

Malignant Tumors of the Oral Cavity among Jordanians

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ABSTRACT

Objective: To determine the incidence of primary malignant tumors of the oral cavity in Jordan and to compare the incidence rates among Jordanian population with world standard population.

Methods: A retrospective study was conducted during the period 2000 and 2007, on 156 cases with histological diagnosis of primary malignant tumors of the oral cavity. The cases were registered and received by active case finding from the maxillofacial departments at the Royal Medical Services Hospitals, Hospitals of the Ministry of Health, Hospitals of Jordan University and Jordan University of Science and Technology and private hospitals. The records included the age, sex and primary site. The age-adjusted standardized rates were calculated and the incidence rates among Jordanian population were compared with the other world standard population.

Results: Over seven years, the primary malignant tumors of the oral cavity in Jordan accounted for 156 cases, of these 96 (61.5%) were males and 60 (38.5%) were females, with a male to female ratio of 1.6: 1. The overall age-adjusted standardized rate was 5.26 per 100,000 (standard world population), and the age-adjusted standardized rates was 6.60 per 100,000 males and 3.87 per 100,000 females. The squamous cell carcinoma was the most common accounting for 67.3% of all oral cavity malignant tumors. On the other hand the most frequent site of oral malignant tumors in Jordan was lips for males, accounting for 23.7% while the tongue was the most common site of oral cavity tumor in Jordan for both sexes accounting for 18.6%, and the age-adjusted standardized rate was somewhat equal in both sexes: 1.01/100,000 versus 0.96/100 000, respectively.

Conclusion: The age-adjusted rate of primary malignant tumors in Jordan was 5.26 per 100,000 (standard world population). The frequency rate increased with increasing age and was more common in males. The squamous cell carcinoma was the most common type with a tendency for a tongue cancer in both sexes and lip cancer becoming more frequent in males.

Keywords: Jordanians, Malignant oral tumors, Mouth, Tongue, Lip.

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Introduction

Oral cancer is an important public health problem.^(1,2) It is the 6th most common cancer in men.⁽³⁾ Most of oral cancers are preventable, as 75% of oral cancers are related to use of tobacco, alcohol, or both substances. It mainly affects individuals in the 6th and 7th decades of

the life with history of smoking and or alcohol consumption.⁽⁴⁻⁶⁾ Dietary deficiency of vitamin A and iron have their impact on oral mucosa and have been associated with high risk of oral malignancy.⁽⁷⁾ In Jordan, 21% of the population were reported to have vitamin A deficiency,⁽⁸⁾ 30% of women were anemic and 55% of these

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anemic had iron deficiency.⁽⁹⁾ There were 615,000 new cases of oral cavity tumors reported worldwide in 2000, and 300,000 were primary squamous cell carcinomas (SCC) of the oral cavity.⁽¹⁰⁾ The SCC was reported as the most common oral malignancy representing about 66.5%.^(11,12) The most frequent oral cancer sites are the tongue, floor of the mouth, soft palate tissue areas in back of the tongue, lips and gums.⁽¹³⁻¹⁷⁾

The aim of this study was to determine the incidence of primary malignant tumors of the oral cavity in Jordan and to compare the incidence rates among Jordanian population with world standard population and to review the epidemiology and clinical features of primary malignant tumors of the oral cavity.

Methods

This study was conducted retrospectively on 156 cases of histologically diagnosed primary malignant tumors of the oral cavity that were registered and received by active case finding in the period of 2000 – 2007. The cases were registered and received by active case finding from the maxillofacial departments at the hospitals of the Royal Medical Services, Ministry of Health, Jordan University and Jordan University of Science and Technology and private sector. The retrieved data included the age, sex and primary site.

The International Classification of Disease (ICD9) was used for coding of the primary site of the oral cavity malignant tumors as shown in Table I. This is a population-based cancer registry study based on the 2004 Jordan population census (Fig.1 and 2). The age and sex specific rates of primary malignant tumors of the oral cavity were calculated using the 5-years divisions of age groups. The rate refers to the number of the newly diagnosed cases of primary malignant oral tumors and it is calculated as the number of new cases diagnosed in Jordan over 7-years divided by the number of residents. The age-adjusted standardized rates (ASR) were calculated by the use of direct method and world standard population expressed per 100,000 inhabitants, allowing comparison of our rates among the

Jordanian population with world standard population (Fig. 3). The different age distributions with ten age categories (0-35, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65-69, 70-74, 75+) were standardized using the age-specific rates in each population to one standard population.

