

Paan Use in South-Eastern Iran: The Associated Factors

F Rakhshani¹, Z Sepehri^{2*}, M Keikha³, T Rakhshani⁴, MR Ebrahimi⁵

¹Department of Public Health, Health Promotion Research Center, Zahedan University of Medical Sciences, Zahedan, ²Department of Internal Medicine, Shahid Beheshti University of Medical Sciences, Tehran, ³Department of Public Health, Zahedan University of Medical Sciences, Zahedan, ⁴Department of Health Education, Tehran University of Medical Sciences, Tehran, ⁵Fars Red Crescent Society, Shiraz, Iran

Abstract

Background: Smokeless tobacco use is growing among youth in many countries especially developing countries. Paan is one of these products that its use in many cultures is of interest. This study evaluates the use of paan among males school-age and assess the attributed factors.

Methods: A cross-sectional study was done on 504 high school pupils of Zahedan city, Capital of Sistan va Baluchistan Province, southeastern Iran in June 2007. Samples were selected by multistage sampling method from high school students in different geographic areas. A questionnaire including 43 questions was completed through interviews.

Results: The mean age of participants was 16.2±1.1 years. While 10.4% of the students were current users of paan, 17.9% were ex-users. Mean duration of using paan was 2.5±1.6 years. Number of daily paan consumption was 4.2±3.6/day. Cigar was 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 our pupils did not use any illicit drug at the time of study. Risk of paan use among students who had a history of taking any other substance was 18-fold more than others. In the case of each attitude, score accretion and risk of paan consumption declined up to 16%.

Conclusion: Among multiple personal, familial and environmental factors, positive history of using any kind of illicit drugs by students and their attitude had strong association with paan use.

Keywords: Paan; Smokeless tobacco; Attitude; Behavior; Family; Iran

Introduction

Nowadays, smokeless tobacco (ST) has a huge fan in the world especially among youngsters.¹ On the other hand, it was shown that ST consumption was a significant risk factor for deaths because of circulatory, pulmonary, and malignant diseases² and even coronary heart diseases.³

Deaths from tobacco will double in 2030 comparing with 1999 due to increased tendency to use tobacco. Although, already about 50% of deaths due to tobacco are in high-income countries, but we should expect that tobacco-related mortality and morbidity

will move developing countries because of additive tobacco use in these countries. According a research on tobacco in China, in next decades, seventy percent of tobacco-related deaths will occur in developing world.⁴

All brands of smokeless tobacco including paan which are sold for oral or nasal-use have nicotine and nitrosamines in their ingredients.¹ "Paan" components consist of tobacco, areca nut, slaked lime, and spices. These materials are rolled in a betel leaf.⁵ 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.⁶ Nicotin may disturb oral health by inhibition of the aerobic antimicrobial functions of neutrophils and monocytes.⁷ Level of oral health was lower in tobacco consumers aged 40 years and older comparing those aged 18-39 years.⁸ Tobacco use is accounted for about half of

*Correspondence: Zahra Sepehri, MD, Department of Internal Medicine, Shahid Beheshti University of Medical Sciences, Taleghani Hospital, Tehran, Iran Tel: +98-912-688 0468, Fax: +98-21-66700517, e-mail: sepehri_z@yahoo.com
Received: March 10, 2011 Accepted: June 6, 2011

male's oral/pharyngeal cancer cases and 11% in females.¹ Kurtul *et al.* analyzed serum total sialic acid levels in smokers and users of oral powder forms of ST since 'oral powder' or 'Maras Powder' of ST is more popular than cigarette smoking in Turkey. They showed that baneful effects of ST use are similar to cigarette smoking ones.⁹ Cervical cancer¹⁰ and squamous cell carcinoma of esophagus¹¹ are other cancers that are associated to paan consumption. Despite these multiple complications, some young people use paan to help them in smoking cessation.¹² Furthermore, all of adolescents lifetime paan users was in East London and originally from South Asia or mixed ethnicities.¹³

In a study on use of smokeless tobacco among Pakistani medical students by Imam *et al.*, 21.5% had history of using some form of tobacco in their lifetime and 6.4% of them were lifetime users of ST. Naswar, paan and nass were the most common forms of ST which were consumed. Gender, college location and concomitant cigar smoking had no considerable association with lifetime smokeless tobacco using in their study.¹⁴

In a study in Russia, the most important factor for smoking was having an intimate friend who smoked.¹⁵

Socioeconomic status of the students at 21 and 28 years-old age was another significant factor for smoking in adolescence.¹⁶ This issue is so important in the study area from different aspects: at first, majority of this province population are young, strategic location of the province since it is bounded with Afghanistan and Pakistan, and also such studies are not available from most populations in developing countries. Therefore, we decided to study use of paan among school-age males and assess the attributed factors.

