



Arecanut and tobacco use among school children in a village in South India – A cross sectional study

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RESEARCH

Please cite this paper as: Nitin J, Nagaraj K, Shashidhar Kotian M. Arecanut and tobacco use among school children in a village in South India – A cross-sectional study. AMJ, 2010, 3, 5, 299-303 Doi 10.4066/AMJ.2010.280

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Abstract

Background

Areca nut is the fourth most commonly used psychoactive substance in the world after caffeine, alcohol and nicotine. Its use is considered a benign and socially acceptable habit among most Indians. Like tobacco, chewing areca nut also leads to oral and oropharyngeal cancers. Chewing of these substances usually starts early in life leading to a multitude of problems in adulthood. This study was conducted among high school students to determine the prevalence and to assess awareness of health hazards associated with these substances.

Method

This cross sectional study was carried out in Vantamuri village, South India. All consenting school children of 7th, 8th and 9th class were interviewed individually using a pretested questionnaire about their chewing habits. This was followed by a thorough oral cavity examination for all.

Results

Out of 392 participants 62.5% were boys. Mean age of all participants was 14.8 ± 1.13 years. The prevalence of areca nut usage among boys and girls was 27.3% and 6.1% while it was 2.4% for gutka (contains tobacco) amongst boys. Majority of students started chewing between 13 and 14 years. About 49% of users were chewing these substances regularly for more than a year. Addictive tendencies were seen in two users. 43% of users chewed the same product used by their family members (P<0.025). 13.4% of chewers

were from divorced or separated parents (P<0.005). About 3/4th of the participants were ignorant of associated health hazards or thought these substances to be harmless. Black staining of teeth was seen in 39.5% of areca nut users (P=0.001). One case of submucous fibrosis was identified among an arecanut chewer.

Conclusion

Awareness level of health hazards was poor among the students. Health education against these substances at an early age may help in curbing this problem.

Key Words

Arecanut, Gutka, children, Awareness, Cross sectional study, India

Background

Globally, arecanut is among the most common addictions following tobacco, alcohol and caffeine.¹ India is the largest producer and consumer of arecanut in the world.² Arecanut chewing is considered a benign and socially acceptable habit among most Indians.³ Its chronic use contributes significantly to the high incidence of oral and oropharyngeal cancer in India. Apart from the carcinogenic potential, arecanut has been shown to be addictive and development of typical dependence symptoms associated with its usage has been described.⁴ Acute effects of arecanut chewing include asthma exacerbation, hypertension, and tachycardia.⁵ The other adverse health effects include oral leukoplakia, submucous fibrosis and gum disease.^{6,7} What is considered benign arecanut use can act as a gateway to tobacco use also very early in life.⁴

Tobacco along with arecanut, slaked lime, catechu and condiments makes gutka. Aggressive advertising and marketing of gutka in small attractive and inexpensive sachets since early 1980s has greatly enhanced the sales of these products.^{1,7} Adverse effects of tobacco usage are oral cancer, cardio vascular diseases, Chronic Obstructive Pulmonary Disease to name a few.

Chewing of these products usually starts at an early age (approximately 13 - 15 years) and by adulthood most users are addicted to this habit. The current problem of tobacco usage among 13 to 15 year old school going



children in Karnataka state of South India is estimated to be 4.9%.⁸

Starting the habit at a young age increases the risk of morbidity and mortality in later life. It also significantly increases the risk of cancer in the population.⁹

It is known that the socio demographic predictors of tobacco usage are poorly understood in the society.¹⁰

In this background, a cross-sectional study was conducted to find out the prevalence of arecanut and gutka usage, correlates of its use, reasons for chewing, awareness about its health hazards and to identify the associated clinically detectable oral lesions.

Method

This study was done in April 2005 in Vantamuri village which is one of the seventeen villages covered by PHC Vantamuri in the field practice area of J.N.Medical College, Belgaum. The village has a population of 4885 and it comes in Belgaum district. The district is situated in north of Karnataka state of South India with a literacy rate of 64.42%.^[11] The village has two government high schools and one private high school. After taking consent from school authorities and guardians, all students of 7th, 8th and 9th class (392) of all the three schools present on the days of examination were included in the study. The prevalent forms of substances used among the students of this place were arecanut and gutka.

Each student was interviewed individually using a pretested questionnaire about their chewing habits, age of initiation, frequency of use, source of information about the product, reasons for use, source of money, consumption among family members, awareness about the harmful effects of the product etc. This was followed by an oral cavity examination. A brief education programme followed immediately after the screening to encourage school children to quit their habits. Regular users of arecanut or tobacco were defined as those who chewed during the past 3 months and current users were defined as those who chewed during the week prior to interview. The data was entered in MS Excel and was analyzed using SPSS Inc. Illinois, USA version 11.0. Test of significance was by Chi Square test.

