



King Saud University
The Saudi Journal for Dental Research

www.ksu.edu.sa
www.sciencedirect.com



ORIGINAL ARTICLE

Oral cancer trends in Iraq from 2000 to 2008



Omar Shebli Museedi *, Wasan H. Younis

Oral Diagnosis Department, College of Dentistry, Baghdad University, Iraq

Received 29 March 2013; revised 30 July 2013; accepted 8 August 2013
Available online 31 August 2013

KEYWORDS

Oral cancer;
Iraqi cancer registry;
2000–2008

Abstract *Background:* The aim of this study was to identify differences in oral cancer incidence among sexes, age groups and oral sites over time in Iraqi population.

Methods: Data was obtained from Iraqi cancer registry, differences and trends were assessed with the Wilcoxon matched-pairs signed-ranks test and Regression test, respectively.

Results: In Iraq from 2000 to 2008, there were 1787 new cases of oral cancer registered, 1035 in men and 752 in women. Cancer at all oral sites affected men more than women. The Tongue other (ICD-02) is the most frequent site follow by lip (ICD-00).

Conclusion: The decrease in the percent of oral cancer incidence in Iraq not compatible with the high percent of exposure to the risk factors, Iraqi cancer registry failed in collecting data concerning risk factor and the mortality rate.

© 2013 Production and hosting by Elsevier B.V. on behalf of King Saud University.

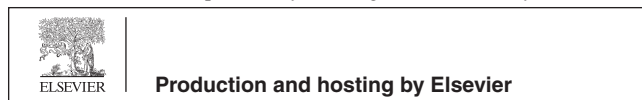
1. Introduction

Oral cancer can be defined as a neoplasm involving the oral cavity, which begins at the lip and ends at the anterior pillar of the fauces. ¹An estimated 263,000 new oral cancer cases were reported annually over the world which account 2.1% of all new cancers were reported for this reason, Oral cancer considered as a major health problem worldwide². The prevalence and incidence of oral cancer worldwide have been widely documented.³ Incidence rate of oral cancer is widely different by geographic location, even within one location, the incidence

varies among groups categorized by age, sex or race, and also incidence rate varies over time.⁴ Geographical variations in the prevalence of oral cancer indicate that the socio-cultural life-style of a population plays an important role in the etiology of oral cancer,⁵ in addition to the practices of tobacco smoking and drinking alcohol which are established cultural risk factors for oral cancer worldwide.⁶ In some industrialized countries the prevalence of oral cancer witnessed an increase. From 1990 to 1999, in the UK there was a statistical significant increase in oral cancers especially in lip cancer⁷ which was also noticed in Netherland and Denmark.⁸ On the other hand, other industrialized countries reported a decrease in the prevalence of oral cancer like the USA, Italy, Hong Kong, France, Germany and Australia.⁹ Other countries reported that oral cancer was increased than the average of oral cancer in the world such as India, Pakistan and Bangladesh reaching 25% of all new cases of cancer.¹⁰ For these reasons and difference in trends of oral cancer around the world we present a detailed analysis of oral cancer registered in Iraq from 2000 to 2008.

* Corresponding author. Tel.: +964 7901576965.
E-mail address: omarshma81@yahoo.com (O.S. Museedi).

Peer review under responsibility of King Saud University.



