

## Associated Factors of Paan Use in Southeast Iran

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### Abstract

**Background:** Smokeless tobacco (ST) use is growing among youth in many countries, especially developing ones. Paan is a ST product that is used in many cultures. This study examines the use of paan among high school-age males and assesses the attributed factors.

**Patients and Methods:** A cross-sectional study was performed on 504 high school pupils in Zahedan City, capital of the Sistan va Baluchistan province in Southeast Iran, in June 2007. Samples were selected using a multistage sampling method from high schools in different geographic areas. A questionnaire comprising 43 questions was completed through interviews. The data were analyzed with SPSS software using a chi-square test and logistic regression.

**Results:** The mean age of the participants was  $16.2 \pm 1.1$  years. While 10.4% of the students were current users of paan, 17.9% were ex-users. The mean duration of using paan was  $2.5 \pm 1.6$  years, and the daily paan use was  $4.2 \pm 3.6$  times a day. Cigars were the most common substance used at least once by pupils (18.6%), followed by paan (17.9%), naas (11.5%), and other illicit drugs. Only 64.7% of the pupils had not used any illicit drug at the time of study. The risk of paan use among students who had a history of using other substances was 18 times greater than those in other groups. In the case of attitude, for each attitude score accretion, the risk of paan consumption decreased by nearly 16%.

**Conclusions:** The study showed that among multiple personal, familial, and environmental factors, a positive history of the use of any kind of illicit drug by students and their attitude have a strong association with paan use.

**Keywords:** Paan; Tobacco, Smokeless; Attitude; Behavior; Family

## 1. Introduction

Currently, there are large numbers of smokeless tobacco (ST) users across the world, especially among young people (1). Observations reveal that ST consumption poses a significant risk factor for death due to circulatory, pulmonary, coronary (2), and other malignant diseases (3). Also Opium abuse is a main public health problem worldwide as in our country (4) by 2030, the deaths from tobacco use will double from the 1999 levels owing to increased tobacco use. Nearly 50% of tobacco-related deaths

are in high-income countries, but we should expect that tobacco-related mortality and morbidity would rise in developing countries because of increased tobacco use in these countries. According to the findings of research on tobacco use in China, over the next few decades, seventy percent of tobacco-related deaths will occur in the developing world (5).

All brands of ST, including paan, that are sold for oral or nasal-use have nicotine and nitrosamines as ingredients (1). "Paan" components consist of tobacco, areca nut, slaked lime, and spices. These materials are rolled in a betel leaf (6). Subcutaneous or intragastric administration of some of these ingredients, such as succulent extracts of betel quids and areca nuts, might lead to carcinomas of the cheek pouch and fore-stomach in rodents (7). Nicotine may disturb oral health by inhibition of the aerobic antimicrobial functions of neutrophils and monocytes

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(8). The level of oral health was lower in tobacco consumers aged 40 years and older compared to those aged 18–39 years (9). Tobacco use accounts for about half the number of male oral/pharyngeal cancer cases and 11% of female cases (1). Kurtul *et al.* analyze serum total sialic acid levels in smokers and users of oral powder forms of ST in Turkey; “oral powder” or “Maras Powder” ST is more popular than cigarette smoking in this country. They show that the harmful effects of ST use are similar to those of cigarette smoking (10). Cervical cancer (11) and squamous-cell carcinoma of the esophagus (12) are other cancers associated with paan consumption. Despite these dangers, some young people use paan to help them quit smoking (13). Furthermore, in a study of East London adolescents, lifetime paan users had South Asian or mixed-ethnicity backgrounds (14). The findings of a study by Imam *et al.* on ST use among Pakistani medical students show that 21.5% had a history of using some form of tobacco in their lifetime and 6.4% were lifetime users of ST. Naswar, paan, and naas were the most common forms of ST consumed. Gender, college location, and concomitant cigar smoking had no considerable association with lifetime ST use in their study (15).

In one Russian study, the most important factor for taking up smoking was having a close friend who smokes (16). The socioeconomic status of students aged 21–28 years was reported as another significant factor for smoking in adolescence (17). This issue is an important study area because young people make up the majority of the population in Sistan va Baluchistan, which is a strategic location since it shares a boundary with Afghanistan and Pakistan; in addition, similar studies do not exist for many developing countries. Therefore, this study examines the use of paan among high school-age males and assesses attributed factors.

## 2. Patients and Methods

A cross-sectional study was performed on 504 high school students in Zahedan City, capital of the Sistan va Baluchistan province in Southeast Iran, in June 2007. Samples were selected using a multistage sampling method from male-only high schools in different geographic areas. First, we divided the city into north, south, east, west, and central areas. Then, we selected two schools from each area and a maximum of 54 students from each school. We randomly selected students from each grade of high school (i.e., 9, 10, and 11) using a list of their names.

