

Prevalence Of Areca Nut And Tobacco Use Among School Going Children In Gandhinagar, Gujarat.

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Abstract: Background: The habit of areca nut and tobacco chewing is prevalent among young children throughout India. Factors like easy availability, low cost, good taste have an impact on development of habit that can lead to precancerous and potentially malignant oral conditions, which is a great concern for the society and the government. Aim: To determine the prevalence of tobacco/areca nut chewing habits among school going children in Gandhinagar, Gujarat. Method: Self administered questionnaires were distributed among 3590 students of government schools of Gandhinagar district. Data about their chewing habits was obtained. 1200 school children with age group of 6-15 years having the habit of areca nut chewing were included in the study. The data was subjected to statistical analysis. Result: The overall prevalence of areca nut/tobacco usage among school children was alarmingly high (32.15%). Children of 8-9 years exhibited highest (36.5%) involvement in areca nut/tobacco habit. 51% of the school children chewed areca nut/tobacco atleast once in a day. Majority of the children (70%) bought areca nut from shops nearby schools. 66.5% of the students were not aware of harmful effects of the chewing habits. Conclusion: In the current scenario, the biggest challenge is to make effective strategies to motivate young children not to initiate the habit and to create awareness among the society about potential health hazards of these substances. [Thakkar H. Natl J Integr Res Med, 2019; 10(6):61-65]

Key Words: areca nut, tobacco, addiction

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Introduction: Areca nut chewing habit is common in India. It is the fourth most commonly used psychoactive substance in the world after nicotine, alcohol and caffeine.¹ Its use is considered a benign and socially acceptable habit amongst Indians.² India is the largest producer as well as consumer of areca nut in the world. In India, areca nut is used in various forms; alone or with tobacco, sweet supari, pan masala etc. If it is consumed with tobacco, traditional forms such as betel quid, tobacco with lime, and tobacco tooth powder are commonly consumed in addition to other forms of smokeless tobacco. It is chewed for its mild central nervous system (CNS) stimulating and psychoactive properties.³ The independent role of areca nut in oral carcinogenesis is well documented in literature.⁴⁻⁶ Areca nut is classified as group I carcinogen to humans by International Agency for Research on Cancer (IARC) in 2004.⁷ It is estimated that 600 million people i.e. 10-25% of the chewers are concentrated in Asia.⁸ Tobacco related cancers account for about one-third of all cancers in South Asia, while the emerging "epidemic" of OSMF (Oral Submucous Fibrosis) has been attributed to chewing of areca nut and its mixtures.

Chewing of areca nut and tobacco by children and women is socially acceptable and it has a

cultural place in society in Indian subcontinent.⁹ Nowadays areca nut is getting popularity in younger generation in the form of processed areca nut products.¹⁰ The factors responsible for this situation could be easy availability, low cost, good taste and its use by family members and friends. Media has played a vital role through aggressive marketing to popularize these products especially in low socioeconomic class children and adolescents. The market is flooded with pre-packed, scented and colorful packets of areca nut products.

OSMF is a precancerous condition with incidence of 0.5% in general population in India.¹¹ It is characterized by inflammation and progressive fibrosis of the submucosal tissues resulting in marked rigidity and trismus. It occurs at any age but most commonly seen in young and adults between 25 and 35 years (2nd-4th decade). Onset of this disease is insidious and is often 2-5 years of duration. This increased prevalence is due to increased use and popularity of commercially prepared areca nut and tobacco product - gutkha, pan masala, flavored supari, etc. It leads to Squamous Cell Carcinoma of oral cavity, pharynx, esophagus and stomach in 7-13% of cases.¹² Moreover, many systemic diseases like metabolic syndrome, asthma, cardiovascular events,

appetite suppression, general and central obesity, chronic kidney diseases and birth weight loss and reduced gestational length during pregnancy are related to the use of areca nut.

The prevalence of areca nut and tobacco chewing habits among school going children reflects the picture of future of our society's oral mucosal health status. The young regular areca nut and tobacco chewers are the group of children who are at high risk of getting conditions like OSMF, oral leukoplakia and oral carcinoma in later life. Furthermore, the areca nut chewing habit is related to increased tendency of a person to use tobacco in later life.¹³ Thus, a need is felt to document the areca nut chewing habit among school going children to effectively develop policies for primary and secondary prevention of areca nut related oral potentially malignant and malignant lesions. Therefore, this study was conducted to assess the prevalence of areca nut and tobacco use among school going children of Gandhinagar, Gujarat.

