking and policies restricting the availability of dokha to this age group.

Keywords: Dokha - smoking - prevalence - male secondary school students

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Introduction

Globally tobacco use causes almost six million deaths each year, and by 2030 the number of deaths is estimated to be more than 8 million (WHO, 2013). 10% of all deaths due to cardiovascular diseases, 22% of all cancer deaths and 36% of all deaths from diseases of the respiratory system are attributed to tobacco use (WHO, 2012). Cardiovascular diseases are increasing globally as well as UAE and it is a leading cause of death in the UAE (HAAD health statistics, 2011; Hajat et al., 2012) and of the “Big four” public health issues identified in the UAE (Loney et al., 2013) three of them viz. cardiovascular disease, cancers and respiratory disorders have direct links to smoking, thereby making it a number one priority issue to be addressed urgently. Risk behaviors such as smoking, begins at a younger age and is known to increase the risk of chronic diseases later on in life (CDC, 2013) and on an average, smokers die 13 to 14 years earlier than nonsmokers (WHO, 2011).

Dokha is smoked using a pipe with a small cup popularly known as Midwakh. The cup can hold approximately 0.5 grams of dokha for each use. Typically smokers need two inhalations to completely burn the dokha before it needs to be refilled; a smoker typically smokes twelve times in a day which is the equivalent of

smoking about six grams of dokha a day (Al-Houqani et al., 2012). A recent study among multi ethnic high school students in Dubai revealed that 23.4% of the students were current users of tobacco and 54.8% of the current tobacco users were dokha smokers which was much higher than cigarettes 23% and shisha 22.2% indicating that dokha is a popular option for these youngsters. Another important finding of this study was that among all current tobacco users, the average reported Hooked On Tobacco Checklist (HONC) score (scale range 0-10) was 4.2 with a standard deviation of 3.0 where scores above zero indicate increasing loss of control over use which may reflect the addictive potential of this form of smoking (Crookes and Wolff, 2014). The single largest study on dokha use among adults in the UAE reported the prevalence of smoking in Abu Dhabi to be about 25% and dokha was found to be the second most common form of smoking (15%) after cigarettes (77.4%) (Al-Houqani et al., 2012). A study among medical university students in Ajman UAE showed that the prevalence of dokha smoking was 25% (Jayakumary et al., 2010).

There is no study till date on the chemical analysis of dokha, the general description on dokha bottles indicates that it is a tobacco product with the amount of nicotine specified on it; the labels also indicate the nicotine content. Only one study among 97 dokha users showed

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that smoking dokha has an acute effect on the heart rate, systolic blood pressure and respiratory rate similar to that seen in cigarette and shisha smokers (Shaikh et al., 2012).

Smoking dokha is attractive to younger age groups because dokha is cheaper than smoking cigarettes as a week's supply of dokha is about \$3USD compared to \$21 USD for the cigarettes (Al-Houqani, 2012). Other reasons are lack of odor, absence of staining of lips, and it is quicker (Shaikh et al., 2012), thereby the smoker can practice quick smoking more secretly.

There is ample scientific evidence about pattern of use, health effects and cessation efforts of cigarettes; however, it is apparent that alternative forms of tobacco products pose significant health risks and warrant attention. Alternative tobacco products such as dokha may also serve as the first step to long-term tobacco use. Although dokha is a common form of smoking in UAE, there is little literature on the prevalence of dokha use among secondary school students. Behaviors are determined in this age group and it is imperative to intervene at this stage. This study will shed some light on the prevalence of dokha use among male secondary school students in the public schools in Ajman UAE.

Materials and Methods

A cross sectional survey was conducted among 560 male secondary school students in grades 10, 11 and 12 in Ajman by multistage stratified random sampling from six public schools for boys with approximately 400 students in each school, divided into approximately 5 divisions in each grade and approximately 25-27 students in each class. By simple random sampling four schools were selected, but two schools refused to participate. By stratified random sampling two divisions from each grade from each of the other three were selected, consent form was distributed and collected on the following day. Data were collected from all students whose parents signed the consent forms and who were eligible for participation and were present in the class on the date of data collection.

Data was collected using a twenty nine item self administered questionnaire that was translated to Arabic. The questionnaire was based on the Global Youth Tobacco Survey (GYTS) and modifications were made to collect the information on dokha smoking. The questionnaire included the demographic profile of participants, questions on prevalence, dokha smoking pattern, risk factors and attitude toward smoking. Content validity was done by three experts involved in tobacco research. In the present paper only the questions on prevalence of dokha smoking is presented.

Operational definitions:

Ever smokers (ES): Those who ever smoked any tobacco product, even one or two puffs. This was based on the question in GYTS questionnaire. (Special report GYTS 2002)

Ever dokha smokers (EDS): Those who ever smoked dokha even one or two puffs.