Results

Of 156 cases of primary malignant tumors of the oral cavity, 96 cases (61.5%) were men and 60 cases (38.5%) were women. The male-to-female ratio was 1.6:1. The mean age of the patients for both sexes was 57.6 ± 18.3 SD (range 6-100 years). The overall ASR was 5.26 per 100 000 (standard world population), the ASR was 6.60 per 100,000 males and 3.87 per 100,000 females. The highest rate was in elderly patients over 75 years of age and about 75.7% of the oral cavity tumors were found in patients who are 45 years or older. Over the age of 50, both sexes showed rise in the rate of tumour occurrence among the different age groups, which was higher among males compared to females as shown in Table II.

The SCC was the most frequent histological type accounting for 67.3% of all diagnosed oral cavity malignant tumors with an ASR of 3.75 per 100,000 and for males it constituted 4.65 per 100,000 and for females 2.81 per 100,000. The non-squamous cell carcinomas accounted for 32.7% with an ASR of 1.51 per 100,000 residents and for males it constituted 1.95 per 100,000 and for females it was 1.06 per 100,000 (Table III).

Other histological types of malignant tumours included: lymphoma (9%), sarcoma (5.8%), basal cell carcinoma (4.5%), adenoid cystic carcinoma (4.5%), mucoepidermoid carcinoma (4.5%), adenocarcinoma (2.6%), melanoma (1.3%) and Langerhan's histiocytosis (0.6%) as shown in Table IV.

Table V shows the number of cases, percentages and ASR of primary malignant tumors of the oral cavity recorded in different anatomical sites in our study. It also shows percentages for males, females and total population along with ASR for all three groups.

Table I: International Classification of Disease (ICD9) codes for Oncology (Malignant Neoplasm of Lip, Oral Cavity)

ICD9*	Site	Includes
140	Lip	Upper and lower lip, mucosa of upper and lower lip, commissure of lip
141	Tongue	Base of tongue, tip, dorsal and ventral surfaces of tongue, anterior 2/3 of tongue, junctional zone of the tongue and lingual tonsil
142	Major Salivary glands	Parotid, submandibular, sublingual
143	Gum	Upper and lower gingiva
144	Floor of the mouth	Anterior and lateral floor of mouth and floor of mouth
145	Other and unspecified parts of mouth	Internal cheek mucosa, vestibule of mouth, hard and soft palate uvula, retromolar area, unspecified sites of the mouth