Materials and Methods: The study was conducted in collaboration with Department of Pedodontics and Preventive Dentistry of Ahmedabad Dental College and Hospital, Ranchhodpura, Gandhinagar, Gujarat. Through school health programmes, 11 government schools in rural areas of Gandhinagar district were selected through random sampling. This sample represented around 10% of the total population of school going children (age group 6-15 years) studying in government schools. Permission from Ethical Committee was obtained for conducting the study. Written consent from school authorities and participants was also obtained. Data of the participants about their chewing habits, age of initiation, frequency of use, source of information about the product, reason for chewing, etc was obtained through self administered questionnaire. Questionnaires were distributed among a total of 3590 students. Children were explained about how to fill up the questionnaire and to provide authentic information. They were assured that all information would be kept confidential. The questionnaire was translated to their local language (Gujarati) for the students. The students were asked to fill their questionnaires in their respective classrooms. Students were given a period of 10–15 minutes to fill the forms. A brief health education program was followed after the filling of questionnaires to encourage school children to quit their habits. Out of 3590

students, children with age group of 6-15 years having the habit of areca nut/tobacco chewing and only those who completed the forms were included in the study. The data was obtained and analyzed statistically.

Results: Out of 3950 children, 1270 were found to have the habit of areca nut/ tobacco chewing in the age group of 6-15 years. A total of 1200 subjects with completely filled questionnaires were included in the study. Prevalence of areca nut and tobacco usage among school children in a rural area was found to be 32.15% in age group of 6-15 years. Data was collected from 1200 school students who participated in the study. Out of which, 690 (57.5%) were boys and 510 (42.5%) were girls.

Table 1 shows agewise and genderwise distribution of subjects with habit. Majority of students involved in the habit are found to be in the age group of 8-9 years.

Table 1: Agewise & genderwise distribution of subjects with habit

Age (in years)	Total no. of boys with habit (%)	Total no. of girls with habit (%)	Total number of subjects with habit (%)
6-7	18 1.5%	12 1%	30 2.5%
8-9	216 18%	222 18.5%	438 36.5%
10-12	258 21.5%	132 11%	390 32.5%
13-15	198 16.5%	144 12%	342 28.5%
Total	690 57.5%	510 42.5%	1200 100%

Chi-square value:24.057, $p < 0.001$ (Statistically highly significant)

Table 2 shows product preference among boys and girls with habit.

Gender	Unsweetened betel nut	Sweetened betel nut	Pan masa la	Tobacco	Total
Boys	102 14.8%	528 76.5%	30 4.3%	30 4.3%	690
Girls	78 15.3%	426 83.5%	6 1.2%	0 0%	510

Total	180 15%	954 79.5%	36 3%	30 2.5%	1200
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Chi-square value: 29.373 $p < 0.001$ (Statistically significant)

Majority of the boys and girls preferred sweetened betel nut over unsweetened betel nut, pan-masala and tobacco. Table 3 depicts the common reasons for acquiring the habit among boys and girls. Majority of the children (70%) developed the habit due to good taste.

Table 3: Reasons for acquiring the habit among boys & girls

Gen der	Tastes good	Used by family /friends	Easy availability	Low cost	Total
Boys	504 73%	108 15.7%	18 2.6%	60 8.7%	690
Girls	336 65.9 %	120 23.5%	18 3.5%	36 7.1%	510
Total	840 70%	228 19%	36 3%	96 8%	1200

Chi-square value: 13.536 $p = 0.004$ (Statistically significant)

Table 4 shows sources from where habit was acquired among children. Most of the children (70%) bought areca nut from shops nearby schools.

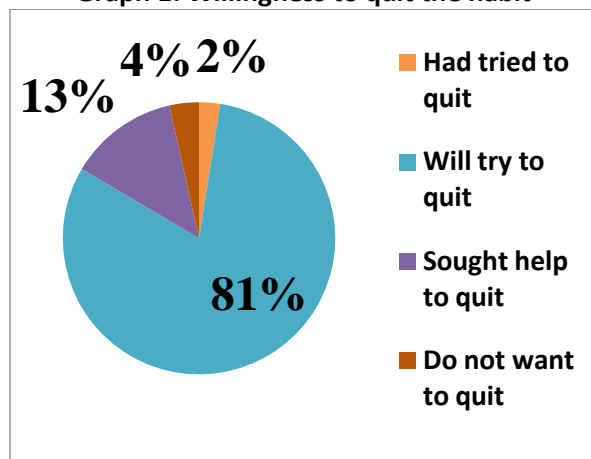
Table 4: Sources from where habit was acquired among boys & girls

Gender	From nearby schools	Siblings	Friends	Parents	Total
Boys	414 60%	96 13.9 %	150 21.7%	30 4.3%	690
Girls	426 83.5%	36 7.1 %	24 4.7%	24 4.7%	510
Total	840 70%	132 11%	174 14.5%	54 4.5%	1200

Chi-square value: 94.478 $p < 0.001$ (Statistically highly significant)

Regarding the knowledge and awareness, 66.5% of the students were not aware of harmful effects of the chewing habits.

Graph 1: Willingness to quit the habit



Graph 1 shows percentage of willingness to quite the habit

Discussion: Areca nut and tobacco chewing is widely prevalent in India. It deserves special attention because of its popularity and social acceptance. This problem is not only prevalent in adults; unfortunately children are also rapidly acquiring this habit. The purpose of the study was to initiate a means of providing baseline data on usage of betel nut and tobacco among school going children.

