

## Betel quid (Paan) and diabetes care

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### Abstract

This communication focuses on an important, yet neglected, aspect of medicine, which has an impact on diabetes care as well. Betel quid (paan) chewing is a commonly encountered, socioculturally accepted, "culture-bound" addictive disorder. Betel quid chewing has unwanted psychotropic, carcinogenic and dysmetabolic effects. Thus, it should be discouraged as strongly as tobacco use. This communication calls for raised awareness among physicians and community leaders regarding this addictive disorder, and highlight the need for research on this topic.

**Keywords:** Drug addiction, drug dependence, metabolic syndrome, South Asia.

### Introduction

Betel quid is the fourth most commonly used psychoactive substance in the world, after caffeine, nicotine and alcohol.<sup>1</sup> Betel quid known in many parts of the South Asia as 'paan', is an integral part of South Asian culture and cuisine. It is available in different forms, such as 'saada, (simple); meetha' (sweet), 'palangtor' (aphrodisiac), and processed (tobacco-free: pan masala; tobacco-rich: gutka).

### Dependence

Though its use is socioculturally accepted, betel quid chewing is an addictive behaviour.<sup>2</sup> Betel quid chewing can foster addiction or dependence similar to that of cigarettes. This addiction is independent of, and not based on, the tobacco content of betel quid.<sup>3</sup> Areca nut, the main constituent of betel quid, along with betel leaves, slaked lime and tobacco, contains aromatic alkaloids such as arecoline, arecaidine, guvacine and guvacoline. These compounds bind to GABA receptors, and create a feeling of alertness and wellbeing.<sup>2</sup>

### Carcinogenic Effects

Betel quid use is associated with various precancerous and cancerous lesions, including those of oral cavity, pharynx, esophagus, liver, biliary tract and uterus. This

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association, too, is independent of the tobacco content in betel quid.<sup>4</sup> Betel quid is listed as a group I carcinogen by the international Agency for Research on Cancer.<sup>5</sup>

### Metabolic Effects

Betel quid has pleiotropic unwanted effects on metabolic and cardiovascular health (Table). Animal studies have revealed diabetogenic and obesogenic effects of betel nut.<sup>6</sup> Past betel quid chewing is associated with new onset diabetes,<sup>7</sup> while betel nut consumption has been shown to be associated with increased waist size (in men and women) and increased glucose levels (in women).<sup>8</sup>

A Bangladeshi cohort study, conducted over 10 years, has reported a greater risk of all-cause mortality and cancer related mortality in betel quid chewers. A dose - response relationship of duration and intensity of betel quid use was noted with all-cause mortality. However, no increase in cardiovascular disease was noted in betel quid chewers.<sup>9</sup>

**Table:** Adverse effects of betel quid chewing.

◆ Cancer	<ul style="list-style-type: none"> <li>■ Oral cavity</li> <li>■ Pharynx</li> <li>■ Esophagus</li> <li>■ Liver and biliary tract</li> <li>■ Uterus</li> </ul>
◆ Metabolism	<ul style="list-style-type: none"> <li>■ Obesity</li> <li>■ Diabetes</li> <li>■ Increased secretion of pro-inflammatory mediators</li> <li>■ Adipocyte dysfunction</li> </ul>
◆ GABA receptor inhibition	<ul style="list-style-type: none"> <li>■ Brain</li> <li>■ Pancreas</li> </ul>
◆ Autonomic dysfunction	<ul style="list-style-type: none"> <li>■ Central sympathomimetic effect</li> <li>■ Parasympathetic effect</li> <li>■ Vitamin D deficiency</li> </ul>
◆ Renal disease	<ul style="list-style-type: none"> <li>■ Chronic kidney disease</li> <li>■ Renal stone disease</li> </ul>
◆ Increased risk of infection	<ul style="list-style-type: none"> <li>■ HIV/AIDS</li> <li>■ Dengue fever</li> <li>■ Tuberculosis</li> <li>■ Typhoid</li> </ul>

In contrast, a meta analysis of 17 Asian studies, involving 5 cohorts and 12 case control studies, has demonstrated increased risk of obesity, metabolic syndrome, diabetes and cardiovascular disease in betel quid chewers.<sup>10</sup>

### Other Effects

Apart from its psychoactive, tumorigenic, and dysmetabolic effects, betel quid use impacts health in other ways as well. Betel quid use may predispose to urinary stone disease,<sup>11</sup> precipitate chronic kidney disease,<sup>12</sup> contribute to hypovitaminosis D,<sup>13</sup> and increase risk of infectious disease including HIV/AIDS, dengue fever, tuberculosis and typhoid.<sup>14</sup> Use during antenatal period has been shown to worsen pregnancy and neonatal outcomes.

### Assessment

Betel quid addiction can be measured by the Betel Quid Dependence Scale, which has been developed in Taiwan<sup>16</sup> and tested in Guam.<sup>17</sup> This scale includes three domains: physical and psychological urgent need (7 items), increasing dose (5 items) and maladaptive use (4 items). Dependence is noted to increase with increasing duration and frequency of use, and is greater in less-educated persons.

### Recommendations

All diabetes care professionals should be aware of the addictive and harmful effects of betel quid chewing. All stakeholders in diabetology should clearly state that betel quid chewing is not recommended in children, adolescents and adults, including persons at risk of diabetes or living with diabetes. Motivation to prevent, limit and manage betel quid chewing should be included as an integral part of routine diabetes care.

Betel quid chewers must be screened for precancerous lesions, cancer and metabolic dysfunction, and encouraged to quit chewing. Non pharmacological measures that can be used to treat betel quid dependence include brief intervention, cognitive behavioral therapy, and motivational interviewing. Healthy eating habits and physical activity must be encouraged in betel quid chewers. Pharmacological measures for betel quid dependence are similar to those used for nicotine dependence containing tobacco. Referral to a mental health professional should be considered if betel quid chewing is not amenable to simple advice and brief intervention and more intensive intervention is needed.

Social and religious leaders must be involved in social marketing about the harmful effects of betel quid chewing, Discussion and research on betel quid chewing

should be encouraged in the context of diabetes care in South Asia.

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