

## Periodontal Diseases – A Shisha Smoker’s Worst Nightmare

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### Abstract

**Objectives:** To review the effects of smoking shisha on oral health, with particular emphasis on the effects of periodontal diseases. The present study was undertaken to evaluate smoking as a risk factor for periodontal disease in Rawalpindi. A total of 250 patients between the age group of 20 – 55 years with the habit of smoking shisha participated in this study. This was based on gender, age group, frequency and duration of smoking shisha and its effects on periodontal health.

**Methods:** The prevalence of smoking was 77% among men and 33% among women. Among men, the highest prevalence was observed in the youngest age group (20 – 40 years). Among women the highest prevalence was observed in one of the older age groups (46 – 50 years). The levels of plaque and gingivitis were recorded on four sites of all teeth present excluding third molars, using the plaque index (PLI) and gingival index (GI.)

**Results:** Showed increase in gingival inflammation, calculus formation, and bleeding and moderate pocket formation. The duration of smoking had significant influence on periodontal health since smoking for more than 10yrs being more liable for presence of pockets than smokers for > 5 years.

**Key words:** Smoking, Shisha smoking, Risk Factors and Periodontal Diseases.

### Introduction

The hookah practice is striking by its great social, cultural, linguistic, material and geometrical diversity. For instance, the device bears such names as narghile (spelled “nargile” in Turkish), shisha, hookah, goza, madâ,a, qalyân, *etc.* Most of these terms refer to the water vessel in the corresponding languages. Three main smoking mixtures have been clearly identified: moassel, tumbak and jurak.<sup>1</sup>

### Linked with oral health:

The practice of water pipe smoking that is involved in the recent global epidemic involves tobacco that is processed and flavoured and indirectly heated by the charcoal. Epidemiological studies have demonstrated that shisha (tobacco) use is a significant risk factor for the development of periodontal diseases.<sup>2</sup> Disease severity increases with the frequency of (shisha). Shisha accumulate markedly more dental calculus than do non shisha – smokers, and the quantity of calculus is correlated with the frequency of shisha smoking.<sup>3</sup> Shisha smoking is also associated with an increased risk of

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periodontal attachment loss and formation of periodontal pockets, as well as alveolar bone loss.<sup>4,5</sup> The adverse effects of smoking like shisha smoking on the periodontium correlates well with both the quantity of daily consumption and the duration.<sup>5</sup>

Shisha smoking is linked with many serious illnesses, such as cancer, cardiopulmonary diseases, low birth weight, as well as with many health problems.<sup>6,7</sup> It is also linked to a detrimental impact on oral health, such as increasing risk of periodontal (gum) diseases. Numerous studies have also demonstrated role of shisha use on the incidence, prevalence, severity of pocket depth, attachment and alveolar bone loss. Shisha smoking plays a significant role in the development of refractory periodontitis. Shisha smokers have also reported to have poorer success rate with scaling and curettage. Although the nicotine level in shisha smokers are lower,<sup>8</sup> nicotine is only one of over 2000 potentially toxic substances.

### Biochemical Effects

In fact, the smoke of hookah is chemically much less complex than that of cigarettes. This is due to the much lower temperatures to which the tobacco – molasses mixture is subjected: actually hundreds of degrees below that of cigarettes. Notably, and in striking contrast with ordinary cigarettes, a great part of the smoke is made up of water and glycerol when moassel is used<sup>9</sup>. Nicotine smoking have increased levels of salivary antibodies (IgA) and serum IgG antibodies to P intermedia and F Nucleatum. In addition shisha smokers appear to have depressed number of helper T lymphocytes which are important components of the immune systems. In order for the host to efficiently deal with bacterial infection, fully functioned neutrophils are required. Shisha smoking can have deleterious effects on neutrophil functions for e.g. it can impair chemotaxis and phagocytes.<sup>10</sup>

Besides this there are many more components in shisha smoke which could directly damage the normal cells of the periodontium. These deleterious effects can greatly affect the reparative and regenerative potential of the periodontium in shisha users. Another aspect of shisha and its related products relates to their potential abilities to reduce gingival blood flows besides the direct damage to the periodontal tissue.<sup>9</sup>

