

SMOKING AND HEALTH IN THE VICTORIAN EAST END



Smoking is an epidemic that kills 5.4 million people each year (World Health Organisation 2008). This poster explores both the extent to which tobacco use can be identified in 19th century skeletal remains, and the evidence of resultant damage to health. We discuss the increased susceptibility to respiratory disease brought about by tobacco consumption, and the link between smoking and socio-economic status.

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Whilst there are few reports of gender differentiation in modern smoking studies, this study shows strong evidence of gender-related variation from Victorian London. This demonstrates that culturally-determined factors affected disease and mortality.

MATERIALS AND METHODS

The cemetery of the Catholic Mission of St Mary and St Michael, Whitechapel, London, is dated to 1843–1854, a period of just 11 years. Epigraphic data suggests that much of the sample may have been of Irish extraction, with some possibly migrating to escape the Great Irish Famine.

In advance of construction work, the Museum of London Archaeology Service were contracted to archaeologically excavate a portion of the cemetery. This resulted in the full osteological analysis of 705 individuals (268 adults). The coffined nature of the sample and the depth of the burial stacks ensured a good level of preservation. The lack of truncation within the cemetery led to high rates of skeletal completeness.

Individuals with complete or partial dentitions were included in this study. All dentitions, both subadult (<18 years of age at death) and adult, were inspected for pipe facets on the occlusal surfaces of the crowns. Pipe facets were identified as concave patterns of wear involving at least two and often four teeth, representing wear from habitual holding of the stems of clay pipes between the teeth. The presence of staining on the lingual surfaces of teeth was also recorded.

RESULTS

Dentitions were present in 92.5% (248/268) of adults from St Mary and St Michael. Fifty-eight of these (248: 23.4%) displayed occlusal wear patterns characteristic of the habitual use of a clay pipe. In many cases, a clear circular 'hole' was evident when the upper and lower jaws were closed (Fig 1). Males were affected more frequently than females to a statistically significant extent.



Fig 1 Individual [1099] with 'pipe facet' from Sts Mary and Michael

Brown staining on the lingual surfaces of teeth (Fig 2) was also more common in males. Staining was found in significantly more adults with pipe facets (32/58: 55.2%) than those without (8/190: 4.2%) ($\chi^2 = 85.31$, $df = 1$, $p \leq 0.0001$) (Table 1). No subadults were affected.



Fig 2 Individual [1051] with dental (lingual) staining from Sts Mary and Michael

Adult individuals with dentitions affected by pipe facets and/or lingual staining had a significantly higher crude prevalence rate of rib periostitis (27/66: 40.9%) when compared to those without (43/197: 21.8%) ($\chi^2 = 9.2$, $df = 1$, $p \leq 0.002$).

Table 1 Pipe facet and dental (lingual) staining prevalence by dentitions present from Sts Mary and Michael

	n. dentitions	Pipe facet	%	Lingual stains	%	Facets and stains	%
Adults	248	58	23.4	40	16.1	32	12.9
Females	102	3	2.9	4	3.9	1	1.0
Males	139	55	39.6	36	25.9	31	22.3

As there were only a small number of females with pipe facets (3) and/or lingual staining (4), male prevalence alone was used to compare mortality curves for those with and without signs of tobacco use. The evidence suggests that males with pipe facets and lingual staining were less likely to survive beyond 35 years of age. In the 26–35 year age category, the mortality of males with lingual staining was higher than that of males with no staining or pipe facets. The same was true of 26–35 year old males with pipe facets. It is possible that this dramatic variation between suggested smokers and non-smokers reflects a less healthy subset of individuals with lower life expectancies (Fig 3).

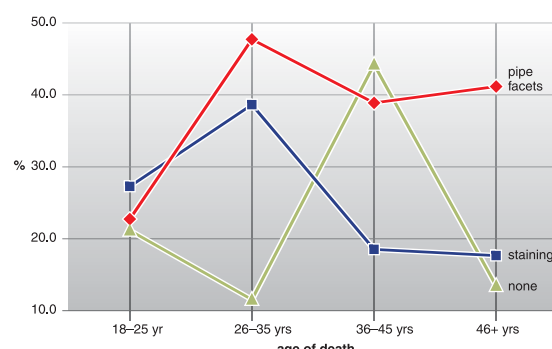


Fig 3 Mortality of male 'smokers' v male 'non-smokers' from Sts Mary and Michael

The prevalence rate of both pipe facets and staining was affected by ante-mortem tooth loss (193/248: 77.8% of adult individuals). Some individuals may have been smoking but lost their teeth prior to death.

A higher prevalence of adults with signs of smoking were affected by sub-gingival calculus when compared to adults overall. Whilst this suggests that smoking contributed to dental disease, there was no evidence of a link with periodontal disease, a known risk factor in tobacco consumption (World Health Organisation 2008).

SUMMARY AND CONCLUSIONS

Pipe and cigar smoking were popular in the 19th century, and in 1847 Philip Morris opened his first shop in London, selling hand-rolled Turkish cigarettes (Borio 1993–2007). However, there were protest groups such as The Anti-Smoking Society, who were derided in Punch magazine (Punch 1855).

It was not possible to demonstrate at what age most individuals took up smoking. There were a number of young adults with notches, which may have taken several years to develop, implying that the smoking of pipes could have begun prior to adulthood. If so, there may have been variations in the health of immature smokers and non-smokers. Male stature was investigated in order to see if there was any difference between the two samples. The results produced a slightly lower mean height for smokers, but there was no statistically significant difference from the non-smokers' mean.

Smoking is associated with an increased incidence of lung disease in modern populations. Adult smokers at St Mary and St Michael were more likely to have osteological signs of lung disease when compared to non-smokers, possibly as a result of an increased susceptibility to respiratory disease brought about by tobacco consumption. Alternatively, it may be that those who smoked belonged to a particular socioeconomic group with an increased vulnerability to disease in general. In modern studies, high levels of smoking are invariably associated with low status groups (World Health Organisation 2008). If this were also true in Victorian London, it is possible that osteological evidence of tobacco use could be employed as an indicator of status, particularly at a population level.

Such evidence of tobacco use may prove a rich source of further research. While social status may have been important in determining the levels of smoking within the population, cultural factors such as gender were just as critical (Fig 4). Many males smoked, most females did not.



Fig 4 Ink drawing by S. Jenner 1850. Two men smoking pipes. Wellcome Library, London

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