

Sweetened areca-nut chewing habit: A public health issue among school children of Indore, India

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Abstract

Chewing of the areca-nut usually starts early in life leading to a multitude of problems in adulthood. The areca-nut can be correlated with an increased incidence of cancer. Like tobacco, chewing the areca-nut also leads to oral and oro-pharyngeal cancers. The areca-nut is usually marketed in the form of a sweetened areca-nut (locally known as sweet supari) to target young children. A high proportion of school children use areca-nut daily in some form. This study was conducted to determine the prevalence of sweetened areca-nut use and assess the awareness of health risks among school students of Indore, India. Till date none of the studies have pointed out the prevalence of sweetened areca use. Population based studies on the habit of areca-nut chewing among children from the district of Indore, Central India have not been reported earlier in the studies. In our study we found 81% of the children used the sweetened form of the areca-nut. Fifty five percent of areca-nut users reported that they learnt the habit from their friends or siblings. The majority of the users (70.4%) were unaware of the harmful effects of areca-nut use, and only a few were aware that it may cause cancer or oral submucous fibrosis. Government school children are more involved in areca-nut chewing habit. Boys were more indulged than girls. Actively communicating the areca-nut's health risks to the public, and creating strategies involving parents, teachers and local communities could be initiated to discourage areca-nut use.

Keywords: Areca chewing habit, Children, Epidemiology, Health risks, India.

Introduction

Areca-nut chewing has been mentioned in the Sanskrit manuscripts and used as food, medicine, social and religious purposes.¹ The word 'Areca' is derived from the Malay word 'adakka' or 'adakeya', the Indian equivalent. The areca-nut is known as "supari" in India. It is the basic ingredient of a variety of widely used chewing products which are easily available even in small local shops. The areca-nut is the fourth most commonly used social drug, ranking after nicotine, ethanol and caffeine.¹ The method of preparation of the Areca-nut, and any specific ingredients consumed with it vary between cultural groups and individual users.²

The major constituents of the nut are carbohydrates, fats, proteins, crude fibre, polyphenols (flavonols and tannins), alkaloids and mineral matter.³ The contents of the areca-nut that are proven to be carcinogens are tannins, polyphenols including safrole and hydroxychavicol, and catechins.⁴ These areca-nut constituents are involved with the collagen pathways, they increase the collagen production and inhibit the collagen degradation thereby causing fibrosis.⁴ Thus, areca-nut chewing is strongly associated with oral submucous fibrosis, a crippling and precancerous condition^{5,6} and is implicated in causing oral cancer.⁷ It has been found to be a common cause of airway obstruction in children leading to emergency admissions with potentially fatal complications.⁸ Areca-nut chewing

Practice Points

- Areca-nut use is common among school children in India and poses a number of health risks e.g. oral submucous fibrosis, cancer.
- The prevalence of the areca-nut chewing habit was 27% in school going children.
- Most of the children were non-regular users; 81% used sweetened areca-nuts, while 3.5% of the children used unsweetened areca-nut alone, and 14% used *pan masala*.
- The majority of the users (70.4%) were unaware of harmful effects of areca-nut use and only a few were aware that it may cause cancer or oral submucous fibrosis.
- Efforts should be taken to increase awareness regarding the health risks of areca-nut use among the general public, parents, teachers, and children/adolescents to discourage developing such habits.

causes broncho-constriction and may aggravate asthma.⁹ Other complications of the consumption of the areca-nut include gingivitis, staining of teeth and the

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possibility of leukoplakia.¹⁰ The euphoric effects as a result of consuming the areca-nut are due to its alkaloid contents such as arecoline (a cholinergic agent and central nervous system stimulant that increases the amount of acetylcholine in the brain), and arecaidine (a hydrolyzed product of arecoline).¹¹

Areca-nut is marketed in the form of the sweetened areca-nut (locally known as sweet *supari*) to target young children.¹² Chewing of the areca-nut usually starts early in life leading to a multitude of problems in adulthood. Childhood and adolescence are the times when people try this form of sweetened areca-nut and start to use the products.¹² Adolescence and young adulthood are the times when people are most susceptible, more vulnerable and more influenced by marketing than adults and if their friends, or their siblings chew, they are even more likely to try themselves.¹³

Areca-nut is available in processed and unprocessed forms. The sweet form of areca-nut is flavoured, fragranced, tasty, inexpensive, and also highly addictive. To flavour the areca-nut, saccharine and various colouring and flavouring agents are added. *Pan masala* is a dry, relatively non-perishable commercial preparation (which contain areca-nut, slaked lime, catechu, and condiments) was introduced in the market in the late 1960s and early 1970s.¹² As this is easily available in attractive looking packets in local shops, it became a favourite for children and adults alike as mouth fresheners. School children often offer the packets to each other in lieu of candy, but most of them do not know that these harmless looking sachets are actually very detrimental to their oral and general health. The nut used is usually of very poor quality, sometimes infested with fungus and microscopic insects and unfit for human consumption. The greedy manufacturers add sweeteners and food colours to make this substandard *supari* attractive and palatable, totally disregarding the fact that there are additional health risks for the consumers.¹² Although sweet *supari* is popular among all age groups and consumed by members of all social classes, the habit to use them as the perfect end to a snack or a meal, is usually cultivated during the school days. The intake usually begins with munching a pack or two a day. Gradually, the quantity increases as children find themselves habituated to it and then the craving sets in. Studies have shown that areca-nut chewing is an addictive practice, much like the use of nicotine.¹³ Till date, none of the Indian studies have pointed the prevalence of sweetened areca use. This study was conducted to determine the prevalence of sweetened areca-nut use and assess the awareness of health risks among school students of Indore, India.