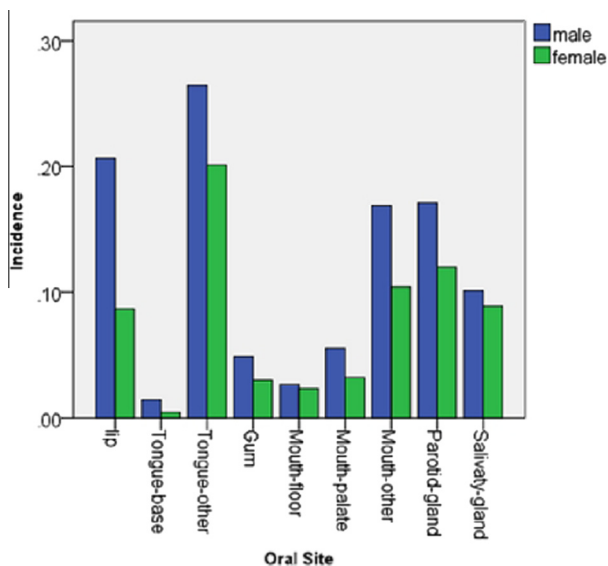


Figure 1 Oral cancer incidence in different oral sites.

This analysis of Iraqi oral cancer data was undertaken to identify differences in oral cancer incidence between sex, age group and oral site over time.

2. Materials and methods

Data for current analysis were obtained from Iraqi Cancer Registry for period from 2000 to 2008. The Iraqi Cancer Registry compiles all primary malignant neoplasm diagnosed in Iraq. The reporting sources of Iraqi Cancer Registry include governmental and private hospitals, pathology laboratories

Table 2 Histopathology of oral malignancies affecting oral cancer from C00-C06 in Iraq 2000–2008.

Histopathology	Percent
SCC	90.92
Adenoid Cystic Carcinoma	1.67
Basel cell carcinoma	1.49
Adenocarcinoma	1.23
Carcinoma undifferentiated	1.02
Rhabdomyosarcoma	0.95
Mucoepidermoid carcinoma	0.85
Fibrosarcoma	0.64
Hemangiosarcoma	0.44
Kaposi sarcoma	0.41
Verrucous carcinoma	0.15
Spindle cell carcinoma	0.13
Fibrous Histiocytoma	0.08

and radiotherapy units. The Iraqi Cancer Registry collects cancer data from all Iraqi governorates, statistical evaluation and processing are undertaken then reports of epidemiological cancer data for Iraq as a whole are issued on annual basis. Some issues produced by Iraqi Cancer Registry did not contain the cancer data concerned with Iraqi Kurdistan region, so we analyze in this study data of all Iraqi governorates except Kurdistan region.

Data were analyzed by age, gender, primary site and histologic grade based on the World Health Organization International classification of Disease for Oncology 3rd edition (ICD-0–3) ICD-10 codes. Oral cancer was defined as malignant disease affecting the Lip (C00), Tongue base (C01), Tongue other (C02), Gum (C03), Mouth floor (C04), Mouth palate (C05), Mouth other (C06), Parotid gland (C07) and Gland Other (C08). Differences in oral cancer incidence between

Table 1 Mean of incidence in male and female in Iraq from 2000 to 2008.

ICD		Mean of incidence	Std. deviation	<i>p</i> -Value
Lip	Male	0.21	0.080	0.003*
	Female	0.09	0.044	
Tongue-base	Male	0.01	0.005	0.003*
	Female	0.00	0.005	
Tongue-other	Male	0.26	0.027	0.004*
	Female	0.20	0.049	
Gum	Male	0.05	0.011	0.004*
	Female	0.03	0.011	
Mouth-floor	Male	0.03	0.015	0.477
	Female	0.02	0.009	
Mouth-palate	Male	0.06	0.013	0.007*
	Female	0.03	0.016	
Mouth-other	Male	0.17	0.052	0.021*
	Female	0.10	0.042	
Parotid-gland	Male	0.17	0.062	0.092
	Female	0.12	0.031	
Salivary-gland others	Male	0.10	0.040	0.533
	Female	0.09	0.034	

* *P* value < 0.05.

Table 3 Histopathology of oral malignancies affecting major salivary gland C07–C08 in Iraq 2000–2008.

Histopathology	Percent
Mucoepidermoid carcinoma	45.11
Adenocarcinoma	26.90
Adenoid Cystic Carcinoma	24.25
Acinar cell Carcinoma	2.10
Plemorphic adenocarcinoma	1.68

men and women were assessed with the Wilcoxon matched-pairs signed-rank test. Trends in oral cancer incidence were assessed with regression test. Differences and trends were considered significant at $p < 0.05$.