Materials and Methods

This cross-sectional study was done on 504 high school pupils of Zahedan city, Capital of Sistan va Baluchistan Province, southeastern Iran, in June 2007. Samples were selected by multistage sampling method from mannish high schools in different geographic areas. At first, we divided the city to north, south, east, west and central areas. Then, we selected two schools from each area and maximum 54 pupils from each school. We selected pupils randomly from each grade of high school (9, 10 and 11) using list of their names.

The purpose of study was explained for pupils,

then they were asked to participate and answer question carefully. We certified them about the confidentiality of the data. The self-administered questionnaire was applied. They were free to leave the study. We selected items which we thought experimentally would cover this condition and after research of the literature and attention to all aspect of the issue, items turned into the question form. Then questions were organized into an appropriate order and structure. A draft of the questionnaire was passed back to the experienced colleagues to check content validity, and made suggestions to resolve any possible defects. The second draft of the questionnaire was reviewed by 15 pupils from different levels and ages to evaluate the validity (simplicity and readability). Difficult questions were reworded and ambiguous questions were excluded. Cronbach's alpha reliability coefficient for questions which had the same answer was 0.75.

The final questionnaire consisted of 43 open and closed questions about individual and demographic information, 10 items on knowledge, 3 items on attitude, 19 items on behavior, 5 items and 6 questions on other information. The knowledge score of the pupils from 3 questions about paan, its ingredients and complications was considered 3. Attitude score was calculated based on 3-point Likert scale; the higher score showed more disagreement about paan. Reverse scoring was applied for question 15 and later because of change in type of the questions. Hence total score of attitude was 57.

Data were analyzed as univariate and multivariate analysis by SPSS software (Version 15, Chicago, IL, USA) using Chi Square test and logistic regression with $\alpha < 0.05$. At the first step, a univariate logistic regression was done on these variables: age, educational level of the student, his father and mother, father's job, number of household member, familial relationship status, previous history of using any kind of tobacco product and/or opium/alcohol and any kind of illicit drugs, family's knowledge about use of paan, number of paan user friends, pupils idea about number of paan users in their school, use of any kind of illicit drugs by parents, the knowledge and attitude of subjects (categorized variables changed to dichotomous for analysis). In the next step, variables that had *P*-value less than 0.25 were analyzed in a multivariate model using backward method.

Ethical approval of the study was obtained from local Ethical Committee of Zahedan University of Medical Sciences.

Results

Overall, 504 male high school pupils participated in this study. The mean age of participants was 16.2 ± 1.1 years which ranged from 13-21 years. Mean number of family members was 7.1 ± 2.4 persons with range of 2-20 persons. Majority of them (86.9%) lived with their parents.

At the time of study, 10.4% of the students were current users of paan, while 17.9% of pupils had an experience of using paan (ex-users). Mean duration of using paan was 2.5 ± 1.6 years with minimum of one year and maximum of 7 years. Number of daily paan consumption was 4.2 ± 3.6 /day (at least one time and maximum 15 times). Forty-two cases of paan user (80.7%) mentioned that their parents did not know anything about paan consumption by them. Paan users reported that they felt vertigo (30.5%), calmness

(22.3%), impatience (18.6%), headache (5.8%) and nausea (13.5%) after consumption. Twelve pupils did not experience any impression and some of them reported two or more symptoms.

More than one third (38.6%) of students believed that most of their friends used paan and 29.2% of them declared that more than 70% of their classmates consumed this smokeless tobacco. Some data about them (level of education, use of any kind of illicit drugs) and their family (number of household members, educational level of father and mother, familial relationship status, father's job, and use of any kind of illicit drugs by parents) were shown in the Table 1.

Cigar was the most common illicit drugs which was used at least once by pupils (18.6%) followed by paan (17.9%), naas (11.5%) and other illicit drugs. Only 64.7% (n=324) of our pupils did not use any illicit drugs at the time of study. The mean of knowl-

Table 1: Personal and familial characteristics in paan users compared with others.