The purpose of the study was explained to the students, and then they were asked to participate and answer each question carefully. We assured them of the confidentiality of the data. The questionnaire was self-administered, and the students were free to leave the study at any time. We created questions from items that we thought were appropriate for our investigation after researching the related literature and exploring all aspects of the issue. These questions were organized in an appropriate order

and structure. A draft of the questionnaire was given to experienced colleagues to check content validity, and they made suggestions to resolve any possible defects. The second draft of the questionnaire was reviewed by 15 students from different levels and ages for face validity (reading simplicity and readability). Difficult questions were reworded and ambiguous questions excluded. The Cronbach's alpha reliability coefficient for questions that had the same answer was 0.75.

The final questionnaire consisted of 43 open and closed questions about individual and demographic information (10 items), knowledge (3 items), attitude (19 items), behavior (5 items), and other information (6 items).

The pupils' knowledge score from the three questions regarding paan, ingredients, and its complications was three. The attitude score was calculated on the basis of three-point Likert scale; a higher score indicated greater disagreement about paan. Reverse scoring was applied for questions 15–43 because of a change in the type of questions, resulting in a total attitude score of 57. Data were analyzed with univariate and multivariate analyses by SPSS software using a chi square test and logistic regression with  $\alpha < 0.05$ .

First, a univariate logistic regression was performed on the following variables: age; educational level; education level of father and mother; father's job; number of household members; familial relationship status; previous history of usage of any kind of tobacco product and/or opium, alcohol, or illicit drugs; family's knowledge of the use of paan; number of friends that use paan; idea of the number of paan users in the school; parents' use of illicit drugs; knowledge; and attitude (categorized variables changed to dichotomous for analysis). In the next step, variables with a p-value of less than 0.25 were analyzed in a multivariate model using a backward method. Ethical approval of the study was obtained from the local Ethical Committee of Zahedan University of Medical Sciences.

## 3. Results

Overall, 504 male high school pupils participated in this study. The mean age of the participants was  $16.2 \pm 1.1$  years, ranging from 13 to 21 years. The mean number of family members was  $7.1 \pm 2.4$  persons, with a range of 2–20 persons. The majority of the participants (86.9%) lived with their parents. At the time of study, 10.4% of the students were current users of paan, while 17.9% had experience using paan (ex-users). The mean duration of paan use was  $2.5 \pm 1.6$  years with a minimum of 1 year and a maximum of 7 years. The daily paan use was  $4.2 \pm 3.6$  times per day (at least once and a maximum of 15 times). Moreover, 42 paan users (80.7%) stated that their parents were unaware of their paan consumption. Paan users reported that they experienced vertigo (30.5%), calmness (22.3%), impatience (18.6%), headaches (5.8%), and nausea (13.5%) after consumption. Further, 12 students did not experience any effect, and some reported two or more

symptoms. More than one-third (38.6%) of the students believed that most of their friends used paan, and 29.2% of them believed that more than 70% of their classmates consumed paan. Table 1 shows some of the data of the students (level of education and use of illicit drugs) and their family (number of household members, education level of father, education level of mother, familial relationship status, father's job, and use of illicit drugs by parents).

Cigars were the most common illicit drugs used at least once by students (18.6%), followed by paan (17.9%), naas (11.5%), and other illicit drugs. Only 64.7% (n = 324) of the participants had not used any illicit drugs at the time of the study.

The mean knowledge score was  $1.2 \pm 0.7$  and ranged from 0 to 2.75. The mean attitude score was  $50.1 \pm 6$  and ranged from 14 to 57. Participants' responses to the attitude questions are shown in Table 2.

After a univariate regression analysis, familial relationship status, father's job, education level of father and mother, age, number of paan-using students in school, and past illicit drug use were analyzed in a multivariate model using a backward method, since these variables

had p-values that were less than 0.25. Finally, only attitude and a history of illicit drug use remained in the model; for students with a history of drug use, the risk of paan use was 18-times greater than that for others [odds ratio (OR) = 18.0; 95% Confidential Interval (CI): 6-54]. With regard to attitude, for each attitude score accretion, the risk of paan consumption decreased by nearly 16-fold (OR = 16.0; 95% CI = 11-20).

#### 4. Discussion

Our study showed that of the study participants, 10.4% were current users of paan while more than half (55%) indicated that they had many classmates who were paan users. Although over-reporting the use of paan among their peers by students the latter result indicates that we may be underestimating the number of current paan users. On the other hand, 17.9% of the students were ex-users of ST. Imam *et al.* report that sixty-six (6.4%) Pakistani medical students were lifetime users of ST (15). The age, educational level, and socioeconomic level of our sample differed from the sample in the Imam study. In Pakistan, the findings of two other studies show that 16.1% of male