3. Results

From 2000 to 2008, there were 1787 new oral cancers registered in Iraq, 1035 in men and 752 in women. Oral cancer accounted for approximately 2% percent of all cancers. The tongue other (ICD-02) is the most frequent site followed by the lip (ICD-00) (Fig. 1).

Cancer at all oral sites affected men more than women. Lip cancer, Tongue base, Tongue other, Gum, mouth palate and mouth other are significant in men than women (Table 1).

Squamous cell carcinoma (SCC) was the most common oral malignancy accounting 90.92% for histopathological analysis for C00 to C06. For major salivary gland cancer (C07 and C08) mucoepidermoid carcinoma was the most malignant tumor with a percentage of 45.11% see (Tables 2 and 3).

The incidence of oral cancer in Iraq from 2000 to 2008 is shown in Fig. 2, there was a significant decrease in the oral cancer with years, in men a significant decrease in the lip, mouth floor, mouth palate and parotid gland, in women a significant decrease in the lip. Tongue other, gum, mouth palate and parotid gland (Table 4).

The issue produced by Iraqi cancer registry divided the age group every five years, periods start as 0–4, 5–9, 10–14,till 90-above. Here in this study the age of patients was divided into three subgroups 0–29, 30–59 and 60-above, in Fig. 3 see the age distribution of oral cancer among Iraqi men from 2000 to 2008, while in Fig. 4 see the distribution in women. The majority of oral cancers among Iraqi men and women at all oral sites were in the 60-above age group. Less than 10% of cancers affects 0–29 age group. There was a