Variable	Group	Paan users		Others		P value
		No	%	No	%	
Use of any kind of illicit drug						
Yes		48	26.8	131	73.2	$P < 0.0001$
No		4	1.2	319	98.8	
Education level of father						
Illiterate		6	7	80	93	$P = 0.187$
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						
Illiterate		16	9	161	91	$P = 0.567$
Elementary		14	11.4	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						
Friendly		32	8.9	327	91.1	$P < 0.033$
Cool		3	33.3	6	66.7	
Not good, not bad		17	12.9	115	87.1	
Father's job						
Jobless		2	3.9	49	96.1	$P = 0.226$
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						
Yes		6	12.5	42	87.5	$P = 0.624$
No		45	10.4	386	89.6	

edge score was 1.2 ± 0.7 ranged from 0 to 2.75 and the mean for attitude score was 50.1 ± 6 ranged from 14 to 57. Responses of the pupils to attitude questions were shown in Table 2.

After univariate regression analysis, familial relationship status, father's job, educational level of father and mother, age, number of paan user students in school, and past history use of illicit drug, were analyzed in a multivariate model using backward method since these variables had *P*-values less than 0.25. Finally, only attitude and past history of using any kind of illicit drug remained in the model as in students that has had positive history about that, risk of paan use was 18-fold greater than others (OR=18.0; 95% CI: 6-54). In the case of attitude, for each attitude score accretion, risk of paan consumption decline up to 16-fold (OR=16.0; 95% CI: 11-20).

Discussion

Our study showed that current users of paan were 10.4% of pupils while more than half of pupils (55%) pointed that they had many paan user friends in their school, so we might underestimate the current users

of paan. On the other hand, 17.9% of the students were ex-users of ST. Imam *et al.* reported that sixty six (6.4%) of Pakistani medical students were lifetime users of ST.¹⁴ Age, educational level and socioeconomic level of our sample were different with Imam *et al.* study.

Two other studies in Pakistan reported that 16.1% of male high school students were current users of paan¹⁷ and 11.2% of medical students were smokers.¹⁸ These results are somehow compatible with our results. This study showed that paan use among pupils had no association with parent's educational level, number of family members and use of illicit drugs by parents. Chen study demonstrated the same results except that they showed significant association between smoking behavior and living in families with lower education level.¹⁹ However, these results are not compatible with Rozi-Akhtar study¹⁷ and Roo-hafza study,²⁰ so we should pay more attention to other predictive and attributable familial factors which may affect it in our community and consider them in future studies.

History of using any kind of illicit drugs by pupil was associated with use of paan by them in Abdullah *et al.* study.²¹ This finding is compatible with current

Table 2: Pupils' attitude about paan.

Attitude questions	Agree No (%)	No comment No (%)	Disagree No (%)
Using paan will elevate our mood	21 (4.2)	82 (16.4)	397 (79.4)
2- Every teenager may use paan once or twice in this age because they think paan will not produce any problem for them	92 (18.4)	127 (25.4)	281 (56.2)
3- I would like to try paan even for one time	42 (8.4)	37 (7.4)	422 (84.2)
4- Using paan once or twice has no disadvantages	45 (9)	56 (11.2)	401 (79.9)
5- Using paan has no mental complication	23 (4.6)	79 (15.8)	399 (79.6)
6- Using paan is a suitable method for relieving pain	20 (4)	92 (18.4)	389 (77.6)
7- Using paan increases tolerance against problems	28 (5.6)	90 (18)	382 (76.4)
8- Using paan occasionally is a harmless or low risk entertainment	37 (7.4)	98 (19.5)	367 (73.1)
9- Using paan keep us calm	40 (8)	75 (15)	386 (77)
10- Using paan result in scented mouth	42 (8.4)	72 (14.4)	386 (77.2)
11- Persons that do not use paan are timid	33 (6.6)	53 (10.6)	415 (82.8)
12- Harms of the paan are untrue	54 (10.8)	68 (13.6)	379 (75.6)
13- Paan is available in stores, so use of it should not have any hazard	18 (3.6)	57 (11.4)	427 (85.1)
14- I like paan odor	23 (4.6)	37 (7.3)	444 (88.1)
15- Paan users are socially worthless persons	301 (59.8)	115 (22.9)	87 (17.3)
16- I never have tendency to see paan	322 (64)	114 (22.7)	67 (13.3)
17- If I recognize that one of my near friends uses paan, I will discontinue my friendship	222 (44.1)	149 (29.6)	132 (26.2)
18- I try to have the least communication with paan users	375 (74.6)	70 (13.9)	58 (11.5)
19- Using paan is an abnormal social behavior	407 (81.1)	53 (10.6)	42 (8.4)