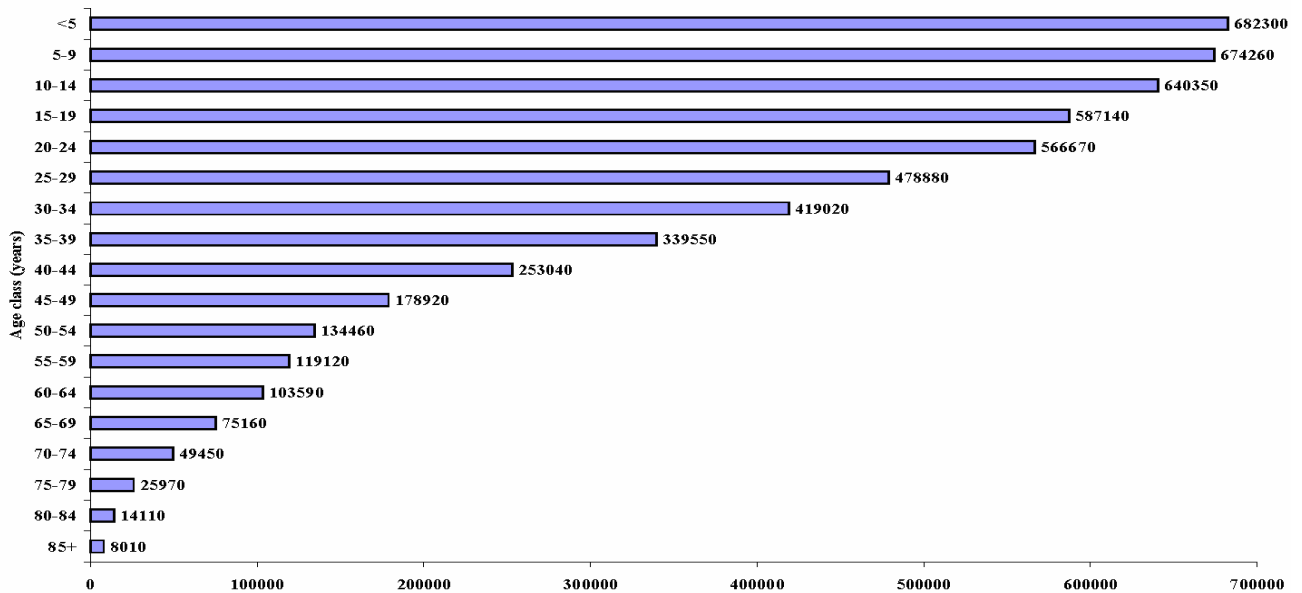


Fig. 1: Age distribution of Jordan population in 2004

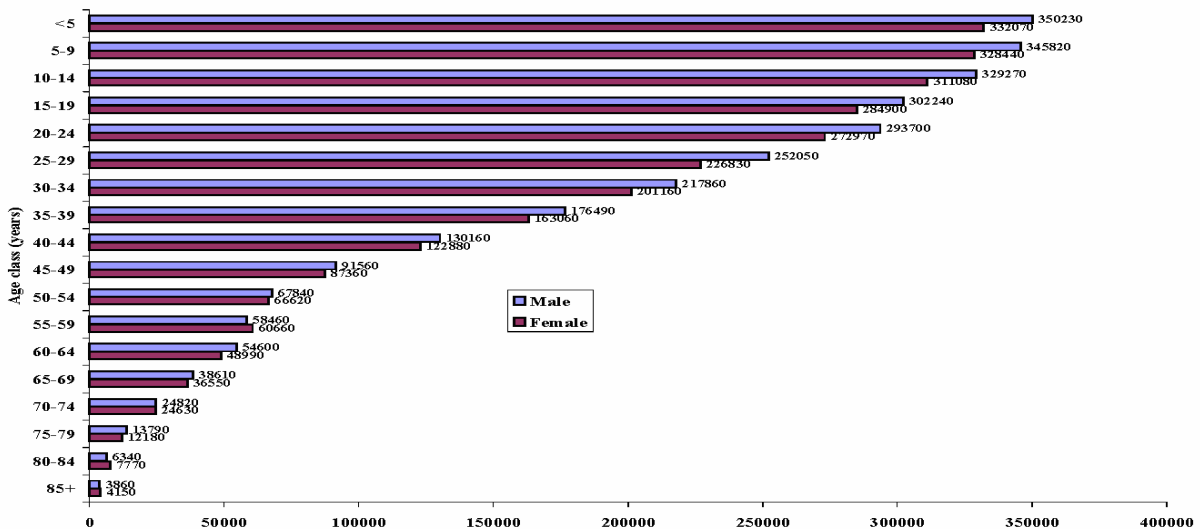


Fig. 2: Age distribution of Jordan population by gender in 2004

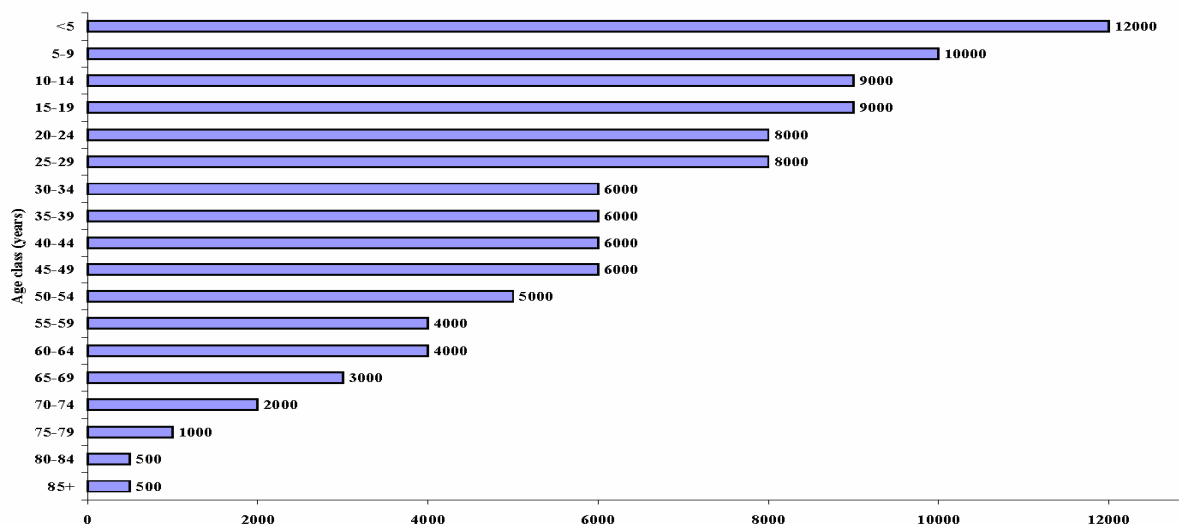


Fig. 3: World Standard population used for age adjustment

Table II: Primary malignant tumors of the oral cavity age-specific rate (ASR) per 100,000 population, by gender-Jordan 2000-2007

Age groups (years)	Male			Female			Total		
	No.	%	Rate	No.	%	Rate	No.	%	Rate
0-35	8	5.1	0.4	12	7.7	0.6	20	12.8	0.5
35-39	5	3.2	2.8	2	1.3	1.2	7	4.5	2.1
40-44	5	3.2	3.8	6	3.8	4.9	11	7.1	4.3
45-49	4	2.6	4.4	7	4.5	8.0	11	7.1	6.1
50-54	6	3.8	8.8	2	1.3	3.0	8	5.1	5.9
55-59	7	4.5	12.0	3	1.9	4.9	10	6.4	8.4
60-64	22	14.1	40.3	9	5.8	18.4	31	19.9	29.9
65-69	9	5.8	23.3	2	1.3	5.5	11	7.1	14.6
70-74	11	7.1	44.3	7	4.5	28.4	18	11.5	36.4
75+	19	12.2	79.2	10	6.4	41.5	29	18.6	60.3
Specific rate	96	61.5	3.48	60	38.5	2.31	156	100	2.92
ASR*	--	--	6.60	--	--	3.87	--	--	5.26

Standard world population --Not applicable *ASR: World Age-Standardized Rate.