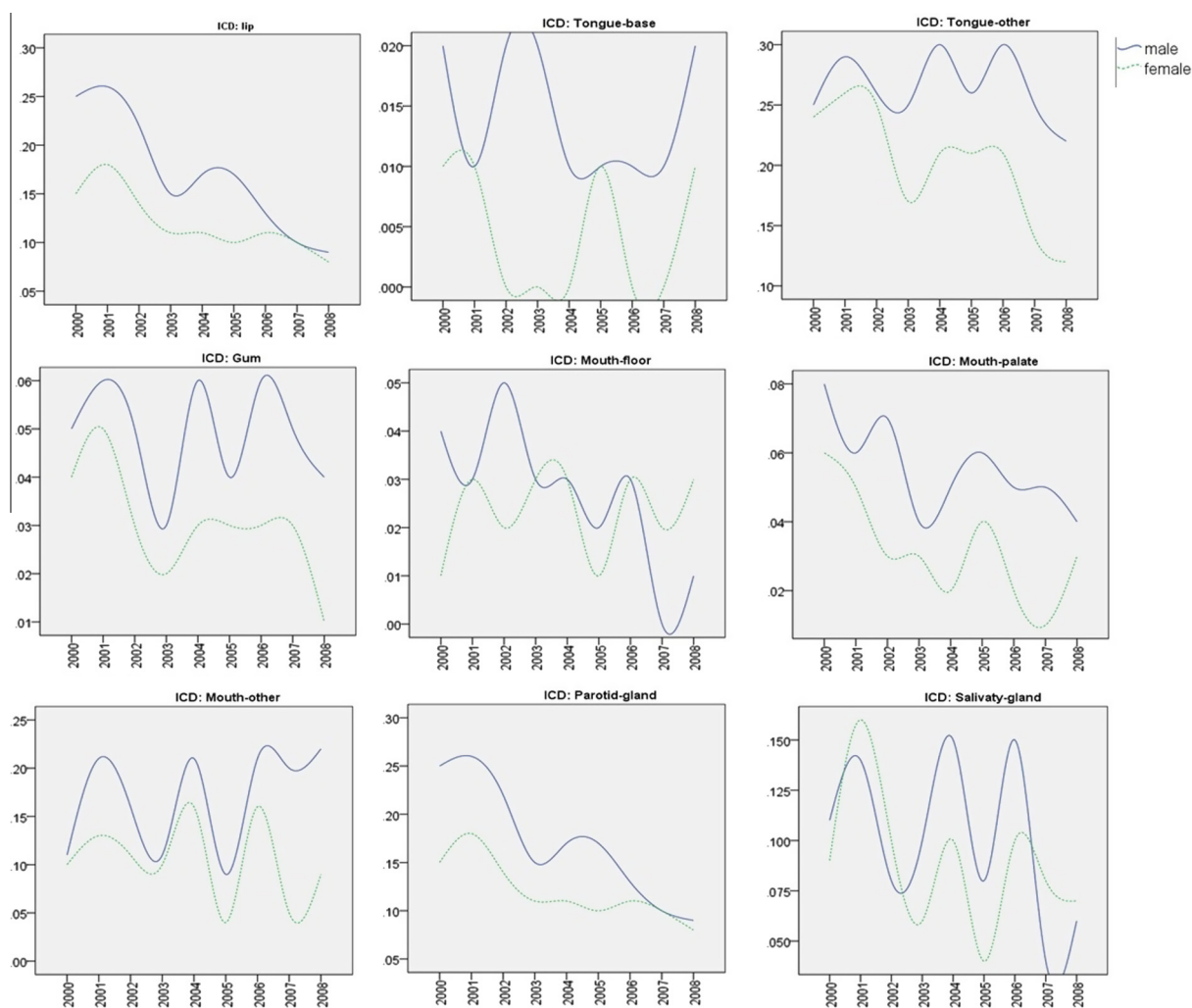


Figure 2 Trends of oral cancer incidence per 100 000 in Iraq from 2000 to 2008.

Table 4 Oral cancer incidence from 2000 to 2008.

Site	Gender	P-value	Site	Gender	P-value
Lip	Male	0.001*	Mouth palate	Male	0.029*
	Female	0.001*		Female	0.026*
Tongue base	Male	0.5	Mouth other	Male	0.251
	Female	0.656		Female	0.5
Tongue other	Male	0.51	Parotid gland	Male	0.001*
	Female	0.006*		Female	0.002*
Gum	Male	0.656	Salivary gland others	Male	0.241
	Female	0.038*		Female	0.212
Mouth floor	Male	0.011*			
	Female	0.493			

* P value < 0.05.