results. This study showed that pupil's attitude had significant association with consumption of paan which is similar to other studies.^{22,23} About half of our pupils (46.8%) imagined that 50% of their schoolmates consumed paan and from this proportion, 29.2% speculated that more than 70% of their schoolmates did that. It may be influential on their Paan use. As Rogacheva *et al.* showed that having a best friend who smoked was the strongest predictor for smoking among adolescents.¹⁵

Our study showed that 9% of paan ex-users had used paan as the first illicit drug. This is an important alarm since the lower social class of its consumption and the possibility to use paan more in comparison to cigar, could make it as a favorite illicit drug among youth and this would be a major risk factor for using other substances in future as Imam *et al.* study revealed such association.¹⁴ Availability of paan and low price of it in studied community (about 7-28%) may be another factor that should be considered.

It seems that we should consider short term and long term programs to prevent the onset of substance abuse. Reduced accessibility to tobacco products by banning on tobacco product sales to children and adolescents and increasing price of these products are

some of possible short term programs. In long term, we should design programs to drop the desire to begin tobacco product use among the students and change their attitude.

The study had some limitation. One of them is interpretation of the results since social studies have multiple aspects and we assessed prevalence in a cross-sectional study. So we only can report some associated factors not the risk factors.

The study showed that among multiple personal, familial and environmental factors, positive history of using any kind of illicit drugs by students and their attitude have strong association with using paan.

Acknowledgement

Authors wish to thank head of education officers for their assistance to collect data and students for their participation. Ethical Committee of Zahedan University of Medical Sciences approved the study. This study was funded by Committee of Students Researches of Zahedan University of Medical Sciences.

Conflict of interest: None declared.

References

- Basu R, Mandal S, Ghosh A, Poddar TK. Role of tobacco in the development of head and neck squamous cell carcinoma in an eastern Indian population. *Asian Pac J Cancer Prev* 2008;**9**:381-6. [1899000]
- Singh RB, Singh S, Chattopadhyaya P, Singh K, Singh V, Kulshrestha SK, Tomar RS, Kumar R, Singh G, Mechirova V, Pella D. Tobacco consumption in relation to causes of death in an urban population of north India. *Int J Chron Obstruct Pulmon Dis* 2007;**2**:177-85. [18044690]
- Rahman MA, Zaman MM. Smoking and smokeless tobacco consumption: Possible risk factors for coronary heart disease among young patients attending a tertiary care cardiac hospital in Bangladesh. *Public Health* 2008;**122**:1331-8. [18657835] [http://dx.doi.org/10.1016/j.puhe.2008.05.015]
- de Beyer J, Kollars N, Edwards N. Research on Tobacco in China: An annotated bibliography of research on tobacco use, health effects, policies, farming and industry. World Bank HNP Economics of Tobacco Discussion Paper. Washington DC, World Bank, 2004. <http://siteresources.worldbank.org/HEALTHNUTRITIONANDPOPULATION/Resources/281627-1095698140167/DP21-China-BIb-finalv4-Cover.pdf>.
- Changrani J, Gany FM, Cruz G, Kerr R, Katz R. Paan and Gutka Use in the United States: A Pilot Study in Bangladeshi and Indian-Gujarati Immigrants in New York City. *J Immigr Refug Stud* 2006;**4**:99-110. [17492057] [http://dx.doi.org/10.1300/J500v04n01_07]
- IARC. Tobacco habits other than smoking: betel-quid and areca-nut chewing; and some related nitrosamines monographs on the evaluation of the carcinogenic risks to humans. Lyon: International Agency for Research on Cancer, 1985; p. 37.
- Pabst MJ, Pabst KM, Collier JA, Coleman TC, Lemons-Prince ML, Godat MS, Waring MB, Babu JP. Inhibition of neutrophil and monocyte defensive functions by nicotine. *J Periodontol* 1995;**66**:1047-55. [8683417]
- Croucher R, Pau AK, Jerreat M, Begum S, Marcenes W. Oral health of Bangladeshi women tobacco-with-paan users and self-reported oral pain following tobacco cessation. *J Public Health Dent* 2003;**63**:235-9. [14682647] [http://dx.doi.org/10.1111/j.1752-7325.2003.tb03505.x]
- Kurtul N, Cil MY, Paçacı SD. Serum total sialic acid levels in smokers and users of smokeless tobacco in form of oral powder (Maras powder). *J Biomed Sci* 2005;**12**:559-63. [15959629] [http://dx.doi.org/10.1007/s11373-005-4563-x]
- Rajkumar T, Franceschi S, Vaccarella S, Gajalakshmi V, Sharmila A, Snijders PJ, Muñoz N, Meijer CJ, Herrero R. Role of paan chewing and dietary habits in cervical carcinoma in Chennai, India. *Br J Cancer* 2003;**88**:1388-93. [12778066] [http://dx.doi.org/10.1038/sj.bjc.6600902]
- Zendeledel K, Nyren O, Luo J, Dickman PW, Boffetta P, Englund A, Ye W. Risk of gastroesophageal cancer among smokers and users of Scandinavian moist snuff. *Int J Cancer* 2008;**122**:1095-9. [17973262] [http://dx.doi.org/10.1002/ijc.23076]
- Croucher R, Choudhury SR. Tobacco control policy initiatives and

