Betel Nut: A Socially Sanctioned Drug of Abuse ?

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"They are always chewing Arecca, a certaine Fruit like a Peare, cut in quarters and rolled up in leaves of a Tree called Bettre (or Vettele), like Bay leaves; which having chewed they spit forth. It makes the mouth red. They say they doe it to comfort the heart, nor could live without it."— Pigafetta, in Purchas,i. 38. [Circa 1521] [1]

Review of Literature

The use of betel nut, Areca catechu L. (family Palmaceae), as a masticatory by humans has been known since the 4th century A. D. in different parts of the world. It is estimated that over 600 million individuals consume betel nut (also called areca nut) in one form or an other world-wide. In old Indian scripts, such as Vagbhata (4th century), and Bhavamista (13th century), betel nut has been described as a therapeutic agent. Its use was recommended in many diseases, such as leucoderma, leprosy, anaemia, and obesity. It was also reported to have de-worming properties. In China, it has been used as a vermifuge since the 6th century and is still employed as such in some parts. [2]

Betel nut is traditionally masticated either alone or as a quid along with a large variety of ingredients, such as betel leaf (Piper betel; family Piperaceae), slaked lime, catechu, different types of tobacco, and various additives, perfumes, and stimulants. [3]

Additionally in India, there has been a dramatic rise over the last two decades, in the use of 'guthka' or 'pan masala', a scented, sweetened mixture of tobacco, betel and catechu chewed together. It is cheap and attractively packaged in sachets. Its use straddles the socioeconomic divide. Widely advertised, it enjoys massive sales all over India and provides sponsorship for sports events, beauty pageants and other popular events. This recent trend of chewing prepacked 'pan masala' has started to replace the habit of betel quid chewing [4]

Usually, men outnumber women in betel mastication habit in most parts of the world. However in Southern India, women's use, is on the face of it, far more widespread.[5]

Arecoline, the active ingredient in the betel nut, is a central nervous system stimulant [6]. It increases respiration and decreases the workload of the heart. Arecoline, has been reported to lower blood pressure. [7]

Apart from its undisputed role in oral cancers [8], anecdotal reports have imputed that betel use may be addictive [9], [10]. However a wide literature search did not reveal any detailed account of betel nut as a substance of abuse.

The current study was prompted by the question of whether betel use could lead to dependence.

Methodology

250 subjects [123 males (49.2%) and 127 females (50.8%)] comprised of psychiatrically ill patients and their well relatives were randomly selected from the in patient facilities at the National Institute of Mental Health and Neurosciences, Bangalore. All subjects were assessed for betel nut use on a 23 item Checklist for Dependence on Betel Nut which was constructed specially for the study. The Checklist documented: 1. Demographic status; 2. Frequency of use; 3. Form of betel used; 4. Process of Initiation of Use; 5. Onset of Use; 6. Attitudes; 7. Dependence Criteria; 8. Affected Status; 9. Comorbid Use of other substances.

Results

Demographic status : Of the 250 subjects interviewed there were 162 users and 88 nonusers. There was a significant difference in age between users and non users [40.13 (11.26) yrs vs. 35.39 (12.12) yrs] [t =3.1; df 1, p = 0.002]. There were significantly more female users [χ^2 =21.4; df 1, p = 0.000]. The number of years of education, narrowly escaped significance in differentiating between users (who were less educated; mean 5.1$\pm$ 5.04 yrs.) and non users (mean 6.46$\pm$ 5.40 yrs.) [t = -1.94, df 248, p = 0.054]. There were more users from rural background [χ^2 =4.34; df 1, p = 0.037]. Specifically, female users were more likely to be from a rural background [χ^2 =10.45; df 1, p = 0.001] and from the lower socio-economic strata [χ^2 =7.2; df 2, p = 0.027].

2. Frequency of use : 48% [78/ 162] of the users used betel more than once a day. The mean frequency of use was 5.9 $\pm$ 3.6 times per day. While 26% [19] of the users preferred to chew betel only as a digestive after meals, 74% used it more frequently and in not so well defined a manner.

3. Form of betel used : Unambiguous information was available on the type of betel preparation used in only 142 of the 162 users. Of these 44 (31%) used betel with multiple additives, principally tobacco (guthka, Pan Paraag etc.)[11] and 98 subjects (69%) used betel in the traditional form with lime and betel leaves or chewed betel alone.

4. Initiation : 87% [139] had been initiated into use by peers or significant family members and 42.6% had family history of betel use in the first degree. There was a significant relationship between betel use and Family History of betel use [χ^2 =6.64; df 1, p = 0.01]

5. Onset of Use : The mean age at onset of use was 24.6$\pm$7.2 years. 75% of all users had started by the time they were 30 years of age.

