The epidemiology of head and neck cancer (ICD-O-140-149) in Kuwait 1979 - 1988

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باستعراض حالات سرطانات الشفة والتجويف الفمي والبلعوم التي تم دراستها في الكويت بالفترة ما بين عام ١٩٧٩ – ١٩٨٨ (حسب التصنيف الدولي لأمراض الفم ١٤٠ الى ١٤٩) ومع أن سرطان الرأس والعنق يعتبر من الأمراض النادرة ، إلا أن هذا المرض يعتبر أحد المشاكل الصحية الكبرى في الدول النامية وقد أظهرت الدراسات السابقة أن الرأس والعنق هو المكان الأكثر إصابة بالسرطان في الكويت وكذلك أظهرت الدراسات في الولايات المتحدة الأمريكية خلال الجزء الأخير من القرن العشرين أن نسبة معدلات الإصابة بسرطان الشفة والفم والبلعوم تعادل ٣% من جميع أنواع السرطانات ، أما النسبة المسجلة بالكويت فهي تعادل ٧,٤ % أي مرة ونصف المرة أكثر من مثيلاتها في الولايات المتحدة الأمريكية ، ولكنها أقل بكثير من المعدلات المسجلة في بعض الدول الآسيوية حيث تبلغ النسبة ٤٠–٥٠ % ، تحدث ٥٠% من حالات سرطان الشفة والفم والبلعوم في الولايات المتحدة الأمريكية قبل سن الأربعين أما في الكويت فان ٢٣,٥ من الحالات تحدث قبل سن الأربعين ، أما معدل الوفيات من هذا المرض في الكويت فهي ١,٠٧ حالة لكل ١٠٠,٠٠٠ نسمة وهي أقل بشكل ملحوظ عنها في الولايات المتحدة حيث يصل المعدل إلى ٣,٢٦ حالة لكل ١٠٠,٠٠٠ بالسنة الواحدة ، أما نسبة إصابة الذكور إلى الإناث من الأجانب في الكويت مابين عام ١٩٨٣ إلى ١٩٨٧ فهي تعادل نفس النسبة المسجلة في الولايات المتحدة الأمريكية وهي ٢:١ (١٩٧٥الى ١٩٨٠) ، وأن إصابة الذكور إلى الإناث من الكويتيين فهي حوالي ١,١ (١٩٨٣ ١٩٨٧) مع تقلص هذه النسبة في العشرين سنة الأخيرة وعند مقارنة الأماكن الأكثر عرضة للإصابة وجد انه هناك اختلاف ملحوظ حيث أن السرطان الأنفي البلعومي وسرطان الغدد اللعابية هو مكان الإصابة الأولى بمرض السرطان في الكويت ، كما أن حالات الإصابة بالسرطان الأنفي البلعومي المسجلة في بعض دول البحر الأبيض المتوسط والدول العربية الأخرى يعتبر من الأماكن الأكثر عرضة للإصابة لحالات السرطان التي تصيب الشفة والفم والبلعوم أما في الولايات المتحدة الأمريكية فان سرطان الحفرة الفمية (اللسان وقاع الفم واللثة) هو المكان الأكثر عرضة للإصابة بينما في بومباي فان سرطان اللسان والفم والبلعوم هو المكان الأكثر عرضة للإصابة بالسرطان الأنفي البلعومي عند الذكور الكويتيين ١,٨ ٢,٦ مرة أكثر منها في الولايات المتحدة الأمريكية وبرمنجهام وولاية نيويورك وبومباي ، بينما عند الذكور غير الكويتيين ٢,٣ ٣,٢ مرة أكثر وعند الإناث الكويتيات فهي ٢,٧ ثمانية مرات أكثر وعند الإناث الغير كويتيات فهي ٤. ١٢ مرة أكثر في الكويت عنها بنفس الدول المذكورة ، كما أن معدل إصابة الذكور الغير كويتيين فهي ٣,٨ مرة أكثر منها لدى الذكور الكويتيين ومعدل إصابة الإناث الغير كويتيات فهي ٥,٠ مرة أكثر منها لدى الإناث الكويتيات أما بالنسبة لسرطان الغدد اللعابية فهي أعلى عند الذكور غير الكويتيين بنسبة ١,٤ سبعة مرات منها عند الذكور الكويتيين وأعلى أيضاً منها في الدول الأخرى المذكورة سابقاً ، بينما ظلت نسبة حالات سرطان الرأس والعنق التي تم تشخيصها ٧,٤ % من جميع الحالات المسجلة ولقد ارتفعت جميع حالات السرطان والتي تم تشخيصها من ٤٨٣٧ حالة مابين عام ١٩٧٤ – ١٩٨٢ إلى ١٠٥٣٩ حالة مابين عام ١٩٧٩–١٩٨٨ .

