

EPIDEMIOLOGY OF CANCER IN THE GULF REGION

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Introduction

Cancer is the second most frequent cause of death in majority of the developed countries. It is emerging as a major public health problem in developing countries. The International Agency for Research on Cancer (IARC) estimates that, globally, nearly 11 million new cases of cancer and more than 6 million deaths from this disease occurred during 2002 with more than half of the cases arising in developing countries where resources for treatment and prevention are scarce. The rapid improvement in the field of health care together with the control of communicable diseases, increased life expectancy at birth, and with rapid socioeconomic changes resulting in modified lifestyles such as increased prevalence of tobacco use, decrease in physical activity and rapid uptake of unhealthy food habits has resulted in an increased incidence of cancer in the developing countries.

Cancer registries are a unique source of information centre for any cancer control program. These data helps to allocate financial and manpower resources in cost-effective health care planning as well as in the design of early detection and prevention programs.

The Gulf Center for Cancer Registration (GCCR) was established in 1997. The GCCR works under the jurisdiction of the Executive Office of the Health Ministers' Council for GCC States. The main office is located in the premises of the Research Center, King Faisal Specialist Hospital and Research Center. The GCCR database, population-based incidence data is the largest aggregations in the Asia. Compiling data from the six national cancer registries representing the six Gulf countries: United Arab Emirates (UAE), Kingdom of Bahrain, Kingdom of Saudi Arabia (KSA), Sultanate of Oman, State of Qatar, and State of Kuwait.

Objectives

The primary objective of this study is to classify information on all cancer cases in order to produce statistics on the occurrence of cancer among GCC States' nationals.

Materials and Methods

Data which include patient's identification, demographic information, site of cancer, histology, stage, behavior and extent of the disease, basis of diagnosis and treatment methods are collected from the patient's medical records based on clinical and histological diagnosis at the National Cancer Registry (NCR) in each of the GCC States. Data entry in CanReg4 software and data quality assurance are performed at each GCC State NCR before they sent to the GCCR main office for ensuring the accuracy of information reported and subsequently for annual data analysis.

Crude Incidence Rates (CIR) and Age Standardized Rates (ASR) were calculated to compare cancer incidence between different countries. These rates are sensitive to changes in the number of reported cases due to underreporting and changes in the population structure. Therefore, there is a potential for some changes in cancer incidence rates in the GCC countries that did not have recent population census available for this report or those depend on fewer sources for cancer

case identification.

Overall cancer incidence in the GCC States

From January 1998 to December 2004 there were 58,180 newly diagnosed cancer cases among the GCC States nationals reported from the six National Cancer Registries. 28,542 cases (49.06%) were males and 29,638 (50.94%) were females.

Majority of cases (71.1%) were reported from KSA, followed by Oman (11.1%), Kuwait (6.8%), Bahrain (5.1%), UAE (3.8%), and Qatar (2.1%).

Diagnosis of cancer based on histopathological confirmation in more than 95% of cases ranging from 85.2% in Kuwait to 97.4% in KSA indicating high degree of certainty of cancer diagnosis in tradeoff completeness of cancer registration in the GCC States. Other sources such as clinical, surgical, and radiological reports were rarely used as independent sources for cancer registration. Death certificate was used as independent source for cancer registration by Kuwait (13.2%) and Bahrain (5.7%), whereas other countries showed no preference to this type of data collection.

Almost half of the cancer cases had either regional or distant metastasis at the time of diagnosis. Only 22.6% of patients presented with localized tumors and less than 2% with in situ, indicating the necessity of launching early detection programs in the Gulf region. Unknown extent of cancers was reported in about 28% of patients ranging from 11.1% in UAE to 73.8% in Bahrain.

In males, cancer incidence was highest in Bahrain and Qatar nationals with ASR of 158.7 and 157 per 100,000 population for Bahraini and Qatari males, respectively. Kuwaiti males had an ASR of 132.6/100,000 population followed by Omani males with an ASR of 99.1/100,000 population, UAE males with ASR of 70.1/100,000 population, and the lowest was among Saudi males (66.1/100,000 population).

In females, cancer incidence was highest in Qatari women with ASR of 165.2/100,000 populations, followed by Bahraini women with ASR of 142.3/100,000 population, Kuwaiti women with ASR of 136.7/100,000 population, Omani women with an ASR of 85.4/100,000 population, UAE women with ASR of 81.9/100,000 population, and the lowest was among Saudi women (ASR 62.9/100,000 population).

Cancer is mainly the disease of old age. The mean age at diagnosis was 50.5 years (Standard Deviation \pm 22.1). Total of 4029 cases (9.7%) were children below age of 15 years. Women develop cancer at an earlier age compared to men, the mean age for women was 47.7 years and 53.2 years for men. There is no significant difference in the age specific incidence rates in men and women of the GCC States.