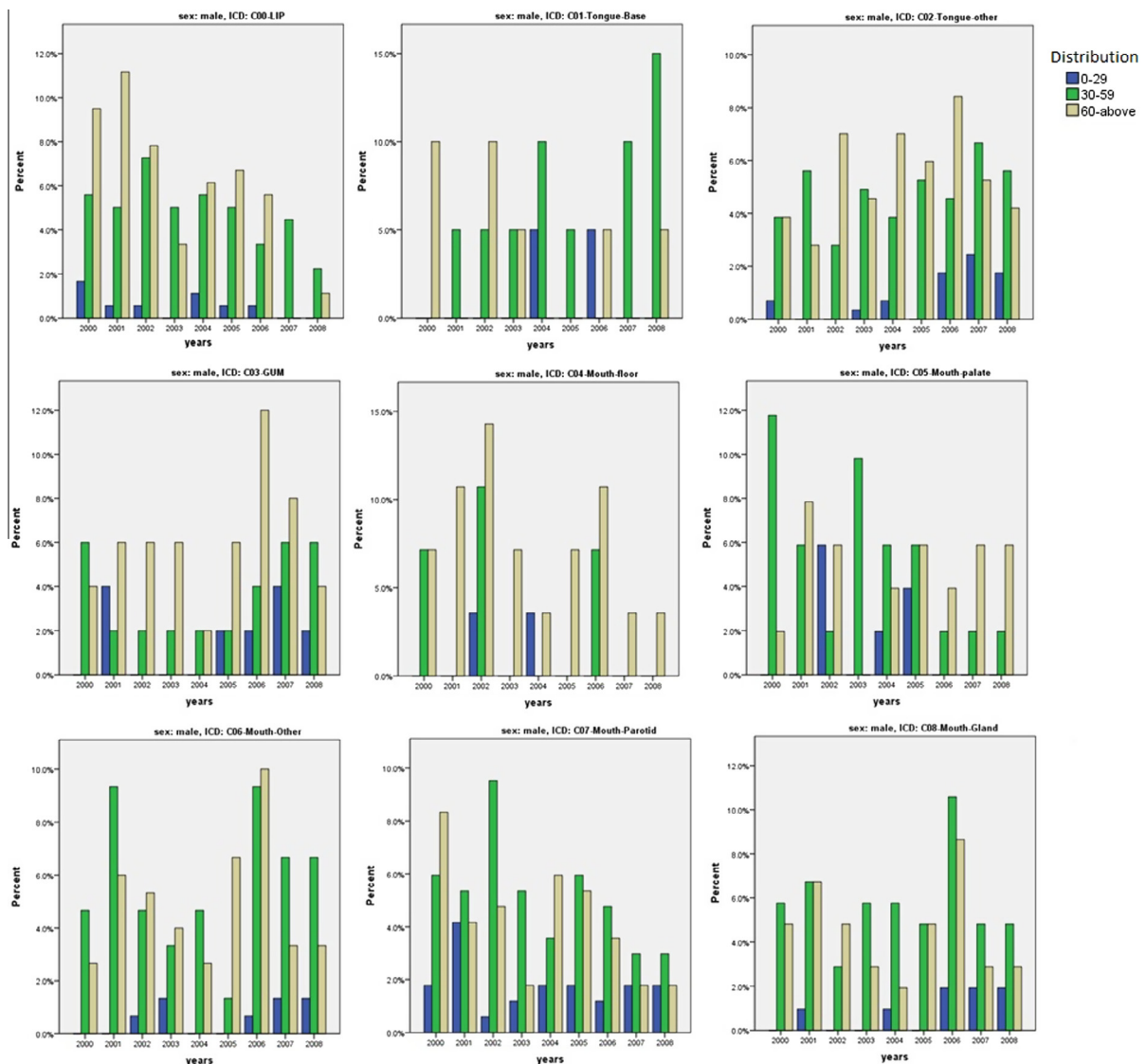


Figure 3 Trends of oral cancer incidence according to age distribution in male.