إن معدل حالات الإصابة السنوية التي تم تشخيصها لسرطان الشفة والفم والبلعوم ارتفعت من ٤٠ حالة في السنة مابين عام ١٩٧٤ – ١٩٨٢ إلى ٧٨,٤ حالة في السنة مابين عام ١٩٧٩ إلى ١٩٨٨ وبزيادة مقدارها ٩٦% وبمقارنتها بالتغيرات السكانية فان الزيادة تكون بمعدل ٣٢,٢ ولقد تم استعراض العوامل المحتملة والمتعلقة بأسباب هذه السرطانات .

Previous studies have shown that malignant tumors of the head and neck are among the leading malignancies in Kuwait and are a major public health problem for Kuwait. A retrospective review of cancer of the head and neck for the period 1979 to 1988 in Kuwait was carried out to assess changes in prevalence if any, in the intervening years since the previous studies and to compare same to rates elsewhere. The nasopharynx, salivary glands and hypopharynx appear to be the three primary sites of head and neck cancer in Kuwait. There has been an increase in salivary gland cancer incidence in females and males between 1974 and 1988. The possible etiologic factors related to these cancers are not known. Further research is needed to identify potential risk factors in the several ethnic populations residing in Kuwait and to screen potential guest workers at their country of origin. The study was restricted to epithelial malignant tumors of the sites reported.

Introduction

A retrospective review of malignant neoplasms of the head and neck (ICD-O-Classification 140 to 149) was undertaken for the period 1979 to 1988 in Kuwait to determine the prevalence of these diseases, to look for trends, to determine the burden of the type of cancer on Kuwait society and to compare the data to those of USA, England and India. The last published review covered the period of 1974 to 1982. Data beyond 1988 were not available at the time of the manuscript preparation due to destruction of the medical system in Kuwait during the war of 1990/1991.

Although rare, malignant neoplasms of the

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head and neck are considered to be a major public health problem for certain developing countries. Previous studies have shown that head and neck malignant tumors are among the leading neoplasms in Kuwait and that the primary site was the nasopharynx.[1] The continuous population increase in the 1980s of Kuwaitis, non-Kuwaiti Arabs, and non-Arabs from the Asian subcontinent is possibly a factor in the changing prevalence and the primary sites of head and neck tumors. Documenting the prevalence and sites of the neoplasms in the Kuwaiti populations at this time will provide baseline data for further studies.

Developing and analyzing population-specific disease data should facilitate better health and immigration strategy planning in Kuwait. The data could provide a basis for research in identifying risk factors, probable etiological factors in different ethnic groups and needs for therapy and rehabilitation. Population-specific data have proved effective in Kuwait in the control and reduction of HIV positive patients entering Kuwait specifically from areas of high risk such as the Asian subcontinent.

Relevant cancer data on Kuwait can be accessed from the Kuwait Cancer Registry, established in 1971 at the Al Sabah Hospital. In 1974, the Registry was expanded to become the national population-based Cancer Registry, collecting and analyzing cancer data from all hospitals and health centers in Kuwait. The Registry uses the International Classification of Diseases with a standard WHO recommended registration form that includes demographic, personal, medical and oncological data. All cancer patients treated in Kuwait are included in the official cancer data of Kuwait which are stored on computers and are accessible for analysis. The data are forwarded regularly to the World Health Organization and appear in publications of the International Agency for Research on Cancer.

Kuwait Cancer Registry is a very reliable database because its computerized record keeping developed over several years has been facilitated by the availability of free hospital services, free treatment and designated sites for cancer care.