Most common cancers among nationals of the GCC States:

Breast Cancer

Breast cancer is the second most common cancer in the world and the most common cancer in women accounting to about 23% of all cancers. It is estimated that approximately one million cases of female breast cancer are diagnosed every year worldwide. Breast cancer is the most frequent cause of death among cancer deaths in women. An estimated 410,712 breast cancer deaths occurred in 2002

Breast cancer is the most common cancer in the GCC States. Between January 1998 and December 2004, 6,882 breast cancer cases were reported from all GCC States accounted to 11.8% from all cancers and 22.7% from cancers among females. Bahrain reported the highest incidence of breast cancer. The ASR per 100,000 women was 46.4 for Bahrain followed by Kuwait (44.3), Qatar (35.5), UAE (19.2), Oman (14.4), and KSA (12.9).

Leukemia

Leukemia is the 12th most common cancer in the world. The estimated number of newly diagnosed cases of leukemia was 300,522 cases in 2002 accounting to about 2.8% of all new cancer cases with male to female ratio of 1.32: 1. In 2002, there were 222,506 reported deaths attributed to leukemia accounting to 3.3% of all cancer deaths.

In the GCC States, leukemia is the second most common cancer. Between January 1998 and December 2004 there were 4,890 cases of leukemia accounted to 8.4% from all cancers in the GCC States. Leukemia incidence appeared to be slightly higher in males than females. Lymphoid leukemia was more common in males while myeloid leukemia was more common in females.

Non-Hodgkin's Lymphoma (NHL)

NHL is the 10th most common cancer in the world. There are 300,571 new cases of NHL in 2002 accounting to 2.8% of all cancers. The male to female ratio is 1.39: 1. An estimated 171,820 deaths of NHL occurred in 2002 representing 2.6% of all cancer deaths.

NHL is the third most common cancer in the GCC States. 4,830 NHL cases were reported from all GCC States accounted to 8.3% from all cancers between January 1998 and December 2004. NHL was the most common cancer in males and the third most common cancer in females (accounted to 10.4% and 6.3% for males and females respectively). Qatar reported the highest incidence of NHL among males and females (ASR was 11.8/100,000 for males and 8.0/100,000 for females), followed by Kuwait (ASR was 11.0/100,000 for males and 6.8/100,000 for females). Oman and Bahrain males ranked third with ASR of 7.8/100,000, whereas Bahraini women ranked third and Kuwaiti women ranked fourth with ASR 5.4/100,000 and 4.4/100,000 respectively. KSA and UAE women ranked fifth with ASR of 4.1/100,000 each. KSA men ranked fifth and UAE men ranked sixth with ASR of 5.6 and 5.2 per 100,000 populations respectively.

Colorectal Cancer

Colorectal cancer is the third most common cancer in the world. In 2002, there were approximately one million new cases of colon and rectum cancer, 550,465 males and 472,687 females worldwide. Colorectal cancer incidence ranked fourth in men and third in women. Approximately there were 529,000 deaths attributed to colon cancer in 2002.

Colorectal cancer is the fourth most common cancer in the GCC States. 4,213 colorectal cancer cases (7.2% from all cancers) were reported from all GCC States between January 1998 and December 2004. Kuwait reported the highest incidence of colorectal cancer (ASR was 15.1/100,000 population) among males followed by Bahrain (12.6/100,000), Qatar (11.6/100,000), UAE (6.6/100,000), KSA (5.0/100,000), and Oman (4.5/100,000), while Qatar reported the highest incidence of colorectal cancer (14.1/100,000) among females followed by Kuwait (12.7/100,000), Bahrain (7.3/100,000), UAE (5.3/100,000), KSA (4.7/100,000) and Oman (3.8/100,000).

Thyroid Cancer

Thyroid cancer is the 21st most common cancer in the world. The estimated total number of new thyroid cancer cases was 141,013 with an estimated 35,375 deaths from thyroid cancer representing 0.53% of all cancer deaths in 2002. Thyroid cancer is almost 3 times higher in females compared to males.

Thyroid cancer is the fifth most common cancer in the GCC States. 3,458 thyroid cancer cases (5.9% from all cancers) were reported from all GCC States between January 1998 and December 2004. Thyroid cancer incidence was significantly higher among women compared to men in all of the GCC States. It ranked second most common cancer in women next to breast cancer. Qatar reported the highest incidence with ASR of 13.5/100,000 followed by Kuwait (7.7/100,000), Bahrain (7.6/100,000), UAE (6.0/100,000), Oman (5.9/100,000), and KSA (5.0/100,000).

Liver Cancer

Liver cancer is the sixth most common cancer in the world, with an estimated number of 626,162 (5.8% of new cancer cases) in 2002. Males are affected more than females with male to female ratio of 2.40: 1. Because of the very poor prognosis, number of deaths in 2002 (598,321) was not far short of the number of new cases, and it represents the third most common cause of death among cancer deaths accounting to 8.9% of cancer deaths.