**Table 1.** Personal and Familial Characteristics of Paan Users Compared with Others

	Paan Users, No. (%)	Others, No. (%)	P value
Use of any kind of illicit drug			< 0.0001
Yes	48 (26.8)	131 (73.2)	
No	4 (1.2)	319 (98.8)	
Education level of father			0.187
Illiterate	6 (7)	80 (93)	
Elementary	8 (7.5)	99 (92.5)	
Guidance	11 (12.5)	75 (87.2)	
Diploma	20 (15)	113 (85)	
Graduate	7 (8)	80 (92)	
Education level of mother			0.567
Illiterate	16 (9)	161 (91)	
Elementary	14 (11)	109 (88.6)	
Guidance	6 (8.1)	68 (91.9)	
Diploma	7 (8.5)	75 (91.5)	
Graduate	9 (20)	36 (80)	
Familial relationship status			< 0.033
Friendly	32 (8.9)	327 (91.1)	
Cool	3 (33.3)	6 (66.7)	
Not good, not bad	17 (12.9)	115 (87.1)	
Father's job			0.226
Unemployed	2 (3.9)	49 (96.1)	
Government employee	18 (9.8)	165 (90.2)	
Driver	4 (5.6)	68 (94.4)	
Worker	2 (6.9)	62 (81)	
Retired	5 (18.5)	27 (93.1)	
Tradesman	15 (19)	22 (81.5)	
Others	6 (10.7)	50 (89.3)	
Use of any kind of illicit drug by parents			0.624
Yes	6 (12.5)	42 (87.5)	
No	45 (10.4)	386 (89.6)	

high school students were current users of paan (18) and 11.2% of medical students were smokers (19). Jalilvand *et al.* also found Paan to be the most commonly used among students in colleg (20) These results are somewhat compatible with our own. The findings of our study showed that paan use among pupils had no association with parent's education level, number of family members, or use of illicit drugs by parents. The findings of Chen's study demonstrate similar results, except that they show a significant association between smoking behavior and families with low education levels (21). However, our results are not compatible with those of Rozi-Akhtar's study (18) or Roohafza's study (22), so future studies should focus on other predictive and attributable familial factors that may affect ST use in the community. History of illicit drug use was associated with paan use in the Abdullah study (23). This finding is compatible with the results of our study.

The current study showed that pupils' attitudes were significantly associated with paan use, which is a similar result to that of other studies (24, 25). About half of our pupils (46.8%) reported that 50% of their schoolmates used paan; of this proportion, 29.2% speculated that more than 70% of their schoolmates did so. This perception may influence paan use among the participants. As Rogacheva shows, having a best friend who smoked was the strongest predictor for smoking among adolescents

15. Our study showed that 9% of former paan users reported that paan was their first illicit drug. This is an important matter because paan's lower social acceptance and ability to be used covertly (especially when compared to cigars) could make it a favorite among youth, which makes it a major risk factor for using other substances. The findings of the Imam study reported a similar association (15). The availability and low price of paan in the study community (about 7-28 cents) may be another factor to be considered. We should consider both short- and long-term programs to prevent the onset of substance abuse. Reduced accessibility to tobacco products from price increases and a ban on tobacco product sales to children and adolescents represent some possible short-term programs. Over the long-term, we should design programs to alter attitudes and decrease the desire to begin tobacco use among students. The current study is limited owing to the fact that an interpretation of the results is difficult since social studies have multiple aspects and the prevalence of paan use was assessed using a cross-sectional study. Thus, we can report some of the associated factors, but we cannot identify the risk factors.

The study showed that among multiple personal, familial, and environmental factors, students' attitudes and a positive history of the use of any kind of illicit drug have a strong association with paan use.

**Table 2.** Students' Attitudes Toward Paan

	Agree, No. (%)	No Comment, No. (%)	Disagree, No. (%)
Using paan will elevate our mood	21 (4.2)	82 (16.4)	397 (79.4)
Every teenager uses paan once or twice these days because they think paan use is not dangerous	92 (18.4)	127 (25.4)	281 (56.2)
I would like to try paan at least once	42 (8.4)	37 (7.4)	422 (84.2)
Using paan once or twice has no disadvantages	45 (9)	56 (11.2)	401 (79.9)
Using paan has no mental complication	23 (4.6)	79 (15.8)	399 (79.6)
Using paan is a suitable method for relieving pain	20 (4)	92 (18.4)	389 (77.6)
Using paan increases tolerance toward problems	28 (5.6)	90 (18)	382 (76.4)
Using paan occasionally is a harmless or low-risk entertainment	37 (7.4)	98 (19.5)	367 (73.1)
Using paan keeps us calm	40 (8)	75 (15)	386 (77)
Using paan results in a scented mouth	42 (8.4)	72 (14.4)	386 (77.2)
People who do not use paan are timid	33 (6.6)	53 (10.6)	415 (82.8)
Reports of the hazardous effects of paan are untrue	54 (10.8)	68 (13.6)	379 (75.6)
Paan is available in stores, so its use should not be hazardous	18 (3.6)	57 (11.4)	427 (85.1)
I like the odor of paan	23 (4.6)	37 (7.3)	444 (88.1)
Paan users are socially worthless persons	301 (59.8)	115 (22.9)	87 (17.3)
I never wish to see paan	322 (64)	114 (22.7)	67 (13.3)
If I notice that one of my close friends uses paan, I will discontinue my friendship with him	222 (44.1)	149 (29.6)	132 (26.2)
I try to avoid communication with paan users	375 (74.6)	70 (13.9)	58 (11.5)
Using paan is an abnormal social behavior	407 (81.1)	53 (10.6)	42 (8.4)

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