### Glossary and some common terms

**Bidi (“beedi”):** A tobacco product in the Indian sub-

continent. “Bidis are made of crude sun-dried tobacco wrapped in a dried Tendu (*Diospyros melanoxylon*) leaf”.<sup>11</sup>

**Bowl:** Locally called “chillum”, “chilam”, “ras”, “hagar”, *etc.* The top part of the hookah, containing the smoking mixture. When the latter is tumbak, the charcoal pieces are in direct contact with this product. When it is Moassel (tobamel), a thermal screen made of a tin foil (kitchen aluminium) is inserted between both.

**Hookah:** An ancient pipe traditionally used in Africa and Asia. This word is the one used in Indian, Pakistan and many other English speaking countries. The height of this apparatus can reach 2 m and its suction hose 5 m. The modern version, i.e. the shisha, is smaller (0.75 m an 1.50 m respectively). Hookah is an Arabic word for vase, vessel (i.e. of water).

**Jurak:** A mixture of about 30% tobacco and 70% molasses / honey / glucose syrup and minced fruits. It does not contain glycerol as moassel. It is strong (nicotine), generally black and barely used outside Africa and Asia.

**Moassel:** Also called tobamel (“tob” stands for tobacco and “mel” for honey in Latin). Means “honeyed” in Arabic. A mixture of about 30% tobacco and 70% molasses / honey / glucose syrup plus glycerol and essences. It is much less stronger than jurâk (nicotine): a sort of “light” version of it. It is widely used on all continents now. More recent than jurâk, it appeared in the 1980s.

**Narghile:** It is more a Persian / Iranian and Turkish (“narghile” in Turkish) / Middle East word although it has been and is still widely used in the European languages (Italian, French, Romanian, English, *etc.*).

**Shisha:** It is more an Arabic (Egyptian, Middle East) word although, thanks to the world craze, it is now being used everywhere in the world. It is a word of Persian origin (shishe). It means bottle / recipient (of water). Unlike the “pure” hookah or narghile, the vase of the contemporaneous shisha is made of glass with a typical flask / vial form.

**Tumbak (tumbeki, „ajamy):** Plain tobacco made of moistened shredded leaves, soaked for hours in water before being squeezed and packed in the bowl of the hookah. As jurak, it is strong (nicotine) and barely used outside Africa and Asia.

**Water pipe:** (in two words or, sometimes, separated by a dash). A general term that is acceptable only when there is one sole form of the object or when artefacts using same smoking preparations are compared.<sup>12</sup>

## Results

The results of our study are shown from Table 1 to 6 giving different details and effects of shisha smoking on different periodontal problems. The profession of dentistry makes us deal with people addicted to smoking every day. Different people have different reasons for being enslaved to this habit. Illiterate workers generally are habituated to gutka or paan whereas highly educated corporate workers use Smoking cigarettes and shisha as stress buster or fashion symbol.

**Table 1:** Total number of patients with distribution in both sexes.

Gender	Male	Female
N = 250	167 (66.8%)	83 (33.2%)

The tables 1 showed that in our study a total of 250 shisha smoker subjects were included, out of which 167 (66.8%) were males and 83 (33.2%) were females. This table reflects the trends of shisha smoking in our society where males are predominant smokers and percentage of smoking in females are also increasing.

**Table 2:** The division of patients according to age groups.

Age (Years)	Numbers and Percentage
20 – 25	83 33%
26 – 35	68 27%
36 – 45	65 26%
46 – 55	34 14%

**Table 3:** The division of patients according to their sex.

Age (Years)	Male	Female
20 – 25	27%	6%
26 – 35	20%	7%
36 – 45	18%	8%
46 – 55	2%	13%

The Table 2 gives the division of our study patients in different age groups. This table showed the

majority of our shisha smokers belongs to younger age i.e. between 20 – 25 years, whereas only 14% belongs to older age i.e. between 46 – 55 years. Again this table highlighted the increased trend and used of shisha in younger population.

This Table showed that in all age group except in older age the percentage of shisha smoking is more frequent in males. But some percent is present for females in each group, explaining rise of shisha smoking in females too.