Materials and methods

To evaluate the prevalence of areca-nut chewing, the study was carried out on 3896 school going children aged between 3-17 years of Indore, India. The data was collected from eight private and four public schools from the district of Indore of central India. A multistage random sampling technique was used to select children

of both sexes and from different socioeconomic backgrounds. The children were requested to fill up a questionnaire. The little ones were interviewed and their answers were put into the questionnaire for them. Prior to the study, permission was taken from the concerned head teachers of the schools and information was sent to parents via class teachers. Participants were assured of confidentiality. The data was recorded and transferred to a Microsoft Excel spreadsheet.

Result

Out of the total children surveyed, 1054 children (27%) were indulged in an areca-nut chewing habit. Among the users, 70.5% were boys and 20.5% were girls. Forty six percent of children from rural areas and 54% from urban areas were indulged in the habit. Government school children were more involved in it. Most of the children were non regular users; 81% used sweetened areca-nut, 3.5% of the children used unsweetened areca-nut alone and 14% used *pan masala*. Most of the children used at least one packet of areca-nut per day. '*Chanchal*' and '*Ritik gold*' were the most commonly used brands of sweetened and flavoured areca-nut among the children.

Fifty five percent of areca-nut users reported that they learnt the habit from their friends or siblings (Table 1). The majority of the users (70.4%) were unaware of the harmful effects of areca-nut use and only a few were aware that it may cause cancer or oral submucous fibrosis (Table 2).

Table 1: Socio-demographic characteristics of the respondents and their areca-nut chewing habits

Variables	Respondents (%)
<i>Gender</i>	
Male	743 (70.49%)
Female	311 (20.51%)
<i>Schools</i>	
Rural	
Government	299 (28.36%)
Non-government	187 (17.74%)
Urban	
Government	296 (28.08%)
Non-government	272 (25.8%)
<i>Areca-nut users</i>	
Regular user	86 (31.5%)
Non-regular user	208 (68.5%)
<i>Form of areca-nut chewed</i>	
Unsweetened areca-nut	36 (3.41%)
Sweetened areca-nut only	854 (81.02%)
Areca-nut and betel quid	18 (1.7%)
Pan masala	146 (13.85%)
<i>From whom children learned</i>	
Themselves	124 (11.76%)
Friends	582 (55.21%)
Siblings	216 (20.5%)
Parents	49 (4.64%)
Relatives	83 (7.87%)

Table 2: Awareness of health risks among respondents

Health risks	Respondents (%)
Chewing areca-nut has health risks	111 (10.53%)
Chewing areca-nut is harmless	201 (19.08%)
Don't know whether it has health risks or is harmless	742 (70.4%)
Health risk: oral submucous fibrosis	22 (2.08%)
Health risk: cancer	89 (8.45%)

Discussion

Areca-nut is the essential ingredient of a variety of widely used chewed products which cause a number of health risks in children and adults. Areca-nut products are easily available even in the small shops in India and play an integral part of religious, social and cultural functions. However, the habit of consuming this can have longer-term consequences on public health.^{12,13}

Several small surveys conducted in schools and colleges in several states of India have reported that 13-50% of students chew areca-nut, *pan masala* and *gutka* (a preparation of crushed areca-nut).¹⁴ We also found a similar array: in our study the mean prevalence for areca-nut chewing among school going children was 27%. Till date none of the Indian studies have pointed out the prevalence of sweetened areca use. In our study we found 81% of the children used a sweetened form of the areca-nut, and that 74% of school children aged 4-16 years in Karachi also consumed it.⁶ Fourteen percent chewed *pan masala* in our study whereas a study by Gupta & Ray¹⁴ found that 12% used *pan masala* in Patna, Bihar. In a survey of rural school-going teenagers in Punjab, India, two-thirds of respondents reported using *gutka* regularly.¹⁵ Another survey of students from junior and degree colleges in Maharashtra, found that 9.9% took *pan masala*, and 9.6% chewed *gutka*.¹⁶ Surveys conducted among medical and dental students in Patna, Bihar, India have identified that chewing of *pan masala* was also common.^{17,18}

Though the results are eloquent, we had several limitations. First, as the sample was drawn from one limited geographic area within Indore district, the results cannot properly be generalized to the national population. The other limitation of the study is that it was done among children of only a few schools so the results cannot be generalized to the whole population of Indore district. Data is applicable to those who attended school on the day of survey. Also, with the best of our efforts, we had limited published data related to our study in peer-reviewed journals to compare.

Conclusion

Areca-nut use is common among school children in India. Areca-nut use by the parents or friends, lack of knowledge on the harmful effects of areca-nut products,

and elders being indifferent towards this habit, affect the younger generation's perception towards high-risk behaviour. The consumption of the areca-nut, like cigarettes, is addictive and dangerous. Areca-nut use has the potential to cause immense harm to health. Unless effective health actions are undertaken to increase the health risks, children may carry this insidious habit into adulthood and conceivably adopt other addictive habits including tobacco use.

To diminish the use of the areca-nut, the Indian Government should consider restraining the trade, introduce advertising regulations, and should deem heavy taxes on it (thus raising its price). Further efforts should be taken to increase awareness regarding health risks of areca-nut use among general public, parents, teachers and children/adolescents to discourage developing such habits.

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