Current dokha smokers (CDS): Those who smoked dokha on one or more days in the past 30 days. This was

again based in the GYTS definition of current smoker (Special report GYTS, 2002).

The ethics and research committees of Gulf Medical University approved the study. Names were not included in the questionnaires to ensure anonymity. Permission was taken from the heads of the schools and ministry of education Ajman region. Data entered in Microsoft excel and data analyzed Using SPSS version 21.

Results

Demographic profile

The cross sectional study was conducted among male secondary school students by stratified random sampling from three public schools in Ajman UAE. Data were collected from 583 subjects, 23 questionnaires being discarded because of incomplete entry. For the analysis of the data 560 questionnaires were used. Among the participants, majority of the students (30.5%) were 17 years old, only 39 (9%) were aged 19 and 20 years. Almost an equal numbers of students from each grade participated (Table 1).

Tobacco smoking habit

The prevalence of ever smokers (ES) was 39% and the prevalence of ever dokha smokers (EDS) was 36%. The current practice of dokha smoking (CDS) was observed in 24% of the students (Table 2).

The study observed that about 39% were ever smokers. Among them 28% were cigarette smokers, 3% were shisha users and the remaining 8% were dokha users.

Specific Prevalence

The trend observed was that prevalence of ES, EDS and CDS increased with age. The highest prevalence was observed above the age of 18 years in all groups of smoking habitués. A similar trend was observed in the case of grades. Compared to science discipline students, other discipline students used more tobacco. The details are given in Table 3. As age increased the proportion of ever smoking and ever dokha smoking and current dokha smoking increased (Figure 1).

Further questions were asked among the current dokha smokers about the use of dokha in combination with other types of smoking. The data showed, more (40.5%) dokha

Table 1. Distribution of Age, Grade and Nationality

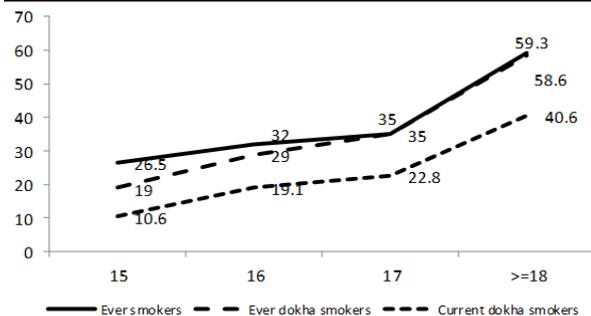
Variable	Group	No	%
Age in years	15	94	16.8
	16	162	28.9
	17	171	30.5
	18 and above	133	14.8
Grade	10	176	31.4
	11	192	34.3
	12	192	34.3

Table 2. Distribution of Ever Users and Current Users

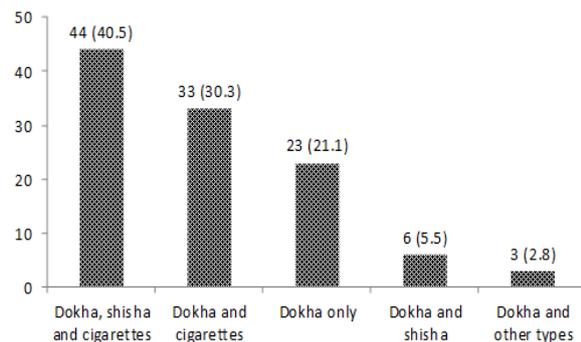
Type of smoking	Number	Percentage
Ever smokers	218	38.9
Ever dokha smokers	203	36.3
Current dokha smokers	134	24.1

Table 3. Age Specific Prevalence of Tobacco Smoking

Variable	Group	Prevalence (%)		
		Ever smokers	Ever dokha smokers	Current dokha smokers
Age in years	15	26.5	19	10.6
	16	32	29	19.1
	17	35	35	22.8
	18 and above	59.3	58.6	40.6
Grade	10	31	28.4	20.4
	11	39.5	33.8	21.3
	12	45	45.8	29.6
Discipline	Science	32.7	26.2	16.3
	Others	46.9	46	29.7

**Figure 1. Prevalence of Smoking Habit Over the Years.**

As age increases the proportion of ever smoking and ever dokha smoking and current dokha smoking increased

**Figure 2. Pattern of Dokha Use Along with Other Types of Smoked Tobacco**

smokers use shisha and cigarettes as well. Dokha smoke only was reported by only 21.1%. The details are given in Figure 2.

