

Smokeless tobacco — health hazards from a good 'ole habit

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'Chewing tobacco is tobacco's body, smoke its ghost, and snuff is tobacco's soul!'

History of tobacco use

ALTHOUGH tobacco is now almost always associated with smoking, this is a relatively new trend in the long-recorded history of tobacco. For almost 500 years, snuff or chewing tobacco were the predominant forms and may even have been the original methods of taking tobacco. As early as Columbus' second voyage in 1493, Friar Roman Paine's journals described the taking of snuff and chewing tobacco in addition to 'drinking smoke'.² This friar probably introduced tobacco to Europe but it was not successfully cultivated there until 1556 when Andre de Thevet grew seeds from Brazil in his herbal garden at Angouleme.² There was great interest in the pharmaceutical potential of tobacco as it was known that it was widely used as a medicine in the New World. However, one of the most famous early 'trials' ended disastrously in 1559 when Jean Nicot (immortalized in the word nicotine), the French ambassador to Lisbon, recommended snuff to Francis II for asthma.³ The King's subsequent death enabled his widow, Mary Queen of Scots, to return to Scotland, thus setting in train the events which made possible the union of Scotland and England. It is not known if the tragic queen used tobacco in any form, but her son James VI (and I) certainly detested the various tobacco habits and wrote a pamphlet denouncing the 'stinking weed'.⁴ James used many of the techniques recommended by modern crusaders against tobacco. In addition to written materials like his *Counterblaste to tobacco* he raised tobacco taxes by 4000% and even demonstrated anatomical specimens such as black brains and viscera attributed to the effects of tobacco.⁵ In spite of royal disapproval, snuff quickly became a popular habit helped by a reputation as a powerful prophylactic against the plague as well as medicine 'for all lethargy, all long griefes, paines, and aches of the head, continued senselesses or benumbing of the brain'.² The preference for snuff over tobacco smoked in pipes has been attributed variously to the Royal Navy which banned smoking in its wooden vessels in the eighteenth century, and to the patronage of George III and Queen Charlotte. Nicknamed 'snuffy Charlotte', she was reputed to keep an entire room at Windsor Castle stocked with snuff. Whatever the reason, tobacco taken by sniffing or 'dipping', that is a pinch dissolved between gum and cheek, had displaced smoking in England by the middle of the eighteenth century. The habit was almost universal among adults of both sexes and snuff was regarded 'as the final reason for the human nose'.⁶

Chewing tobacco leaf was the tobacco habit preferred by American frontiersmen. 'Plug' tobacco was invented in North Carolina in the early nineteenth century. The term originates from the method of production which involved filling auger holes

in sweet-sapped trees (such as the maple) with leaf tobacco. After a few months, the plugs of sap-sweetened tobacco were harvested by splitting the logs.⁷ The Lorillard family who had been in the snuff business since arriving in America as Huguenot refugees in 1760, also came to dominate the market for plug tobacco. By the time of Charles Dickens' visit to America in 1842, chewing tobacco was an almost universal habit among American men and he described Washington as the 'headquarters of tobacco-tinctured saliva'.² Modern US senators have lost their predecessors' reputation for chewing tobacco and spitting but polished spittoons are still prominent in the Senate Building. Two large snuff boxes are also maintained just behind the Vice President's dias and \$161.10 is allowed in the budget for snuff.⁸

Public opinion slowly turned against smokeless tobacco towards the end of the nineteenth century with the acceptance of the germ theory and the recognition that many diseases, especially tuberculosis, could be spread by tobacco spitting and sneezing. The trend towards smoking was accelerated by the invention of a cigarette machine by James Bonsak in 1880. By 1885 production of cigarettes in USA reached one billion but it took until 1921 for cigarettes to surpass all other forms of tobacco; this trend was assisted by mass production and innovative advertising, particularly by the Camel Company. The First World War was probably an important contributor to the dissemination of the cigarette smoking habit and by the 1920s smoking tobacco had come to dominate the market. In the quarter century 1950-79, smokeless tobacco became regarded as a 'quaint' habit restricted to specific groups such as older farmers or to occupations where smoking was particularly hazardous, for example, the mining, petroleum and chemical industries. Snuff-dipping persisted as a habit of women in the deep south of the USA.⁹

Revival of smokeless tobacco use

Rather than disappearing completely, however, there has been a renaissance in the popularity of chewing tobacco since the 1970s. In the USA sales of smokeless tobacco products have increased by 11% per year since 1974.¹⁰ By 1983, the latest year for which complete statistics are available, there were an estimated 22 million users who spent \$900 million on smokeless tobacco products.¹¹ Sales reports for the first quarter of 1984 showed continued growth with moist snuff and loose-leaf tobacco leading the other forms.¹¹ This growth is attributed to the development of new markets, in particular young males in high school and college.¹² Aggressive advertising campaigns use sportsmen and 'macho' cowboy figures to promote smokeless tobacco products. As smokeless tobacco is not included in the ban on television advertising, promotion includes peak-time adverts featuring wad-chewing cowboys who dispatch snakes and other hazards with their bare hands. Less obviously commercial is the support from leading sportsmen and advertising by association through the sponsorship of sporting events. Baseball players in particular are seldom seen without the characteristic bulge of a tobacco plug in their cheeks.