Table III: Rates of intra-oral squamous cell carcinoma (SCC) versus non- squamous cell carcinoma (Non-SCC) per 100,000 of Jordan population 2000-2007

	Male			Female			Total		
	No.	%	ASR	No.	%	ASR	No.	%	ASR
SCC	67	42.9	4.65	38	24.4	2.81	105	67.3	3.75
Non-SCC	29	18.6	1.95	22	14.1	1.06	51	32.7	1.51
Total	96	61.5	6.60	60	38.5	3.87	156	100	5.26

Table IV: Distribution of primary malignant tumors of oral cavity by histological types per 100,000 of Jordan populations 2000-2007

	Male			Female			Total		
	No.	%	ASR	No.	%	ASR	No.	%	ASR
Squamous Cell Carcinoma	67	42.9	4.65	38	24.4	2.81	105	67.3	3.75
Lymphoma	11	7.1	0.70	3	1.9	0.18	14	9.0	0.45
Sarcoma	4	2.6	0.23	5	3.2	0.16	9	5.8	0.19
Basal cell Carcinoma	4	2.6	0.33	3	1.9	0.18	7	4.5	0.26
Adenoid cystic carcinoma	5	3.2	0.31	2	1.3	0.10	7	4.5	0.21
Mucoepidermoid carcinoma	3	1.9	0.21	4	2.6	0.18	7	4.5	0.19
Adenocarcinoma	1	0.6	0.08	3	1.9	0.17	4	2.6	0.12
Melanoma	0	0	0	2	1.3	0.09	2	1.3	0.04
Langerhan's histiocytosis	1	0.6	0.08	0	0	0	1	0.6	0.04
Total	96	61.5	6.60	60	38.5	3.87	156	100	5.26

Table V: Numbers, percentages and age-adjusted rates of primary malignant tumors of the oral cavity recorded at different anatomic sites, in Jordan: 2000-2007.