Discussion

The study was conducted in public schools in Ajman where approximately 80% of the students are locals and the remaining 20% are other Arabs. The prevalence of ever smokers, ever dokha smokers and current dokha smokers is very high in the present study. There is not much difference between ever smokers and ever Dokha smokers indicating that Dokha is the emerging trend among youngsters in the UAE. A recent study among high school students from Dubai UAE indicated the popularity of dokha when compared to cigarettes where among the current users of tobacco dokha users were more than double the numbers of cigarette users (Crookes and Wolff, 2014). rs of cigarette users (Crookes and Wolff, 2014). Thus far most surveys carried out among school children

in the region have not reported the use of dokha (John and Muttappallymyalil, 2013). UAE GYTS showed that the prevalence of ever smokers was 20.9% and current smokers were 29.7% among school boys (WHO, 2010). The 2013 global report on tobacco epidemic indicated that 15.6% of the youth were current cigarette users and 21.3% were current tobacco users (WHO, 2013), this 21.3% may include dokha and Shisha users.

Prevalence of ever cigarette smoking among high school students ranged from 14.4% in Oman to 23.9% in Bahrain (Al-Mulla et al., 2008), (21.7%) in secondary school students of Saudi Arabia (Amin et al., 2011) and 29.6% in High-School students from Greece (Lazaros et al., 2009). A study of 635 students in rural secondary schools in the Nile Delta region found that 11.5% of male students reported current smoking (Harbour, 2011). In our study the prevalence of ever smokers is 38.9% and ever dokha smokers is 24% which is much higher than most other studies on different forms of smoking among high school students. One of the reasons for the prevalence to be higher in our study when compared to GYTS data and other studies is that we included male secondary school students from grade 10 to 12, where as the GYTS included students from grade 7 to 10 of both genders.

In our study the prevalence of smoking increased with age among ever smokers, ever dokha smokers and current dokha smokers. Ever smokers almost doubled from age 15 (26.5%) to 18 years (59.3%), ever dokha smokers almost tripled from age 15 (19%) to 18 years (58.6%), and current dokha smokers also almost quadrupled from 15 (10.6%) to 18 years (40.6%). According to the WHO report on the global tobacco epidemic 2013, current tobacco use is 21.3% among youth and 28.1% among adults (WHO 2013). A survey among high school boys in England also shows that the prevalence of regular smoking increases with age, from 0.5% of eleven year olds to 11% of fifteen year olds (The Information Centre for Health and Social Care, 2011). In Abu Dhabi data from the Weqaya screening program showed that the smoking rate for 18-20 year olds was 16%, for 20-29 year olds was 27% and for 30-39 year olds was 28% (Al-Houqani et al., 2012).

In our study we found that the number of ever smokers, ever dokha smokers and current dokha smokers increased with increasing grades with almost half of the boys (45.8%) being ever dokha smokers and almost one third (28.4%) being current dokha smokers in grade 12. This trend is similar to the CDC analyzed data from 2000 to 2009 from the National Youth Tobacco Survey where 8.2% of middle school students and 23.9% of secondary school students were smokers (CDC, 2010). In grade 11, the students in UAE have the option to choose the science stream or other streams such as arts and commerce. On comparing science students with other students we found that science students had fewer ever smokers, ever dokha smokers and current smokers when compared to students who took other streams, this finding is in contrast to the findings of the study in Riyadh, Saudi Arabia 2011 that showed smoking to be significantly higher in the science students when compared to others (Nohair, 2011).

In our study we found that most of the dokha smokers smoke all 30 days (32.8%) while in Iraq 2013 they found

that majority of the students (38%) smoked for 1 to 2 days in the last 30 days and only 19.6% smoke everyday (Hussain and Satar, 2013). Study done in Saudi Arabia 2007 showed that most of the students (52%) smoked for 1 to 2 days in the last 30 days and only 6% smoke every day, and most of them smoked more than 4 times a day 29.1% and 2.4% prefer to smoke more than 20 cigarettes a day (Abdalla et al., 2007) 24.6% of young hookah smokers in Pune India smoked every day (Kakodkar and Bansal, 2013). In the order of cost, Shisha is most expensive, followed by cigarettes, then Dokha. The low cost of Dokha may be a reason for the more frequent use.

In conclusion, the alarming increase in the number of Dokha smokers among school students in both the current study, which included predominantly local students, and the Dubai study (Crookes and Wolff, 2014) among predominantly expatriate students is a disturbing trend. Dokha smoking is not only a menace by itself but is also can serve as a gateway for other forms of smoking such as shisha and cigarettes. The present ban on cigarettes and shisha is not enough; there should be a ban all tobacco products including Dokha.

Although the study was conducted in one of the smaller emirates of the United Arab Emirates the results are valuable as more than 80% of the participants were UAE local students, we recommend a nationwide survey on dokha smoking to be conducted among school children of all nationalities. The study highlights the fact that dokha is an emerging alternate tobacco product which warrants urgent action targeting school students.

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