**Table 4:** The relation of shisha smoking with periodontal status.

Periodontal Status	Number of Patients	Percentage
Healthy	110	44%
Bleeding on probing	90	36%
Presence of calculus	35	14%
Pockets 4 – 5 mm	8	3.2%
Pockets 6mm or more	7	2.8%

The Table 4 is very important as it showed the relation and effects of shisha smoking on the periodontal status of study subjects, it showed that 44% of patients had no periodontal disease in spite of shisha smoking while 36% had bleeding problems, 14% had calculus and only 6% had pocket formation. This table signifies the role of shisha smoking with the appearance of different periodontal problems.

**Table 5:** The Duration of shisha smoking.

Duration of Smoking	Number	Percentage
< 2 years	55	22%
Between 5 – 10 years	89	35.6%
> 10 years	106	42.4%

This table explains the duration of shisha smoking in our study subjects, it showed that about 78% are smoking more than 5 years. While only 22% are new smoker whose duration is less than 2 years, thus the effects of shisha smoking in our subjects on different periodontal problems are emphasized.

**Table 6:** The Frequency of smoking shisha.

Frequency of Smoking	Number	Percentage
1 – 5 units per day	47	18.8%
6 – 10 units per day	70	28.%
11 – 20 units per day	78	31.2%
21 or more units per day	55	22.%

This table explains the frequency of shisha smoking in our study subjects; it showed that about 60% are those who used between 6 to 20 units / day of shisha smoking. It means that our study subjects are regular smoker of shisha and the effects of their smoking on dental problems are true.

## Discussion

Shisha smoking is a worldwide public health risk. In developing countries tobacco use in form of Shisha is increasing. Shisha smoke contains harmful constituents leading to a variety of life threatening conditions, including pulmonary disease, coronary heart disease, and pregnancy related complications. The fashionable trend of shisha smoking originated in the Middle East and is now gaining immense popularity in Pakistan. It is accepted by the youth as a safe recreational activity, due to lack of government policies, misperceptions about its safety and ignorance of general population and health care professionals.

Shisha smoking had a significant impact on rate of plaque accumulation and hence the severity of periodontal disease. The risk of periodontal disease increases as the duration and frequency of smoking shisha increases day, and the number of years that the patient has smoked. In the present study also long time and heavy shisha smokers were more liable for presenting periodontal pockets.

The knowledge and perceptions of patients about shisha smoking were assessed in this study. Similar studies carried out in Israel showed that 37% adolescents had ever smoked a water pipe<sup>13</sup> and a four – fold increase was observed in water pipe smokers from seventh to the ninth grade school children.<sup>14</sup> The mean age of students initiating shisha smoking was 14 years in the current study, which is less than 19 years in an international study.<sup>15</sup>

Majority of the patients were of the opinion that shisha cafes play an important role in promoting shi-

sha smoking. Most patients said that shisha smoking is influenced by other people in close family circle smoking water pipe. Perceptions regarding health hazards associated with shisha smoking changed significantly after the health awareness sessions. The limitations of the study are that only a small sample could be surveyed studying in medical college. The people visiting shisha cafes and restaurants were not assessed because of logistics, which would have been more representative of the situation. Stratified proportion of male and female students could not be assessed for the post test as the students present at the time of post test were enrolled.

There are some recommendations for shisha smoking:

1. Hazards of smoking shisha and other tobacco products should be highlighted through the media, as nothing can substitute change of mind set towards smoking.
2. Public awareness campaigns to inform / educate the masses about the hazards of tobacco should be held regularly every year e.g. World Tobacco Day (May 31st), World Health Day (April 7th) etc.
3. The use of shisha and all tobacco products should be banned and law enforcing authorities should take strict action against people violating such a ban.
4. Awareness programmes regarding quitting shisha smoking should be carried out, so that more and more smokers adopt the way of quitting.
5. Government should increase the present duty and sales tax on shisha smoking.
6. Enhanced teaching, of an appropriate nature, at undergraduate and postgraduate levels is needed to educate the health officials regarding means to fight this problem.

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