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Incidence of oral and oropharyngeal cancer in United Kingdom (1990—1999)—recent trends and regional variation

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Summary This study aimed to determine whether the incidence of oral cancer is continuing to rise in the UK and if this varies geographically. A descriptive epidemiological study of oral cancer incidence in 12 UK cancer registries (1990—1999) was undertaken. Poisson regression models were employed to assess trends. There were 32,852 oral cancer cases registered (1990—1999). Statistically significant increases in incidence of 18% and 30% were seen in males and females respectively ($p < 0.01$). The trend was observed in younger (<45 years) and older (45+ years) age groups ($p < 0.01$) with 3.5% and 2.4% average annual increases respectively. These increases were consistent for the majority of regions in the older group. For the younger group the increases in incidence were more rapid and differed geographically. Incidence remains higher in men than women, in older compared with younger groups, and in northern regions. These findings provide evidence of a continuing increase in the burden of oral cancer across the UK.

Introduction

Epidemiological research into oral cancer is complicated by the variety of anatomical subsites which has lead to

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diversity of reporting in this field.[1] While these sites are anatomically diverse, cancers of the oral cavity and oropharynx are for the most part homogeneous with respect to the descriptive epidemiology, clinical presentation and major risk factors associated with their causation.[2] Moreover from a clinical point of view all sites can be examined by a routine oral health assessment.[3] Henceforth, the term ''oral cancer'' will be used to encompass both oral and oropharyngeal cancer. Incidence of oral cancer varies markedly world-wide. Globally it is the eighth most common malignancy, with an estimated 405,318 newly diagnosed cases of oral cancer occurring in 2002.[4] The highest rates are generally registered in a few developing countries, particularly those of the Indian subcontinent, where the disease accounts for up to 40% of all malignancies and is the most common malignancy among men. However, there are pockets of high incidence in industrialised western countries—the Bas-Rhin region of France experiences some of the highest rates in the world.[4]

In England and Wales oral cancers have been reported as being the eleventh most common malignancy in males and sixteenth most common in females,[2] for both males and females, the overall age-standardised incidence rate of lip, mouth and pharyngeal cancers declined slightly during the 1970s but remained stable during the 1980s and 1990s.[5] In Scotland, cancers of the head and neck (which also includes laryngeal cancer), for which routine data is collected, rank fourth and eleventh for males and females respectively.[6]

Oral cancer in the UK is rare in patients under 45 years, occurring mainly in males in their 6th and 7th decade of life from socio-economically deprived backgrounds.[5,6] Younger patients, defined arbitrarily here and elsewhere, as being aged less than 45 years, have previously been estimated to account for approximately 6% of all oral cancers.[7] Concern that mortality rates for tongue cancer are increasing in young males was raised from analysis of Scottish data over 15 years ago.[8] Later evidence confirmed that this may be a problem experienced world-wide.[9] From a risk factor point of view, it has been suggested that oral cancer in the young may be a distinct entity which acts in an aggressive manner. [7,10]

Rising trends in oral cancer incidence have been observed internationally[4] and also within the UK[3,5,11] and a dramatic increase in incidence has been reported in Scotland from the 1980s to the 1990s.[2] However, a detailed comparative analysis across the UK has not been undertaken. This paper describes the recent time trends of oral cancer incidence in the UK and investigates regional variations using data from the population-based UK cancer registries.

Patients and methods

The study population includes all individuals registered with histologically confirmed carcinoma of the lip (ICD10 C00), mouth or oral cavity (C01-06), and oropharynx (C09-10) as detailed in Table 1, diagnosed between January 1st 1990 to 31st December 1999, from the 12 regional registries which have 100% coverage of the United Kingdom population. Where case diagnoses were provided coded to ICD 9 they were recoded to ICD 10.[12]

Annual mid-term population estimates for the period by age and sex were supplied for England and Wales by the Office for National Statistics (ONS),[13] for Northern Ireland by the Northern Ireland Statistics and Research Agency[14] and for Scotland by the General Registrar Office for Scotland.[15]

All incidence rates are reported as age-standardised per 100,000 person-years at risk. To account for changes over time in the age composition of the population, incidence rates were age-standardised using the direct method to the ''European standard population''[16] giving European age-standardised rates (EASRs). Age-standardised incidence rates give greater insight into trends over time and are more useful for comparison between areas, age groups and sexes.

Statistical analyses were performed on SPSS for Windows 7.5 (SPSS Inc.) and Poisson regression analyses were performed using STATA9.0 (STATA Corp.) statistical package. Lifetime risk of cancer was calculated using the cumulative approach.[16,17]

Poisson regression models were used to assess the significance of trends in incidence after adjusting for age (5 year age groups) and sex. Variations in trends between cancer registries were assessed using Poisson regression to examine interactions between time and cancer registries. Poisson regression was also used to model the incidence trends, adjusting for any changes in the age profile of the population (using registry specific populations adjusted for age profile not EASR). Estimates of the percentage change from the first to the last year (and annually) in incidence over time were extracted from the models.

Table 1 ICD-10 Codes for oral cancer used for data collection

ICD-10 Code	Site
C00	Lip
C01	Base of tongue
C02	Other and unspecified parts of tongue
C03	Gum
C04	Floor of mouth
C05	Palate
C06	Other and unspecified parts of mouth
C09	Tonsil
C10	Oropharynx
C14	Other and ill defined sites in the lip, oral cavity and pharynx