The major chemical constituents of the areca nut are carbohydrates, fats, proteins, crude fiber, polyphenols, alkaloids, and mineral matter. Polyphenols (flavonols, tannins) constitute a large proportion of the dry weight of the nut. Polyphenols are responsible for the astringent taste of the nut. The nut has been shown to contain at least six related alkaloids, of which four (arecoline, arecaidine, guvacine, and guvacoline) have been conclusively identified in biochemical studies.¹⁴ Arecoline is generally the main alkaloid, which is carcinogenic. Application of these substances to human fibroblasts induces fibroblast proliferation and collagen production.¹⁵ Areca nut chewing is strongly associated with OSMF.

It was clear from this cross sectional study that areca nut consumption is not only highly prevalent in predominantly rural areas in Gandhinagar, Gujarat, but also an accepted fare. Total prevalence of areca nut usage among study participants was found to be almost two in every five children; however, this study was limited to 12 villages and may not be generalizable. 79.5% of the subjects preferred to chew sweetened areca nut while only 2.5% of children chewed

tobacco. 4.3% of boys reported to use smokeless tobacco in our study and fortunately no girl was consuming tobacco. However, in India smokeless tobacco use is very common among both males and females.

It is estimated that the beginning age of chewing was conservatively 8-9 years corresponding to 3rd grade, unfortunately, there were some participants who started the usage at about 6 years. While in the study done by Joseph *et al.* in 2010¹⁶, age of starting the habit in majority of areca nut users (34.7%) was 13 years and the majority of gutka users (66.7%) were 13-14 years. Initiation of the habit at a young age significantly increases the risk of cancer in the future. These products were easily available in the market and also in areas around home and schools.

In our study, the most preferred place for consuming these substances was a place nearby school. However, according to a Government resolution, there is no usage of tobacco and tobacco products inside the school premises or within 100 meter radius of it.¹⁷ In our study, half of the students (51%) were consuming these substances regularly once a day since 6 months to one year. These students were regarded as regular users.

Major reason for consumption in both boys and girls was for taste. Next most common reason were the friends who used these products regularly. Other misconceptions such as feeling elated, postpone hunger, looking good, aids in concentration were seen in few areca nut users. A study carried out by Oakley *et al.* in 2005 stated that the users felt that areca nut gives relief from boredom (75%), aids in concentration (53%), elates the mood (51%) and postpones hunger (46%).¹⁸ Rajan *et al.* in 2007 did a study where 96% of users felt elated and relaxed after areca nut chewing.² In a New Hampshire study, done by Stevens *et al.* in 1993, it was found that poor familial relations and low school satisfaction were among the greatest risk factors for school children trying smokeless tobacco.¹⁹

Knowledge regarding health hazards of areca nut or tobacco was also very poor among students in the present study. Only about 33.5% of the students knew about harmful effects of the habit. Shah *et al.* in 2008 conducted a study on the school going children of Karachi and found that 96% students considered haalia harmful for health and 60% students believed pan masala to

be unsafe.²⁰ In another study done by Parwal and Mukherjee in 2004, almost half of the students included in the study knew that gutka usage lead to oral cancer.²¹

In this study majority of school children (59%) knew about these products through advertisement in television. Gutka and tobacco were one of the most highly advertised products in almost all Medias and users reported seeing more advertisements related to them. Youth-targeted media advertisements and sport sponsorship influence the children's mind and help them to initiate areca nut and tobacco use in India. In the absence of any restriction by school authorities or parents along with easy and widespread availability of areca nut and tobacco products to all ages, students were spending substantial amounts on purchasing these products even when they need stationery or books for school. Acceptance of the habit, peer pressure and addiction seem to be major contributing factors to the increasing trend of areca nut and tobacco use.

In the current scenario, the biggest challenge is to make effective strategies to motivate young children not to initiate the habit, to quit the habit and to create awareness among the children, parents and teachers about potential health hazards of these substances. Young people differ from adults in the way they perceive and interact, and it should be noted that dental aesthetics was a factor that discouraged them to chew, a factor not suggested by older adults. Among the opinions concerning factors that discouraged areca nut use in this study group, it is noted that substantial numbers believed that staining of teeth, leading to poor aesthetics was a social problem among chewers. School health education program in the future should capitalize on such views of school children in efforts to emphasize important health related messages and harmful effects of areca nut and tobacco.

Conclusion: The overall prevalence of areca nut and tobacco usage among school children in a rural area was alarmingly high (32.15%) in such a young age of 6-15 years in boys as well as girls. In the absence of effective measures this number is likely to increase over a period of time, which is a serious health related issue. Being a pediatric dentist, it is our duty to spread awareness regarding the ill effects of this habit and educate the younger generation to avoid developing such

addictions in order to prevent long term morbidity.

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