One measure of the success of these campaigns can be seen in recent surveys of smokeless tobacco use by school children

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in the USA. A study reported in 1984 from Colorado found that 12.6% of students between 14 and 19 years of age were regular users of smokeless tobacco products.¹⁰ Even more recently, an Oklahoma study found rates of use ranging from 7% in nine-year-olds to 22% in 17-year-olds (news item, *The Nation's Health*, February 1985). In many schools the imprint of the circular tobacco tin on the back pocket of jeans has become a common sight and something of a status symbol. Among girls, smokeless tobacco use is much less common but there is an increase in 'snuff dipping' which is an update of the long established Southern habit. In the modern 'dip' the tobacco is enclosed in a fine pouch similar to a small teabag which is held between cheek and gum. This seems to be the only acceptable form of smokeless tobacco use among teenage girls at least in the central USA (MacDonald P, Walling AD, unpublished survey).

Health problems

This explosion in the use of smokeless tobacco is taking place at a time when adverse health effects from the habit are neither widely known nor, in many cases, clearly defined epidemiologically. In fact, advertising implies that smokeless tobacco is a safe alternative to smoking — a point of view which has even been suggested in the medical literature by Russell and colleagues¹³ in a discussion of the risks of cardiovascular and respiratory disease. While any habit which leads to nicotine intake and addiction must be regarded as hazardous, particularly to the cardiovascular system, there has been little research on the long-term systemic effects of smokeless tobacco. Squires and his co-workers have reported a significant rise in pulse and blood pressure induced by oral tobacco in both animals and humans.¹⁴ This contradicts an earlier report by Smith and colleagues,¹⁵ who based their conclusions on a retrospective review of snuff-users but excluded those with a history of cardiovascular disease.

In the same paper, written in 1970, Smith was unimpressed even with the evidence for smokeless tobacco as a factor in oral cancer and charged that 'many writers and clinicians have been willing to accept an association between mouth cancer and long-term snuff without well-documented clinical studies or experimental evidence from a large population'. This evidence has gradually been accumulating. In 1981, Winn and colleagues⁹ used a case-controlled study to demonstrate significant excess mortality from oral and pharyngeal cancer resulting from snuff-dipping by women in North Carolina. The increased risk of oral and pharyngeal cancer was four-fold among snuff users and 50-fold for cancers of the gingival and buccal mucosa. They implicated n-nitrosornicotine as one carcinogen which had already demonstrated tumour-initiating properties in animal studies.¹⁶ Writing in 1982, Christen had little doubt that smokeless tobacco had the potential to cause cancer of the mouth, pharynx, larynx and oesophagus.² He cited 646 cases attributable to smokeless tobacco, including a case of cancer of the ear in a patient who had regularly put snuff into his left ear for 42 years! Similarly, Squier¹² was convinced of the association and was alarmed by the growing exposure of young people to smokeless tobacco. His argument was based in part on epidemiological evidence from India where 48% of cancers occur in the oral cavity and the prevalence of tobacco chewing is estimated to reach 73%. Other international evidence has come from Scandinavia, for example from Sundstrom.¹⁷ However, there remains an element of doubt as to the carcinogenicity of smokeless tobacco. Reviewing the literature in 1984, Poulson concluded that the definitive answer remained elusive. There is, however, sufficient evidence for the US Surgeon General to ex-

press concern¹² and for the federal government to fund studies on the epidemiology of smokeless tobacco use and schemes to discourage the habit.

From this confused situation, the only clear message is that there is at least cause for considerable concern over the rapidly growing fashion for smokeless tobacco use among young people. The evidence for a causal link to oral and pharyngeal cancers seems almost complete and one study has gone so far as to calculate an annual incidence of oral and pharyngeal cancer among snuff dippers of 26 cases per 100 000 users.⁹ More sinister is the paucity of our understanding of the systemic effects of long-term exposure to constituents of smokeless tobacco. These constituents include not only nicotine but a wide range of herbicides, pesticides, colourings and flavourings.

Conclusion

The plug of tobacco in the cheek is part of the cowboy image currently popular in both the USA and Europe. It would be a tragedy if both urban and rural cowboys were setting in train health problems whose effects may not become apparent for many years. It is time for both the general public and the health professions to stop regarding smokeless tobacco as a quaint and amusing habit and to start a long, careful assessment of its potential as a serious health hazard.

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