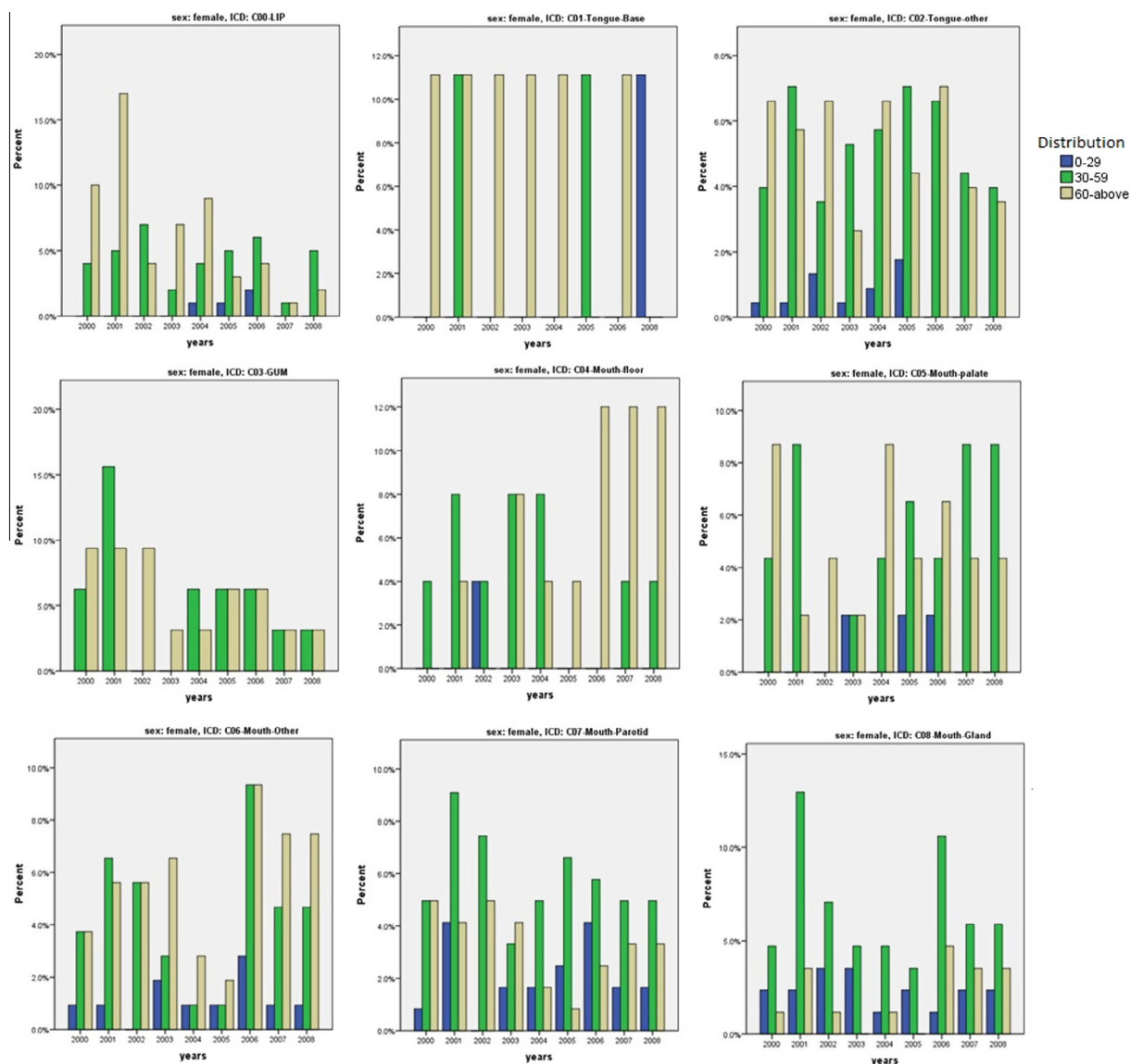


Figure 4 Trends of oral cancer incidence according to age distribution in female.

steady increase in the incidence of lip cancer with increasing age. At age 60 and above, the percent of incidence of lip cancer was 51.4% in men and 57% in women. The youngest age group affected by lip cancer was 10–14 for men, and 20–24 for women. The incidence of tongue base and tongue other cancer peaked at age 60–64, 65–69 respectively in men, and 60–64, 50–54 respectively in women. The youngest age group affected by tongue cancer was 15–19 for both men and women. The incidence of major salivary gland peaked at [65–69 for parotid gland, 50–54 for other gland] in men, and [70–74 for parotid gland, 55–59 for other gland] in women. The youngest age group affected was 10–14 for both men and women.