Results

Out of the total 392 student participants, 245(62.5%) were boys. Mean age of all the students was 14.8 years (SD =1.13). Total prevalence of arecanut usage among study participants was found to be 19.4%. The prevalence of gutka usage was low (1.5%) and it was 2.4% among boys and nil among girls (Table1). None of students reported using tobacco in any other forms. Age of starting the habit in majority of arecanut users (34.7%) was 13yrs and majority of gutka users (66.7%) was 13 to 14yrs.

Majority of the boys (65.75%) first came to know about these substances from their friends while most girls (66.7%) came to know about it from their family members. Most boys (44.3%) preferred to chew arecanut or gutka at market place while

most girls at their homes (77.8%). Most of the boys (84.9%) and girls (88.8%) were chewing these substances for one or more years.

Most users of both arecanut and gutka were regular users and among them majority were current users (Table2). Among the 67 boys who chew arecanut, 16(23.9%) took 1 or less pack during previous week, 13(19.4%) took 2-4 packs during previous week and 9 (13.4%) took between 1-6 packs every day during previous week. Out of 9 girls who chew arecanut, 4(44.4%) chewed 1-2 packs previous week and 2(22.2%) chewed 3-4 packs previous week. Out of 6 gutka users, 3 took 1 pack each previous week and 2 had taken 2-3 packs each previous week. Addictive tendency towards arecanut and gutka was seen one each among users.

Most students (78.5%) obtained money to buy arecanut or gutka packets from their parents. The students were asked whether their parents knew of their chewing habits. Forty (50.6%) parents/guardians were reported to be unaware that their children were consuming arecanut or gutka. Out of the remaining 39 parents/guardians who knew, 84.6% of them ignored the habit according to the respondents. Out of the 79 children who chew either arecanut or gutka, 34 (43.0%) consumed the same product as their family members (P=0.025). Among the 79 consumers, 11(13.9%) were from divorced or sepearted parents (P=0.005). About three fourth students did not know the harmful effects of these products or were under the impression that it was harmless (Table 3).

Most arecanut users (14.7%) felt mood elation, relief from tooth ache (6.6%), improvement in oral hygiene (3.9%) followed by relief from nausea (1.3%) after chewing. Most gutka users (66.7%) felt relieved of tooth ache followed by mood elation (33.3%) after chewing. Oral cavity examination showed 30(39.5%) out of 76 arecanut chewers and 41(13.0%) out of 316 non arecanut chewers had black staining of teeth and this difference was found to be statistically significant ($\chi^2=29$, P= 0.001) (Table 4). Oral Submucous Fibrosis (OSMF) was seen in a boy who was chewing arecanut everyday for more than 4 years.

Discussion

Total prevalence of arecanut usage among study participants was found to be almost one in every five children however this study was limited to one village and may not be generalisable. Nonetheless the data are comparable to data from Delhi where 21.3% were reported to be chewing arecanut.¹² However the proportions were much lower than those in other studies from the Mariana Islands and in Karachi.^{9, 13} The total prevalence of gutka usage of 1.5% in our study was also much lower than in several other studies.^{10, 14, 15, 16, 17}

Age of starting the habit among most arecanut users (34.7%) was 13yrs and most gutka users (66.7%) was 13 to 14yrs.



The first source of information about arecanut or gutka for majority of boys in this study was friends while for girls it was family members. The role of family members and friends influencing the chewing practices of arecanut and gutka in children was supported by several other studies.^{3, 13, 14, 16, 18, 19, 20.}

In our study the most preferred place for consuming these substances was market place. These places are favourite spots for students as chewing here ensures no fear of being caught by parents or teachers.^{14, 15} The next most preferred place was at home. In our study majority of students (48.8%) were consuming these substances for more than a year. Out of the total students taking arecanut or gutka the majority were current users. Compared to other studies the duration and quantity of consumption of arecanut and gutka was less in our study indicating that substance abuse was a less serious problem in our study area.^{13, 16, 17, 21, 22} The addictive tendency towards arecanut which was 1.3% in our study was comparable to findings of Oakley et al.⁹ However the Karachi study found it to be 40.3%.²¹