Site	Male			Female			Total		
	No.	%	ASR	No.	%	ASR	No.	%	ASR
Lip	30	19.2	2.09	7	4.5	0.56	37	23.7	1.34
Tongue	16	10.3	1.01	13	8.3	0.96	29	18.6	0.99
Maxilla	14	9.0	0.97	5	3.2	0.26	19	12.2	0.63
Submandibular lymph nodes	11	7.1	0.73	6	3.8	0.43	17	10.9	0.58
Salivary glands	8	5.1	0.55	8	5.1	0.36	16	10.3	0.46
Cheek	8	5.1	0.64	8	5.1	0.51	16	10.3	0.57
Floor of the mouth	4	2.6	0.31	5	3.2	0.40	9	5.8	0.35
Palate	4	2.6	0.28	3	1.9	0.13	7	4.5	0.21
Mandible	1	0.6	0.03	5	3.2	0.25	6	3.8	0.14
All sites	96	61.5	6.60	60	38.5	3.87	156	100	5.26

Discussion

This is a population-based cancer registry study based on the 2004 Jordan population census that determines the incidence of primary malignant tumors of the oral cavity in Jordanians. The world age-standardized Ratio (ASR) of primary malignant tumors in Jordan was 6.60 per 100,000 males and 3.87 per 100,000 females. Globally the ASR of primary malignant tumors is 6.3 per 100,000 males and 3.2 per 100,000 females. There are notable differences between oral cavity tumors incidence rates in developed and developing countries. In the developed parts of the world, the ASR is 6.5 in males and 2.6 in females; in less developed areas, the rates are 11.1 and 7.2, respectively.

Review of literature revealed that Melanesia had the highest incidence (31.5 per 100,000 in men and 20.2 per 100,000 in women) and this was attributed to the chewing of betel leaf (paan) in that country. Rates in men were high

in the following regions with decreasing frequency: South Asia (12.7 per 100,000), Western Europe (11.3 per 100,000), Southern Africa (11.1 per 100,000), Australia/New Zealand (10.2 per 100,000), and Southern Europe (9.2 per 100,000) which reflects prevalence of specific risk factors, such as tobacco and/or alcohol use. On the contrary, females were affected more frequently in Southern Asia with a rate of (8.3 per 100,000).

In Jordan 46% of males and 10% of females were reported to be smokers.⁽¹⁸⁾ All forms of smoking are socially acceptable while alcohol consumption in this Muslim community is prohibited and not socially acceptable.

The high rate of oral cancer in Australia is due to lip cancer related to solar irradiation.^(19,20,21) In Jordan the average daily sun exposure is nine hours around the year, most of men are outdoor workers, this increases exposure to UV light and increases risk for lip cancer.⁽²²⁾ The oral cavity malignant tumors incidence in this study was higher than that reported by national cancer

registry in Jordan (ASR 6.60 versus reported 5.26 per 100,000),⁽²³⁾ and than that reported in another study in the North of Jordan (ASR 6.60 versus 2.14 per 100,000).⁽²²⁾ The epidemiology of oral cavity malignant tumors in this study was characterized by the higher rate in patients over 50 years of age and the incidence rate by age group increased with age, this is consistent with a study conducted in the North of Jordan that reported more prevalent malignant tumors of the oral cavity with increase of age.⁽²²⁾ Other studies reported that about one and half to four-fold increase in prevalence of oral cavity cancer was observed in patients above the age of 50 years compared with those below the age of 50, and it is a disease that affects men in the 5th and 6th decades of life and is associated with habits of smoking, alcohol consumption, different geographic areas and gender.^(4-6,22,24,25-30)