4. Discussion

In this descriptive study oral cancer affected men more than women in all oral sites; male: female oral cancer ratio was

1.3:1. Most similar studies in countries around the world revealed that oral cancer is more common in men than in women and the ratio of male to female diagnosed with oral cancer is about 1.5:1.¹⁰ The difference in oral cancer between men and women is due to an increase in exposure of men to exogenous carcinogens.¹¹ The variations in the contributions of smoking and alcohol were the possible cause of difference in oral cancer between men and women, in addition men are exposed to solar radiation more than women due to the nature of their profession which increased the risk of lip cancer.¹¹

This study revealed the tongue is the most common site for oral cancer among Iraqi people which is in agreement with studies in European and the US populations.¹⁰ Otherwise the studies among Asian populations revealed that the most common site is Buccal mucosa due to betel quid/tobacco chewing habits.¹⁰

The majority of oral cancer in this study was SCC which accounts about 90.2%. In all similar previous studies, SCC was

the most frequent lesion but with different frequency in each study. Most studies in the world reported an occurrence of SCC above 90% and other malignant tumors account less than 10%.¹² As we see the mucoepidermoid carcinoma was the most common malignant cancer in the Parotid gland (C07) and Gland Other (C08), that agrees with Vargas et al. and Li et al. studies^{13,14} as common salivary gland malignant tumors, but there was about 26.9% of salivary gland tumors recorded as adenocarcinoma with no specific histopathology, which indicated a weakness in recording the histopathological entity especially for the salivary gland.

In the present study only 10% of carcinomas occurred in patients younger than 30 years old. The occurrence of oral SCC is rare among young individuals. It is like the results of previous studies. Sheng Han et al. found that SCC was the major histopathological finding in older patients (82.2% were over 40 years old).¹⁵ In Susan Muller's et al. study more than 95% of oral SCC occur in people ≥ 40 years old with a mean age of onset in the seventh decade.¹⁶

Tobacco in all forms and alcohol consumption are the most important etiological factors predisposed to oral cancer.¹⁷ So the increase in smoking and alcohol in the community increased oral cancer incidence. In Iraq, a survey has shown that 42% of men were classified as smokers out of 4800 household included in the study.¹⁸ Results of another study reported that 21.8% of Iraqi adolescents were tobacco users.¹⁹ In this study the decreased incidence of oral cancer in different oral cancer sites was not related to the increased exposure to the potential risk factors. The irrelevant correlation may be attributed to errors in collection of oral cancer data from the providing resource, also in the past few years a considerable section of Iraqi population preferred to seek medical care outside Iraq (mainly in neighboring countries) therefore, such cases may not be included in the registry.

Comparable studies tend to record the mortality rate, one study in Europe study shows increases in the mortality rate among German and Eastern Europe countries.²⁰ Another study done in the USA shows the mortality rate for men to be 4.1 and 1.5 for women.²¹ In our study, we cannot analyze the mortality rate since Iraqi cancer registry ignored recording the mortality rate for each cancer site such an analysis helps to predict the effectiveness of the early cancer detection program and the oral cancer treatment regimens implemented by the Iraqi Ministry of Health. The Iraqi cancer registry did not record the risk factors and malignant metastasis. Iraqi cancer registry used ICD-9 before they produced the issue of 2000, after that they used ICD-10. In spite of the use of ICD-10 which helps to provide more specific description of diseases and record accurate anatomical location of cancer, Iraqi cancer registry makes this advantage of ICD-10 invaluable due to failure in recording precise location i.e., lip cancer location of facial skin, vermilion, mucosal surface, upper or lower lip. Finally the issue produced by Iraqi Cancer registry every year should include all Iraqi governorates but the political situation in Iraq reflected on not including the registration of cancer cases from Kurdistan region.

This study was the first analysis of oral cancer trends in Iraq. We hope to carry out other similar studies for comparison purposes with available result. The issues produced from Iraqi cancer registry suffer from some failures in recording accurate account of cancer cases, accurate histopathology for

all cases, documents the risk factor and inclusion of all Iraqi governorate.

Conflicts of interest

The authors of Oral cancer trends in Iraq from 2000 to 2008 certify that there are no conflicts of interest regarding the publication of this manuscript and that they do not have any commercial association or financial interest in the publication of this manuscript.