6. Attitudes: 65.2% [105 / 162] of the users attributed their use to Heightened Positive expectancies. Some of the prominent expectancies were that it increases concentration (18%) and enhances digestion and taste (43 %). A prominent side effect of use which was frequently (30%) noted was 'dryness of mouth'. Knowledge of harm – 40% of the users [65 /162] claimed to know that betel use could cause oral and other cancers .

Positive expectancies regarding Betel Use were significantly higher in users compared to non users [χ^2 =99.24; df 1, p = 0.000]; and significantly higher in dependent users compared to non - dependent users [χ^2 =146.09; df 1, p = 0.000]

7. Dependence Criteria: Craving was reported in 45% [73 / 162] of all users. Withdrawal features were commonly elicited: Aches, pains (14%), Decreased performance and fatiguability (25%), Irritability (25%), Lethargy (22%) and Sadness and feeling down (83%). Tolerance or the need to steadily increase the amount consumed was elicited in 44% [71] of the users. Use despite knowledge of harm was present in 40% [65]. Salience (preoccupation with seeking and using) was elicited in 43% [69]. Multiple attempts at abstinence were reported by 74 % [120] with a mean of 5.6 (3.7) attempts. 73 of the 126 betel users satisfied three or more of the dependence criteria. The dependent users differed from the casual users in being significantly older [t=2.9; df160, p= .004], having a greater frequency of use [t=14.5; df155, p= .000] ; more likely to be female [χ^2 =21.1; df 1, p = 0.000], married [χ^2 =10.8; df 2, p = 0.004] and have a history of betel use in other first degree

members of their family [χ^2 =1.6; df 1, p = 0.04]. The dependent users were again more likely than the casual users, to hold the views that betel chewing promoted social intercourse [χ^2 =18.6; df 1, p = 0.000], improved mood [χ^2 =90.7; df 1, p = 0.000], enhanced performance [χ^2 =84.2; df 1, p = 0.000] and aided digestion [χ^2 =10.5; df 1, p = 0.001].

While 38.8% of the plain betel users showed patterns of dependent use, 79.6% of the guthka [betel mixed with tobacco] users manifested dependence. Guthka users were significantly more likely than plain betel users [χ^2 =20.2; df 1, p = 0.000] to develop dependent patterns of use. Guthka users also had a significantly higher [t =4.9; df 57.4, p = 0.000] daily frequency of self administration [5.8(4.8) times per day] compared to plain betel users [1.9 (2.8) times per day].

Casual (non – dependent) users were more likely to restrict their use to social gatherings and festive occasions, than the dependent users who used it rather more frequently[χ^2 =150.1; df 2, p = 0.000].

Dependent users of betel nut were not more likely than the casual users to have a psychiatric illness [χ^2 =.19; df 1, p = 0.66]

8. Affected Status: No significant increase in risk for dependence was observed among patients compared to normals [χ^2 =1.5; df 1, p = 0.22]

9. Comorbid Use of other substances: While most users [83%] used no other substance, 12 % smoked cigarettes and / or beedies and 5% used alcohol

Discussion

The results of the present study suggest that there is ample evidence for a syndrome of Betel [Areca] nut dependence. The affected experience phenomena such as Craving, Withdrawal, Tolerance, Preoccupation with acquiring and using, Multiple attempts at abstinence with relapse and Use despite knowledge of harm.

While the addition of tobacco and other additives to the betel product seems to lead to greater risk of dependence, there is no doubt that betel alone carries significant risk of dependence.

Betel Use and Dependence appeared to be significantly higher in older cohorts. Being less educated, female, coming from a rural background and having a family history of use of betel contributed significantly to the likelihood of having positive expectancies regarding Betel Use

While there was no significant overrepresentation of any sex in the total sample, there did seem to be an obvious gender specificity in matters of use of betel, women significantly out-numbering men. This is a finding which goes against the grain of the popular belief that men usually out-number women in terms of the betel mastication habit. Betel use was significantly higher among women from lower socioeconomic backgrounds and from rural areas. Equally significant, there was no difference in guthka use between men and women.

In a country like India where it is rare to find women smoking tobacco or in fact using any other socially sanctioned substance like alcohol, betel and guthka must then represent the preferred substance of use and abuse for the large majority of poor, rural, Indian women.

The sample was taken from patients and their well attenders in a Psychiatric hospital. Most substances of abuse have generally been observed to be used relatively more in psychiatrically ill populations. It was surprising then, that the psychiatrically ill subjects, in this study, did not use more betel than the normal subjects.

Data from India [especially amongst Indian women] has strongly implicated betel quid chewing as a high risk for oral cancers [8]. Coupled with its addictive potential and the fact that the use of the substance has wide social sanction, betel nut use requires to be examined further in terms of its potential public health implications.

Public health initiatives against oral tobacco and betel, in India require to consider the addictive potential of betel nut in their programmes.

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