

# Effect of Smokeless Tobacco (Madgha) on Spirometry

Shazly B. Ali<sup>1,\*</sup> and Rania M. Eid<sup>2</sup>

<sup>1</sup> Chest Department, Faculty of medicine, Aswan University, Aswan, Egypt

<sup>2</sup> Physiology Department, Faculty of medicine, Aswan University, Aswan, Egypt

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**Objective** smokeless tobacco (Madgha) wide used in upper Egypt, Sudan and many countries, it has effects on multi systems, respiratory system one of them, presented on spirometry

**Patients and Methods** A spirometry was performed as a routine standard investigation for 100 patients aged between 28 and 67 year-old; 86 men and 14 women, from Southern Egypt and Northern Sudan. Madgha is a chewable type of smokeless tobacco, one pinch = about 2 grams putted between lower lip and gum for about 15 minutes.

**Results** spirometry result, normal (28%), mild obstruction (16%) moderate obstruction (26%) sever obstruction (30%).

**Conclusion** There is a strong relation between increase of Madgha use and obstructive defect of pulmonary function.

**Keywords:** smokeless tobacco, Madgha, Madgha index, spirometry

## 1 Introduction

Smoking is considered the most important preventable cause of death, historically smoking was transformed from Native American by sailors to Europe in the late 15th and early 16th centuries. By the beginning of the 17th century, tobacco was being grown in India, China, Japan, Southeast Asia, the Middle East, and West Africa. (Britannica academic). Smokeless tobacco has many forms for use (Snuff, Chewing tobacco, etc...) also different names in different countries (Madgha in Egypt, Shamma in KSA, Saot in Sudan, tombak in Yamane). Many studies were done in this hot area to evaluate the hazards effects of different smoking types either locally or systemically (cardiovascular, chest, CNS, Cancers of the oral cavity and hypopharynx were highly common in south-central Asia, especially in India (associated with smokeless tobacco) (3), additionally smokeless tobacco (SLT) use is a risk factor for oral cancer in South Asia (6), smokeless tobacco products affected the growth of some types of oral bacteria, which may affect the healthy ecological balance of oral bacteria in humans. (1), Smokeless has considerable percent in this effects especially because it contains a high amount of nicotine comparable to cigarette (5). Our study was conducted to evaluate the effect of smokeless tobacco on pulmonary function test (spirometry) and make evaluation index for the (SLT).

## 2 Patients

Between May and December; 2016, at Aswan university hospitals and a private clinic in Aswan city, Egypt. A

spirometry was performed as a routine standard investigation for 100 patients aged between 28 and 67 year-old; 86 men and 14 women, from Southern Egypt and Northern Sudan. At outpatient clinic patients presented with symptoms of pulmonary diseases in the form of dyspnea, cough, expectoration, and wheeze. For each patient, detailed history of smokeless tobacco (Madgha) was taken and patient with interstitial lung diseases, bronchiectasis, cardiac patient, hepatic patient and renal patient was excluded and the spirometry was applied after full instructions of test performance two week after symptoms free.

## 3 Methods

Madgha it is one of chewable type of smokeless tobacco used by patient in Egypt, it contain dried tobacco leaves mixed with stony salty material called (Atron) (ratio 2:1) coming from Aswan and Sudan mountains, if water add to the mixture semisolid material (Saot) will formed.

one pinch = about 2 grams putted between lower lip and gum for about 15 minutes for single use, spitting according to each patient habits. There is no clear index for Madgha use so we create index in the form of (number of pinch per day x number of year of use) and consider mild (< 100), moderate (100-200), and severe (>200)

### 3.1 Statistical analysis

Statistical analysis was used to detect the effect of

\*Corresponding author e-mail: Shazly\_md@yahoo.com

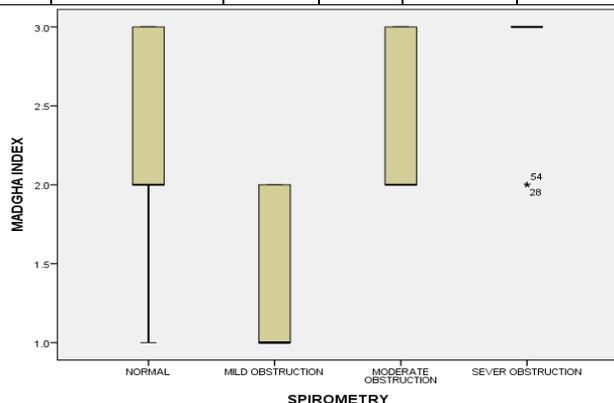
smokeless tobacco on pulmonary function test. All statistical calculations were carried out using computer program SPSS version 23 for Microsoft Windows (Statistical Package for the Social Sciences; SPSS Inc., Chicago, Illinois, USA).