References

1. Neville B, Damm D, Allen C, Bouquot J. *Oral and Maxillofacial Pathology*. second ed. Philadelphia: Saunders; 2002.
2. Ferlay J, Shin HR, Bray F, Forman D, Mathers C, Parkin DM. GLOBOCAN 2008, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 10. Lyon, France: International Agency for Research on Cancer; 2010.
3. Moore SR, Johnson NW, Pierce AM, Wilson DF. The epidemiology of mouth cancer: a review of global incidence. *Oral Dis* 2000;6:65–74.
4. Silverman Jr S, editor. *Oral Cancer*. second ed. New York: The American Cancer Society; 1985.
5. Enwonwu CO, Meeks VI. Bionutrition and oral cancer in humans. *Crit Rev Oral Biol Med* 1995;6:5–17.
6. Blot WJ, McLaughlin JK, Winn DM, Austin DF, Greenberg RS, Preston-Martin S. Smoking and drinking in relation to oral and pharyngeal cancer. *Cancer Res* 1988;48:3282–7.
7. Conway DI, Stockton DL, Warnakulasuriya KA, Ogden G, Macpherson LM. Incidence of oral and oropharyngeal cancer in United Kingdom (1990–1999)-recent trends and regional variation. *Oral Oncol* 2006;42(6):586–92.
8. Visser BJO, Leemans CR. Oral and oropharyngeal cancer in The Braakhuis Netherlands between 1989 and 2006 Increasing incidence but not in young adults. *Oral Oncol* 2009;45(9):85–9.
9. Yako-Suketomo H, Matsuda T. Comparison of time Trends in lip, oral cavity and pharynx cancer mortality (1990–2006) between countries based on the WHO mortality database. *Japan J Clin Oncol* 2010;40(11):1118–9.
10. Warnakulasuriya S. Global epidemiology of oral and oropharyngeal cancer. *Oral Oncol* 2009;45:309–16.
11. Sugarman PB. Prevention of oral cancer current medical literature. *J Ear Nose Throat* 2000;1:57–61.
12. Johnson NW. Tobacco use and oral cancer: a global perspective. *J Dent Educ* 2001;65:328–39.
13. Vargas PA, Gerhard R, Arango Filho VJ. Salivary gland tumors in Brazilian population: a retrospective study of 124 cases. *Rev Hosp Clin Fac Sao Paulo* 2002;57:271–6.
14. Li LJ, Li Y, Wen YM. Clinical analysis of salivary gland tumor in West China in past 50 years. *Oral Oncol* 2008;44:187–92.
15. Han S, Chen Y, Ge X, Zhang M, Wang J, Zhao Q, et al. Epidemiology and cost analysis for patients with oral cancer in a university hospital in China. *BMC Public Health* 2010;10:196.
16. Muller S, Pan Y, Li R, Chi AC. Changing trends in oral squamous cell carcinoma with particular reference to young patients: 1971–2006 The Emory University experience. *Head Neck Pathol* 2008;2:60–6.
17. Vecchia La, Tavani A, Franceschi S, Levi F, Corrao G, Negri E. Epidemiology and prevention of oral cancer. *Oral Oncol* 1997;33:302–12.
18. Government of Iraq, Ministry of Health, WHO. Chronic non-communicable disease risk factors survey in Iraq, 2006. <<http://www.who.int/chp/steps/IraqSTEPSReport2006.pdf>> .

19. Hussain HY, Abdulsatar BA. Prevalence and determinants of tobacco use among Iraqi adolescents. *IraqTob Induc Dis* 2013;**11**(1):14–26.
20. Vecchia La, Lucchini F, Negri E, Levi F. Trends in oral cancer mortality in Europe. *Oral Oncol* 2004;**40**:433–9.
21. Llewellyn CD, Johnson NW, Warnakulasuriya KA. Risk factors for squamous cell carcinoma of the oral cavity in young people – a comprehensive literature review. *Oral Oncol* 2001;**37**:01–418.