Methods and Materials

A computer search for all head and neck malignant epithelial neoplasms (ICD-O - 140-149) from year 1979 to 1988 was carried out at the Kuwait Cancer Registry. The following data were obtained on these malignant neoplasms and analyzed:

* Total cases by site, by age, sex and nationality (Kuwaiti vs. non-Kuwaiti) and deaths
* Religion of patients defined as Muslim, Christian, Hindu, Buddhist, others
* Nationality/ethnicity defined as Arab, Asian, Caucasian, Black, others
* Social class defined as upper, middle, lower
* Residential district defined as urban Kuwait, oil district, desert, outside Kuwait
* Occupational exposure defined as (1) dust and sun, (2) oil fumes, (3) 1 and 2, (4) radiation, (5) 3and 4, (6)other, (7) none
* Tobacco habit, total years of habit and whether current
* History of alcohol use

Results

The computer search produced 10,539 total recorded cancer cases for the years 1979 to 1988. As all cancer cases are recorded at the Kuwait Cancer Registry, this figure represented all reported cases in Kuwait forthe period. There were 784 cases of head and neck cancers - 7.4% of all reported cases. Of these, 21.7% died (170/784) which was equal to 1.6% of all cases. The most common sites of cancer were the nasopharynx (24.7%), salivary glands (23.5%) and the hypopharynx (14.2%) (Fig. 1). Seventy-five percent of patients were non-Kuwaitis. The Kuwaiti male-to-female ratio was 1.1:1, while the non-Kuwaiti male-to-female ratio was 1.7:1. The crude rate for head and neck cancers was calculated as 50.2/100,000 or an annualized incidence rate of 5.02/100,000. When 169 cases of non-residents (Kuwait treats patients from any Gulf Cooperation Council member state upon request) were excluded, the crude case rate was 39.4/100,000 or an annualized incidence rate of 3.94/100,000. The crude death rate was 10.69/100,000 or 1.07/100,000/year. The majority of cases were not classified for social class. The majority of patients (65.4%) resided in or around Kuwait City (Fig. 2). The highest reported occupational exposure was to dust and sun (13.5%). For tobacco habit, 40.2% of patients responded yes; 37.5% responded no and for 22.3%, there was no information. When this 22.3% is excluded, 52% of those who answered said they had a tobacco habit. Sixty-

seven percent of males who responded were smokers while 13.2% of females were smokers. By nationality, 33.% of Kuwaitis were smokers and 56.9% of non-Kuwaitis were smokers. 2.2% responded yes to alcohol use. For religion, 92.7% were Muslims and as for ethnicity, 83.5% were Arabs and 14.9% were Asians.

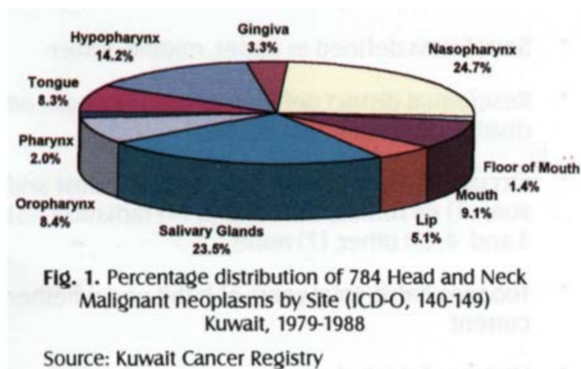

Fig. 1. Percentage distribution of 784 Head and Neck Malignant neoplasms by Site (ICD-O, 140-149) Kuwait, 1979-1988

Source: Kuwait Cancer Registry

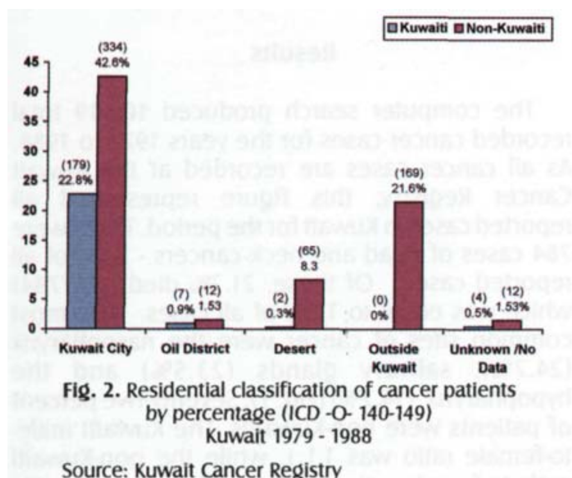

Fig. 2. Residential classification of cancer patients by percentage (ICD -O- 140-149) Kuwait 1979 - 1988

Source: Kuwait Cancer Registry

Discussion

In the USA, the proportion of head and neck cancers has remained at about 5% of all cancers during the latter part of the twentieth century.[2] The percentage in Kuwait - 7.4% - is higher than that of the USA, but far below the 40-50% observed in some Asian countries.[3] The percentage is similar to that reported in the 1974-82 (7.5%) study.[1] The percentage of deaths from head and neck cancers (22%) is close to that of USA (27%).[4] Because of the transience of the population (e.g. contract workers), accurate survival rates are not available. Over 25% of cases are lost to follow-up after five years.