Liver cancer is the sixth most common cancer in the GCC States. 2,987 liver cancer cases (5.1% from all cancers) were reported from all GCC States between January 1998 and December 2004. Liver cancer incidence was significantly higher among men compared to women in all of the GCC States. It ranked third most common cancer in men next to NHL and leukemia. Qatar had the highest incidence among men and women with ASR of 13.1/100,000 for males and 8.9/100,000 for females. Kuwaiti men ranked second (8.8/100,000), followed by KSA (6.9/100,000), Oman (6.4/100,000), Bahrain (5.2/100,000), and UAE (3.0/100,000).

Lung Cancer

Lung cancer is the commonest cancer in the world today accounting to 12.4% of all new cases. There are estimated to be 1,352,132 new cases in 2002. The disease is more common in men with a male to female ratio of 2.49: 1. Lung cancer is the leading cause of cancer related death in men and second in women. An estimated 1,178,918 deaths accounting to 17.5% of all cancer deaths are occurred in 2002. Lung cancer is the seventh most common cancer in the GCC States. 2,481 lung cancer cases (4.9% from all cancers) were reported from all GCC States between January 1998 and December 2004. Lung cancer incidence was significantly higher among men compared to women in all of the GCC States. It ranked fourth most common cancer in men next to NHL, leukemia, and liver cancer. Bahrain had the highest incidence among men and women with ASR of 34.2/100,000 for males and 12.0/100,000 for females. Qatar ranked second, followed by Kuwait, Oman, and UAE. KSA reported the lowest incidence among males and females (5.0 and 1.3 per 100,000 for males and females respectively).

Stomach Cancer

Stomach cancer is the fourth most common cancer in the world with an estimated number of 933,937 cases in 2002 (8.6% of new cancer cases). The male to female ratio is 1.83: 1.

An estimated 700,349 (446,052 males and 254,297 females) stomach cancer deaths occurred in 2002. It is the second most frequent cause of death among cancer deaths accounting to 10.4% of cancer deaths.

Stomach cancer is the eighth most common cancer in the GCC States. 2,424 stomach cancer cases (4.1% from all cancers) were reported from all GCC States between January 1998 and December 2004. Stomach cancer incidence was more common in men compared to women in all of the GCC States. Oman had the highest incidence among men and women with ASR of 12.8/100,000 for males and 6.2/100,000 for females. Bahrain ranked second, followed by UAE, Qatar, and Kuwait. KSA reported the lowest incidence among males and females (2.8 and 1.7 per 100,000 for males and females respectively).

Prostate Cancer

Prostate cancer is the fifth most common cancer in the world and the second importance in men. The estimated total number of new cases in 2002 is 679,023 accounting to 11.7% of cancers in men. With an estimated 221,002 deaths prostate cancer is the sixth leading cause of cancer death in men. This represents 5.8% of all cancer deaths in men.

Prostate cancer is the 9th most common cancer in the GCC States. 1,721 prostate cancer cases were reported from all GCC States between January 1998 and December 2004 accounted to 3.0% from all cancers and 6.0% from cancers among males. Bahrain reported the highest incidence of prostate cancer. The ASR per 100,000 men was 14.1 for Bahrain followed by Kuwait (12.3), Oman (9.6), Qatar (9.4), UAE (6.4), and KSA (4.0).

Cervical Cancer

Cancer of cervix is the second most common cancer in women in the world. Almost half a million newly diagnosed cases of cervical cancer are estimated every year accounting to about 10% of all cancers in women. Cervical cancer is the third most frequent cause of death among cancer deaths in women. An estimated 273,500 cervix cancer deaths occurred in 2002 accounting to about 9% of all cancer deaths in women.

Cervical cancer is the 10th most common cancer in the GCC States. Between January 1998 and December 2004, there were 1,279 cervical cancer cases reported from all GCC States accounted to 2.2% from all cancers and 4.3% from cancers among females. Qatar reported the highest incidence of cervical cancer. The ASR per 100,000 women was 6.8 for Qatar followed by Bahrain (5.9), Oman (5.7), UAE (5.4), Kuwait (4.8), and KSA (2.2).

Ovarian Cancer

Ovarian cancer is the sixth most common cancer among women. In 2002, there were 204,499 newly diagnosed ovarian cancer cases accounting to 5.8% of all cancers among women. Ovarian cancer is also the seventh most common cause of death among cancer deaths in women. In 2002 there were 124,860 deaths attributed to ovarian cancer accounting to 4.3%.

Ovarian cancer is the 11th most common cancer in the GCC States. Between January 1998 and December 2004, 1,180 ovarian cancer cases were reported from all GCC States accounted to 2.0% from all cancers and 4.0% from cancers among females. Bahrain reported the highest incidence of ovarian cancer. The ASR per 100,000 women was 7.4 for Bahrain followed by Qatar (6.7), Kuwait (5.9), Oman (5.5), UAE (4.4), and KSA (2.3).

Conclusion

The GCCCR is a demonstration of the value of collaborative efforts among the region countries to establish epidemiological data about cancer that could be used in various ways in cancer control efforts.