The male-to-female ratio of 1.6:1 was another characteristic of oral cavity malignant tumors pattern in this study. In developed countries, the male-to-female ratio is 2.5:1, and in less developed countries it is about 1.5:1.⁽¹⁹⁾ Indeed, gender was not found to be a risk factor for oral cavity cancer; this difference in prevalence reflects the existence of other risk factors associated with the male gender, such as tobacco and alcohol consumption habits.⁽³¹⁾ Other studies showed different male: female ratios for example, in North of Jordan the male-to-female ratio was 1.8:1,⁽²²⁾ in USA 2.4:1,⁽³²⁾ UK 2.3:1, France 5.5:1, Spain 4.9:1 and Germany 4:1,⁽¹⁾ Hungary 4:1,⁽²⁴⁾ Iraq 2:1,⁽³³⁾ Nigeria 1.4:1,⁽³⁴⁾ and in North India it was 1.6:1.⁽²¹⁾

The SCC was more common than other histological types of oral cavity tumors, and it accounted for 67.3% of the cases. Other studies reported that SCC was the most frequent histological type, accounting for 95% of the oral cancer tumors, and the lip was the most commonly affected site followed by the tongue. This could be explained by a lesser exposure to alcohol and tobacco in women.^(1,27,35-40,41) Other study showed that the most common sites of tumors were tongue and floor of the mouth, but in the women group the incidence of tumors in these sites were 43% compared with 61% in the men.⁽²⁷⁾ The second most common tumor of the

head and neck was Lymphoma and about 3% to 5% of non-Hodgkin were primarily located in the oral cavity with the Waldeyer ring being the most frequently involved site.^(42,43)

Sarcomas represent a minority of these neoplasms, accounting for only 3–10% of all head and neck soft tissue tumors.⁽⁴⁴⁾ Salivary glands are remarkable for their histological diversity. These neoplasms can be of epithelial, mesenchymal and lymphoid origin. Carcinoma of the salivary glands accounts for less than 1% of all oral cavity neoplasms.⁽³⁸⁾ Review of literature revealed that basal cell carcinoma affects the head and neck in 97.5%, distributed over the following sites: nasal accounting for 27.0%, frontal 21.4%, cheek 15.3%, eyelids 12.1%, ears 7.5%, neck 7.5%, lips 5.3%, scalp 2.5%, and chin 1.4%. Histologically, 66.2% basal cell carcinomas were solid, 17.1% infiltrative and 7.1% combined.⁽⁴⁵⁾

Limitations of the Study

The study was carried out for the purpose of the best estimation of the incidence of oral cavity tumors in Jordan. Patients with early cancer stages or pre-cancerous changes were not included. Moreover, risk factors of lifestyle, cigarette smoking, alcohol consumption, dietary habits, and family history were not studied.

Conclusion

The age-adjusted rate of primary malignant tumors in Jordan was 5.26 per 100,000 (standard world population). The frequency rate increased with increasing age and was more common in males. The squamous cell carcinoma was the most common type with a tendency for a tongue cancer in both sexes and lip cancer becoming more frequent in males.

Recommendations

There is a need for a national program focusing on educational information addressing the oral health and its importance in preventing oral cavity malignant tumors. Many studies suggest that tobacco use and alcohol drinking play the greatest role in carcinogenesis of oral cavity malignant tumors. The documentation of oral cancer cases nationwide is far deficient from optimum, and more collaboration is

needed between the different health care organizations and the national cancer registry in Jordan.