The main source of money for purchasing arecanut or gutka in our study was family members. Friends were the source of money only in 2.5% of cases. In Oakley et al study 44% students purchased arecanut out of their own pocket money and 10% from parents.⁹ In Karachi study 84.4% of students were using the substances with full knowledge of their family.²¹ Significant numbers of children were found chewing the same product consumed by any of their family members. Similar observations were made in several other studies.^{14, 19, 21, 23}

Our study also found that significant number of chewers were families of divorced or separated parents. This was similar to results of two studies done in Taiwan wherein students whose parents were separated or divorced had a higher prevalence of arecanut usage.^{23, 24} In a New Hampshire study, poor familial relations and low school satisfaction were found to be the greatest risk factor for school children trying smokeless tobacco.²⁵ Knowledge regarding health hazards of arecanut or gutka was very poor among students in our study. Very few knew that it leads to cancer and OSMF. In the Karachi study, 98.6% students knew that arecanut is injurious to health, 42.7% knew that it causes cancer and 3.5% knew that it causes OSMF.²¹ Almost half of the students in Parwal et al study knew that gutka usage leads to oral cancer.¹⁵

Misconceptions like feeling elated, relief from tooth ache & nausea, improvement of oral hygiene was seen in few arecanut users. In Oakley et al study users felt arecanut gives relief from boredom (75%), aids in concentration (53%), elates the mood (51%) and postpones hunger (46%).⁹ In Gunaseelan et al study 96% of users felt elated and relaxed after arecanut chewing.³ Misconceptions like feeling relieved of tooth ache and feeling elated as seen among few gutka users in our study was also seen other studies.^{14, 16, 26} In addition to this gutka users in Wardha study felt ease of abdominal complaints and in Delhi study felt relieved of morning motions.¹⁴

Arecanut chewing was found to be significantly associated with black staining of teeth. This was in contrast to several other studies where in arecanut chewing practice was found to decrease dental decay.^{27, 28, 29} The prevalence of OSMF found in our study was much less in comparison to 8.8% detected among Northern Mariana high school children.⁹ The boy identified with this condition was chewing arecanuts regularly for more than 4 years. Another research study had found that this condition develops after 8.6 years of betel quid usage which was much earlier to our observation.³⁰

Conclusion

Although the overall prevalence of arecanut and gutka usage among school children in our area was not as high as in other studies, their awareness of hazards associated with usage of these substances was found to be very poor. The fact that most users started chewing at a young age, were regular users, few already developing addictive tendencies should be a cause of concern.

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ACKNOWLEDGEMENTS

The authors would like to thank the medical officer of PHC and head masters of high schools in Vantamuri village for permitting us to do this study. We also thank Dr. Vijaya A Naik, Professor and Mr. MD Mallapur, Statistician of Department of Community Medicine, J.N. Medical College, Belgaum in helping us complete the manuscript of this research work.

PEER REVIEW

Not commissioned. Externally Peer reviewed.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests

FUNDING

Nil



Tables

Table 1. Prevalence of arecanut and gutka (contains tobacco) consumption among high school students.

Product	Boys (n=245)		Girls (n=147)		Total(n=392)	
	No.	(P*)%	No.	(P)%	No.	(P)%
Arecanut	64	26.1	9	6.1	73	18.6
Gutka	3	1.2	-	-	3	0.8
Both	3	1.2	-	-	3	0.8
Total	70	28.6	9	6.1	79	20.1

P* - Prevalence

Table 2. Distribution of substance use according to type of user.

Type of user		Arecanut (n=76)		Gutka (n=6)	Combined (n=82)
		Boys %	Girls %	Boys %	Total %
Regular user	Current user	38 56.7	6 66.7	5 83.3	49 59.8
	Others	27 40.3	2 22.2	0 -	29 35.4
Non regular user		2 3.0	1 11.1	1 16.7	4 4.9
Total		67 100.0	9 100.0	6 100.0	82 100.0

Table 3. Awareness of health hazards associated with arecanut and gutka usage.

Response	Towards arecanut usage		Towards gutka usage	
	No.	%	No.	%
Don't know	206	52.5	237	60.5
Harmless	83	21.2	63	16.1
Cancer	39	9.9	42	10.7
OSMF**	-		1	0.2
Other problems	88	22.4	56	14.3

(n=392)

** Oral Submucous Fibrosis

Table 4. Oral Cavity examination findings of study participants.

Tooth lesions	Arecanut users (n=73)	Gutka users (n=3)	Both users (n=3)	Total users (n=79)	Total non users (n=313)
Black Stains	30	2	-	30	41
Cavity	3	-	1	2	15
Yellow Stains	2	1	1	4	-

P= 0.001.