In the USA, 4.9% of oral cancers are diagnosed before age 40 (1983-87), while in Kuwait, 34.3% of oral cancers are diagnosed before age 40.[5] The non-Kuwaiti male/female ratio at 1.8:1 (1983-1987) has narrowed since 1974-1978,[6] and is similar to the USA (1975-1980) ratio of 2:1.[7] The Kuwaiti male/female ratio (1983-1987) is about 1.1:1 and has remained about the same since 1974-1978.[8]

The findings by site are quite dissimilar to those of USA (Fig. 3). The nasopharynx and salivary glands are the primary cancer sites in Kuwait. The nasopharynx has been reported as the primary site for head and neck cancers in the Mediterranean and other Arab countries.[1-9] In the USA, the oral cavity (tongue, floor, gingiva) is the leading site.[2] In Bombay, the tongue, mouth and hypopharynx are the leading sites.[5]

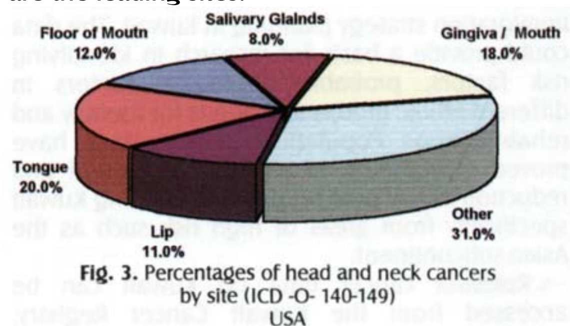

Fig. 3. Percentages of head and neck cancers by site (ICD -O- 140-149) USA

Source: Tobacco effects in the mouth. A National Cancer Institute and National Institute of Dental Research Guide for Health Professionals.
U.S. Department of Health and Human Services, Public Health Service, National Institute of Health. Publ. 92.3330.

The age-adjusted rate of nasopharyngeal cancer (1983-1987) for Kuwaiti males is 1.6 - 2.8 times greater than what was observed in some cities in USA, UK and India.[5,8-24] For the non-Kuwaiti males, it is 1.3 - 3.3 times greater while for Kuwaiti females, it is 2.7 - 6.3 times greater and for non-Kuwaiti females, it is 4.0 - 9.5 times greater (Table 1). The non-Kuwaiti male rate is 1.2 times greater than the Kuwaiti male rate; the non-Kuwaiti female rate is 1.5 times greater than the Kuwait female rate.[5] For salivary gland cancers, the age-adjusted rate for non-Kuwaiti males is 0.4 - 7 times greater than in these other countries or in Kuwaiti males.

When the age-adjusted rates over two periods 1974-1978 and 1979-1988 were examined in different groups (Figs. 5 & 6), Kuwaiti males had rates 60% less than non-Kuwaiti males while Kuwaiti females 30% less than non-Kuwaiti females.[8-9] For Kuwaiti males, there had been a 62% decrease in age-adjusted head and neck cancer rates between the periods 1979-1982 and 1983-1987 and for non-Kuwaiti males the rates had decreased by 17.6%. Whereas Kuwaiti females had

Table t. Increased risk of nasopharyngeal cancer in Kuwait (age adjusted incidence rate, per 100,000) According to other world populations.

Population	Age adjusted incidence rates per (100,000)	Greater risk in Kuwaitis	Greater risk in non Kuwaitis	Crude rates
Kuwaiti, males	1.27	0.85		0.71
Kuwaiti, females	0.82	0.66		0.52
Non-Kuwaiti, males	1.50		1.18	0.99
Non-Kuwaiti, females	1.24		1.51	0.50
USA (SEER), white, males	0.55	2.31	2.73	0.65
USA (SEER), white, females	0.23	3.57	5.39	0.29
USA (SEER), Afro-Amer. males	0.81	1.57	1.85	0.69
USA (SEER), Afro-Amer. females	0.31	2.65	4.00	0.30
New York State, males	0.53	2.40	2.83	0.63
New York State, females	0.22	3.73	5.64	0.32
Birmingham, UK, males	0.45	2.82	3.33	0.61
Birmingham, UK, females	0.13	6.31	9.54	0.17
Bombay, India males	0.70	2.40	2.14	0.47
Bombay, India, females	0.25	3.28	4.96	0.18

Source: Parkin DM, Muir CS, Whelan SL, Gao YT, FerlayJ, Powell J. Cancer Incidence in Five Continents. IARC Sci Publ. 120. International Agency for Research on Cancer, Lyon, 1992.

