An update on oral cavity cancer: epidemiological trends, prevention strategies and novel approaches in diagnosis and prognosis

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In the UK, the incidence of oral cavity cancer continues to rise, with an increase of around 60% over the past 10 years. Many patients still present with advanced disease, often resulting in locoregional recurrence and poor outcomes, which has not changed significantly for over four decades. Changes in aetiology may also be emerging, given the decline of smoking in developed countries. Therefore, new methods to better target prevention, improve screening and detect recurrence are needed. High-throughput 'omics' technologies appear promising for future individual-level diagnosis and prognosis. However, given this is a relatively rare cancer with significant intra-tumour heterogeneity and variation in patient response, reliable biomarkers have been difficult to elucidate. From a public health perspective, implementing these novel technologies into current services would require substantial practical, financial and ethical considerations. This may be difficult to justify and implement at present, therefore focus remains on early detection using new patient-led follow-up strategies. This paper reviews the latest evidence on epidemiological trends in oral cavity cancer to help identify at risk groups, population-based approaches for prevention, in addition to potential cutting-edge approaches in the diagnosis and prognosis of this disease.

Keywords: Epidemiology, Oral Cancer, Survival, Risk Factors, Squamous Cell Carcinoma, Mouth Neoplasms

Introduction

Head and neck cancer, which includes the oral cavity is the 7th most common cancer globally, accounting for more than 660,000 new cases and 325,000 deaths each year. In the UK, the overall incidence of oral cavity cancer continues to rise, with an increase of around 60% over the past 10 years (Cancer Research UK (CRUK), 2015; Warnakulasuriya, 2009). Globally, incidence and mortality remain higher among males, with 150,000 more cases and 70,000 more deaths worldwide reported in males compared to females. Despite this however, the data suggest an increasing trend in oral cavity cancer amongst women and a decreasing trend for men in Europe and the United States (Miranda-Filho and Bray, 2020; Sung *et al.*, 2021). The highest age-standardised incidence rates (per 100,000 person-years) for oral cavity cancer are in Melanesia, namely Papua New Guinea (males= 22.2; females= 11.9), South Central Asia (males= 13.3; females= 4.6)) and Eastern Europe (males= 9.2; females= 1.9) (Sung *et al.*, 2021).

Ninety percent of all malignant tumours that arise from the oral mucosal epithelium are squamous cell carcinomas (OSCC) (Vigneswaran and Williams, 2014). The definition of oral cancer often varies between studies, with many combining oral and oropharyngeal cancer subsites, although differences in the aetiology, management and response to treatment means they should be considered as distinct disease entities (Conway, 2018; Thomas *et al.*, 2018). Therefore, the term oral cancer in the context of this review will focus only on cancer of the oral cavity. In addition to registries, the use of International Classification of Diseases (ICD-10) codes C00-C06 (World Health Organization (WHO), 2016), has helped standardise the collection and curation of cancer data (Table 1). The highest risk sites include lateral border of the tongue and the floor of mouth.

Table 1. International Classification of Diseases (ICD-10) codes for oral cavity cancer.

Main site	*ICD-10 Code*
Malignant neoplasms of lip	C00
Malignant neoplasm of base of tongue	C01
Malignant neoplasm of other and unspecified part of tongue	C02
Malignant neoplasm of gum	C03
Malignant neoplasm of floor of mouth	C04
Malignant neoplasm of palate	C05
Malignant neoplasm of other and unspecified parts of mouth	C06

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