### 4 Results

In this study, we examined 100 patients using Madgha, 86% men and 14 % women, from Southern Egypt 56% and Northern Sudan 34%. All patients underwent routine diagnostic spirometry study, normal (28%)(95% Confidence Interval for Mean = 2.41), mild obstruction (16%) (95% Confidence Interval for Mean = 1.60) moderate obstruction (26%) (95% Confidence Interval for Mean =2.50) severe obstruction (30%) (95% Confidence Interval for Mean =3.03).table 1

**Table 1:** degree of obstruction in relation to patient number

spirometry					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	normal	30	30.0	30.0	30.0
	mild obstruction	14	14.0	14.0	44.0
	moderate obstruction	26	26.0	26.0	70.0
	sever obstruction	30	30.0	30.0	100.0
	Total	100	100.0	100.0	



**Figure 1:** degree of obstruction according to Madgha index.

**Table 2:** frequency of smoking index

smoking index					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	< 100	14	14.0	14.0	14.0
	100-200	40	40.0	40.0	54.0

> 200	46	46.0	46.0	100.0
Total	100	100.0	100.0	

patient according to Madgha index was mild (14%) , moderate (40%) , severe (46%),table2 highest index was observed with drives (22%) and lowest with employees (4%) , salty food was observed as special habits with moderate and sever obstructive patient.(p value<0.00).

### 5 Discussion

Smokeless tobacco used worldwide and is more prevalent in countries of Asia, Africa and the Middle East ,it used in many forms as tobacco dipping, snuff, snus, tobacco gum, dissolvable tobacco, herbal smokeless tobacco, etc. (2) Chewing tobacco is the most prevalent form of smokeless tobacco use in Middle East and Africa with different names, known in Egypt as Madgha. In this study highest Madgha index observed with drives (22%) and lowest with employees (4%)There are several adverse health effects attributable to smokeless tobacco.(4 ,7,8) Many people have not been awarded about nicotine ; such harmful a chemical substance with addicting properties in smokeless tobacco making it similar to smoked tobacco. (8) chewing or sniffing Smokeless tobacco contains several carcinogenic compounds.(9) Smokeless tobacco has been associated with oral cancer, hypertension, heart disease and other conditions.(9). Respiratory system one of these systems should be affected by smokeless tobacco. In current study respiratory function tests using spirometry was performed for (100) patients, showing the followings; normal parameters in (28%), mild obstruction (16%), moderate obstruction (26%) and severe obstruction (30%) fig1.

The findings of this study indicate a strong association between increase index of smokeless tobacco use and decline in pulmonary function test (spirometry), where patients with mild Madgha index have mild obstructive defect while moderate and severe Madgha index have moderate and severe obstructive defects respectively. This study show obstructive defect in PFT similar to cigarette smoking probably because of patient's habits such as long standing of Madgha chewing and sleeping with Madgha in the mouth , However swallowing of Madgha during sleeping may lead to gastritis, GERD, bronchoconstriction , micro aspiration , and excessive salty additive intake, smokeless tobacco have excessive nicotine content. Nevertheless these complications related- smokeless tobacco intake will affect health significantly as much as cigarette smoking in a pattern not only affecting respiratory system but also other body systems.

### 6 Conclusion

There is a strong relation between increase of Madgha use

and obstructive defect of pulmonary function.

## Recommendation

- 1- Medical warning of smokeless tobacco (Madgha) as well as cigarette smoking would increase community awareness of Madgha related-complications.
- 2- Consider much survey plans of smokeless tobacco users in Egyptian community.
- 3- Further studies to shed light on post bronchodilator effect of smokeless tobacco users

## Study limitations

- (1) The effect of smokeless tobacco on PFTs evaluated by spirometry in symptomatizing patients only.
- (2) For cultural and religious believes, many female patients denying smoking or smokeless tobacco, especially in rural areas, a reason led to inappropriate female percentage included in the study.

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## Conflicts of interest

There are no conflicts of inter

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