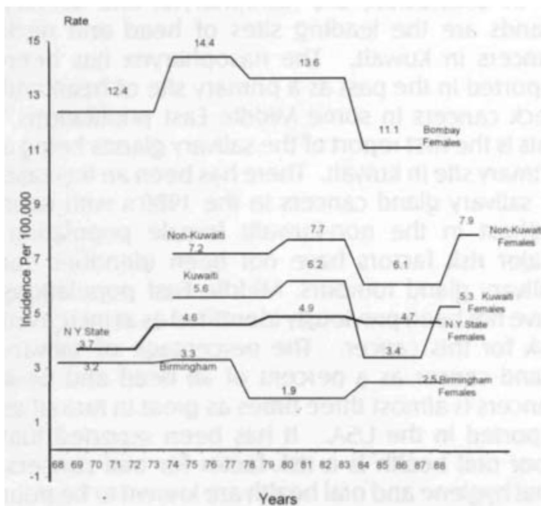

Fig. 4. Head and neck cancer incidence in Kuwait 1974-1988 in comparison with Bombay (India), Birmingham (U.K), N.Y. State (U.S.A.) in males: average annual age. Adjusted rates per 100,000 (WSP)

Source:
Vol. VI Parkin DM, Muir CS, Whelan SL, Gao YT, Ferlay J, Powell J. Cancer Incidence in Five Continents Volume VI. IARC Sci Publ. 120. International Agency for Research on Cancer, Lyon, 1992.

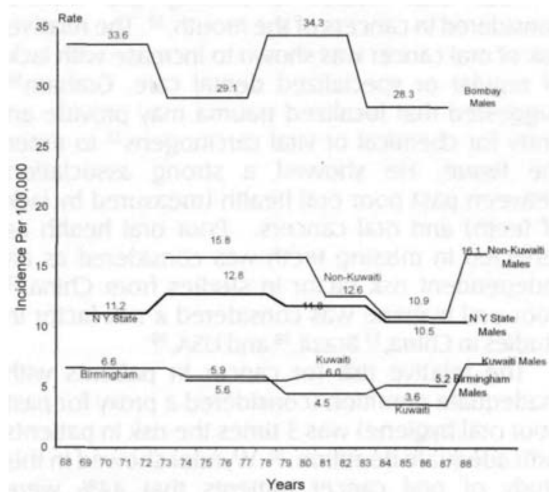

Fig. 5. Head and neck cancer incidence in Kuwait 1974-1988 in comparision with Bombay (India), Birmingham (U.K.), N.Y. State (U.S.A.) in females: average annual age. Adjusted rates per 100,000 (WSP)

Source:
Vol. VI Parkin DM, Muir CS, Whelan SL, Gao YT, Ferlay J, Powell J. Cancer Incidence in Five Continents, Volume VI. IARC Sci Publ. 120. International Agency for Research on Cancer, Lyon, 1992.

a 78.7% decrease, non-Kuwaiti females had a 25.7% increase.

While the percentage of head and neck cancers remained at 7.4% of all cases reported, the average annual number of cases of head and neck cancers increased from 40 per year (1974-1978) to 78.4 per year (1979-1988), for a population-adjusted increase of 34.3%. Kuwaitis (40% of mid-term population) represented 24.5% of the annualized incidence while non-Kuwaitis represented 76.5%.

Aetiolocjical Factors

Cancers of the head and neck are considered multifactoral in origin.[3-10-12] In the USA, 70% of oral cancers are attributed to smoking[10-13] and other forms of tobacco use.[14] In this study, some 52% of those responding reported a smoking habit. The use of qat was not part of the report because it is not common in Kuwait. Some 15% of the female patients reported smoking. The most recent national data indicated that 12% of adult

women were smokers.[15] While alcohol use was reported in only 2.2% of respondents, the authors are sceptical of this figure given the illegal availability of this prohibited item.