References

1. **Morelato RA, López de Blanc SA.** Oral cancer mortality in the province of Cordoba, Argentine Republic in the period 1975-2000. A comparative study with other populations. *Med Oral Patol Oral Cir Bucal* 2006; 11(3):230-235.
2. **Ahluwalia KP.** Assessing the oral cancer risk of South-Asian immigrants in New York City. *Cancer* 2005; 104(12): 2959-2961.
3. **Csepe P, Banoczy J, Dombi C, et al.** Model program for screening oral cancers in the Roma population. *Magy Onkol* 2007; 51(2):95-101.
4. **Carter LM, Harris AT, Kavi VP, et al.** Oral cancer awareness amongst hospital nursing staff. *BMC Oral Health* 2009 28; 9(1):4.
5. **Polednak AP.** Trends in incidence rates of tobacco-related cancer, selected areas, SEER Program, United States, 1992-2004. *Prev Chronic Dis* 2009; 6(1): A16.
6. **Cassetti T, La Rosa F, Rossi L, et al.** Cancer incidence in men: a cluster analysis of spatial patterns. *BMC Cancer* 2008; 8:344.
7. **Canto MT, Devsea SS.** Oral cavity and pharynx cancer incidence rates in the United States, 1975-1998. *Oral Oncol* 2002; 38:610-617
8. **Khatib IM.** High prevalence of subclinical vitamin A deficiency in Jordan a forgotten risk: food. *Nutr Bull* 2002; 23:228-236
9. **Mawajdeh S, Badran A, Hadadeen A.** Prevalence and determance of anemia and iron deficiency among Jordanian women 15-49 years of age: A national study. *Ministry of Health Unicef* 1996
10. **Kademani D.** Oral cancer. *Mayo Clin Proc* 2007 Jul; 82(7):878-87.
11. **Johnson N.** Tobacco use and oral cancer: a global perspective. *J Dent Educ* 2001 Apr; 65(4): 328-39.
12. **Ahmed HG, Mahgoob RM.** Impact of Toombak dipping in the etiology of oral cancer: gender-exclusive hazard in the Sudan. *J Cancer Res Ther* 2007; 3(2):127-130.
13. **Sherin N, Simi T, Shameena P. et al.** Changing trends in oral cancer. *Indian J Cancer* 2008; Jul-Sep; 45(3): 93-96.
14. **Stewart SL, Cardinez CJ, Richardson LC, et al.** Centers for Disease Control and Prevention (CDC). Surveillance for cancers associated with tobacco use--United States, 1999-2004. *MMWR Surveill Summ* 2008; 57(8):1-33.
15. **Weinberg MA, Estefan DJ.** Assessing oral malignancies. *Am Fam Physician* 2002; 65(7):1379-1384.
16. **Sargeran K, Murtomaa H, Safavi SM, et al.** Malignant oral tumors in Iran: ten-year analysis on patient and tumor characteristics of 1042 patients in Tehran. *J Craniofac Surg* 2006; 17(6):1230-1233.
17. **Yeole BB, Sankaranarayanan R, Sunny M Sc L, et al.** Survival from head and neck cancer in Mumbai (Bombay), India. *Cancer* 2000; 89(2):437-44.
18. **Ministry of planning\ UNDP.** Jordan Human Development Report, 2002
19. **Parkin DM, Bray F, Ferlay J, et al.** Global cancer statistics, 2002. *CA Cancer J Clin* 2005; 55(2):74-108.
20. **Ragin CC, Modugno F, Gollin SM.** The epidemiology and risk factors of head and neck cancer: a focus on human papillomavirus. *J Dent Res* 2007; 86(2):104-114.
21. **Mehrotra R, Singh M, Gupta RK, et al.** Trends of prevalence and pathological spectrum of head and neck cancers in North India. *Indian J Cancer* 2005; 42(2):89-93.
22. **Rawashdeh MA, Matalka I.** Malignant oral tumors in Jordanians, 1991-2001. A descriptive epidemiological study. *Int J Oral Maxillofac Surg* 2004; 33(2):183-188.
23. **Al-Kayed S, Tarawneh M.** Cancer Incidence in Jordan 2004. The Hashemite Kingdome of Jordan: Ministry of Health. Cancer Prevention Directorate National Cancer Registry. 2004
24. **Suba Z.** Gender-related hormonal risk factors for oral cancer. *Pathol Oncol Res* 2007; 13(3):195-202.
25. **Perussi MR, Denardin OV, Fava AS, et al.** Squamous cell carcinoma of the mouth in the elderly in São Paulo. *Rev Assoc Med Bras* 2002; 48(4): 341-344.
26. **Losi-Guembarovski R, Menezes RP, Poliselí F, et al.** Oral carcinoma epidemiology in Paraná State, Southern Brazil. *Cad Saude Publica* 2009 Feb; 25(2): 393-400.
27. **de Carvalho MB, Lenzi J, et al.** Clinical and epidemiological characteristics of squamous cell carcinoma of the oral cavity in women. *Rev Assoc Med Bras* 2001 Jul-Sep; 47(3): 208-214.
28. **Riera P, Martínez B.** Morbidity and mortality for oral and pharyngeal cancer in Chile. *Rev Med Chil* 2005 May; 133(5): 555-563.
29. **Mehrotra R, Singh M, Kumar D, et al.** Age specific incidence rate and pathological spectrum of oral cancer in Allahabad. *Indian J Med Sci* 2003 Sep; 57(9):400-404.