- UK resident Bangladeshi male smokers: community-based, qualitative study. *Ethn Health* 2007;**12**:321-37. [17701760] [<http://dx.doi.org/10.1080/13557850701300731>]
- 13** Jayakody AA, Viner RM, Haines MM, Bhui KS, Head JA, Taylor SJ, Booy R, Klineberg E, Clark C, Stansfeld SA. Illicit and traditional drug use among ethnic minority adolescents in East London. *Public Health* 2006;**120**:329-38. [16543028] [<http://dx.doi.org/10.1016/j.puhe.2005.10.009>]
- 14** Imam SZ, Nawaz H, Sepah YJ, Pabaney AH, Ilyas M, Ghaffar S. Use of smokeless tobacco among groups of Pakistani medical students - a cross sectional study. *BMC Public Health* 2007;**7**:231. [17767719] [<http://dx.doi.org/10.1186/1471-2458-7-231>]
- 15** Rogacheva A, Laatikainen T, Patja K, Paavola M, Tossavainen K, Vartiainen E. Smoking and related factors of the social environment among adolescents in the Republic of Karelia, Russia in 1995 and 2004. *Eur J Public Health* 2008;**18**:630-6. [18820308] [<http://dx.doi.org/10.1093/eurpub/ckn083>]
- 16** Paavola M, Vartiainen E, Haukkala A. Smoking from adolescence to adulthood: the effects of parental and own socioeconomic status. *Eur J Public Health* 2004;**14**:417-21. [15542880] [<http://dx.doi.org/10.1093/eurpub/14.4.417>]
- 17** Rozi S, Akhtar S. Prevalence and predictors of smokeless tobacco use among high-school males in Karachi, Pakistan. *East Mediterr Health J* 2007;**13**:916-24. [17955775]
- 18** Nawaz H, Imam SZ, Zubairi AB, Pabaney AH, Sepah YJ, Islam M, Khan JA. Smoking habits and beliefs of future physicians of Pakistan. *Int J Tuberc Lung Dis* 2007;**11**:915-9. [17705960]
- 19** Chen Y, Pederson L, Lefcoe NM. Fathers' educational level, adult's smoking status, and children's smoking behavior in Shanghai. *Health Values: Achieving High Level Wellness* 1992;**16**:51-6.
- 20** Roohafza H, Sadeghi M, Emami AR. Smoking in youth: Isfahan Healthy Heart Project (IHHP). *Hakim* 2003;**6**:61-8.
- 21** Abdullah AS, Fielding R, Hedley AJ. Patterns of Cigarette Smoking, Alcohol Use and Other Substance Use Among Chinese University Students in Hong Kong. *Am J Addict* 2002;**11**:235-46. [12202016] [<http://dx.doi.org/10.1080/10550490290088018>]
- 22** Chen JW. Adolescents' knowledge, behavior patterns, and attitudes related to cigarette smoking in the Republic of China. Dissertation Abstracts International 1988;**49**:163.
- 23** Chen X, Unger JB, Johnson CA. Is acculturation a risk factor for early smoking initiation among Chinese American minors? A comparative perspective. *Tob Control* 1999;**8**:402-10. [10629247] [<http://dx.doi.org/10.1136/tc.8.4.402>]