Poor oral health is among the factors considered in cancers of the mouth.[10] The relative risk of oral cancer was shown to increase with lack of regular or specialized dental care. Graham[16] suggested that localized trauma may provide an entry for chemical or viral carcinogens[12] to enter the tissue. He showed a strong association between past poor oral health (measured by lack of teeth) and oral cancers. Poor oral health as reflected in missing teeth was considered as an independent risk factor in studies from China.[17] Poor oral hygiene was considered a risk factor in studies in China,[17] Brazil,[18] and USA.[19]

The relative risk for cancer in patients with inadequate dentition (considered a proxy for past poor oral hygiene) was 3 times the risk in patients with adequate dentition.[20] Wynder showed in this study of oral cancer patients that 44% were edentulous compared to 28% in the control group. On the other hand, D.K. Daftary et al argued that there were no well controlled studies on the contributory role of oral hygiene in the initiation of oral cancers.[21] In Kuwait, the oral hygiene and oral hygiene habits of the population are known to be poor and this is combined with infrequent visits to the dental clinic. While the risk from poor oral hygiene can be debated, the opportunity for early cancer screening, detection and treatment is lost by the failure of at-risk patients in Kuwait to visit the dental office on a regular basis.

Nasopharyngeal Cancers

Nasopharyngeal cancers represent a different disease from other epidermoid cancers of the head and neck. They are not tobacco-related and most are histologically distinct and occur in younger age groups.[22] Rates higher than in Europe or North America have been found in Southern Chinese; in Malta, Tunisia, Algeria, Kuwait; in Israel, in Arabs and Jews of North African descent; and in the Arctic.[2325] For Southern Chinese, nasopharyngeal cancer is considered a disease of genetic susceptibility combined with environmental factors. Preserved vegetables, traditional plant medicines specifically those derived from croton tiglium and related plants, and saltfish that releases nitrosodimethylamines upon cooking, are considered factors.[22] Oncogenic viruses and the Epstein-Barr virus have also been suggested as risk factors for nasopharyngeal cancers.[12-23] For Arabs and North Africans, the risk factors have not been identified.

The expected male/female ratio for nasopharyngeal cancers is about 2-3:1, with the incidence rates peaking in the second decade.[5] For Kuwaiti males, the nasopharyngeal cancer incidence rate peaks in the fifth, sixth and seventh decades; for Kuwaiti females in the third to sixth decade; for non-Kuwaiti males and for females in the seventh decade.

Salivary Gland Tumours

These tumours are considered uniformly rare. The age-adjusted annual incidence rates in males (1979-1988) have increased up to 100% since 1974-78. The percent of salivary gland tumours as a percent of all head and neck cancer in Kuwait has increased from 10.9% in males and 13.4% in females, respectively in 1974-1981, to 26% in males and 39% in females, respectively, by 1988. However, in the US, in the period 1983-1987, there were some unexpected deviations from the known pattern.[5]

These tumours make up 13% of head and neck cancer in Bangladesh and 7% in USA. Higher incidence rates have been observed in Hawaiians of Japanese origin, Filipinos, Chinese, Indians in Singapore, Nigerians, native Canadians and Hispanic Americans in Texas.[24] Rates are consistently higher in males. Higher rates have also been found in atomic bomb survivors.

In conclusion, the nasopharynx and salivary glands are the leading sites of head and neck cancers in Kuwait. The nasopharynx has been reported in the past as a primary site of head and neck cancers in some Middle East populations.[1] This is the first report of the salivary glands being a primary site in Kuwait. There has been an increase in salivary gland cancers in the 1980s with rates highest in the non-Kuwaiti female population. Major risk factors have not been identified for salivary gland tumours. Middle East populations have not been previously identified as at increased risk for this cancer. The percentage of salivary gland cancer as a percent of all head and neck cancers is almost three times as great in Kuwait as reported in the USA. It has been reported that poor oral health is a risk factor for oral cancers. Oral hygiene and oral health are known to be poor in the adult population in Kuwait.[26] Poor general hygiene has been considered a contributing factor in other cancer sites.[27]

Smoking is a serious health risk and a major cause of oral cancers; 52.5% of those responding

indicated a present or past tobacco habit. Smoking among both sexes, in youth and adults, is considered a very serious public health problem in Kuwait. The role of alcohol in Kuwait is not clear. As alcohol is prohibited, few individuals would normally declare the habit.

Further studies are required in Kuwait to seek to determine risk factors or modifiers for these cancers, specifically nasopharyngeal and salivary gland cancers in both nationals and non-nationals. The incidence of salivary gland tumours in relation to site and histological type needs to be documented to enable informative comparison with studies from other countries.

Considering the head and neck cancer prevalence in foreigners and the cost implications of treatment, oral screening for some cancers by new simplified testing methods may be considered among other requisites for employment of foreigners in Kuwait. Such early screening for HIV positive contract workers destined for Kuwait is routinely carried out throughout Southeast Asia. Additional screening for hepatitis positive patients is under consideration. Oral cancer screening should also be possible.

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