30. **Hoffman HT, Karnell LH, Funk GF, et al.** The National Cancer Data Base report on cancer of the head and neck. *Arch Otolaryngol Head Neck Surg* 1998 Sep; 124(9): 951-962.
31. **Dias GS, Almeida AP.** A histological and clinical study on oral cancer: descriptive analyses of 365 cases. *Med Oral Patol Oral Cir Bucal* 2007; 12(7): E474-E478.
32. **Jemal A, Siegel R, Ward E, et al.** Cancer statistics. *CA Cancer J Clin* 2007; 57(1):43-66.
33. **Al-Rawi NH, Talabani NG.** Squamous cell carcinoma of the oral cavity: a case series analysis of clinical presentation and histological grading of 1,425 cases from Iraq. *Clin Oral Investig* 2008;12(1):15-18.
34. **Adeyemi BF, Adekunle LV, Kolude BM, et al.** Head and neck cancer--a clinicopathological study in a tertiary care center. *J Natl Med Assoc* 2008 Jun;100(6):690-697.
35. **Taneja C, Allen H, Koness RJ, et al.** Changing patterns of failure of head and neck cancer. *Arch Otolaryngol Head Neck Surg* 2002 Mar; 128(3):324-327.
36. **Riera P, Martínez B.** Morbidity and mortality for oral and pharyngeal cancer in Chile. *Rev Med Chil* 2005 May;133(5):555-63.
37. **Mehrotra R, Singh M, Kumar D, et al.** Age specific incidence rate and pathological spectrum of oral cancer in Allahabad. *Indian J Med Sci* 2003 Sep; 57(9):400-404.
38. **Zheng JW, Qiu WL, Zhang ZY.** Combined and sequential treatment of oral and maxillofacial malignancies: an evolving concept and clinical protocol. *Chin Med J (Engl)* 2008 Oct 5; 121(19):1945-52.
39. **Asakage T, Yokoyama A, Haneda T, et al.** Genetic polymorphisms of alcohol and aldehyde dehydrogenases, and drinking, smoking and diet in Japanese men with oral and pharyngeal squamous cell carcinoma. *Carcinogenesis* 2007 Apr; 28(4):865-874.
40. **Yadav P.** Reconstructive surgery in oral cancers. *Indian J Plast Surg* 2007; 40:22-27.
41. **Termine N, Panzarella V, Falaschini S, et al.** HPV in oral squamous cell carcinoma vs head and neck squamous cell carcinoma biopsies: a meta-analysis (1988-2007). *Ann Oncol* 2008 Oct; 19(10):1681-1690.
42. **Boulaadas M, Benazzou S, Sefiani S, et al.** Primary extranodal non-Hodgkin lymphoma of the oral cavity. *J Craniofac Surg* 2008 Jul; 19(4):1183-1185.
43. **Choi JW, Kim SS, Kim EY, et al.** Peripheral T-cell lymphoma in the neck: CT findings of lymph node involvement. *AJNR Am J Neuroradiol* 2006 May; 27(5):1079-1082.
44. **Khademi B, Daneshbod Y, Negahban S, et al.** Biphasic parapharyngeal synovial sarcoma: a cytologic and immunocytologic report of a case. *Cytojournal* 2006; 3:6413-6420.
45. **Hüsler R, Schlittler FL, Kreutziger J, et al.** Staged surgical therapy of basal cell carcinoma of the head and neck region: an evaluation of 500 procedures. *Swiss Med Wkly* 2008; 13; 138 (49-50): 746-751.