UNITED ARAB EMIRATES
MINISTRY OF HEALTH & PREVENTION

CANCER INCIDENCE IN UNITED ARAB EMIRATES ANNUAL REPORT OF THE UAE - NATIONAL CANCER REGISTRY - 2014

Statistics and Research Center

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HIS HIGHNESS SHEIKH KHALIFA BIN ZAYED AL NAHYAN

PRESIDENT OF THE UNITED ARAB EMIRATES

HIS HIGHNESS SHEIKH MOHAMMED BIN RASHID AL MAKTOUM

VICE PRESIDENT AND PRIME MINISTER OF UAE AND RULER OF DUBAI

WORD FROM THE MINISTER OF HEALTH AND PREVENTION

The healthcare sector in the United Arab Emirates has witnessed great strides and achievement that have made it possible for the UAE health system to excel abreast with the top international health systems and gained a prominent presence amongst leading nations and top ten nations, globally, in the level of the population's quality of health service assessment.

This has been achieved through continuous progress, implementation of key objectives, and specialized and clear initiatives consistent with the aspirations of our leadership to promote health services in all parts of the country. That is positively reflected on the health and wellbeing of all citizens and residents living in the UAE.

Patients are at the top of our focus and attention; providing them with excellent, innovative, unique, and accessible health services based on the best international practices.

Our first priority is to reduce the incidence of cancer until the day arrives when it is no longer fatal. Despite the many types of cancer, and the various challenges facing us, like all the other health systems, goals can be reached with the right principals and foundation in place such as promoting cancer awareness, spreading the knowledge across various age groups and institutions and how to prevent it. The population needs to be exposed to a wave of information on the types of cancer, causes of cancer, and common symptoms in order to work towards increasing screening and other preventive measures. The importance of early detection and seeking treatment services soon after diagnosis needs to be clearly heard and supported using empirical sciences that meet international standards.

Hence, the importance of launching the UAE National Cancer Registry as a main pillar for finding facts based on verified statistical data which would reformulate the mechanisms of action based on methodologies and true foundations that help decision makers and policy makers obtain and utilize the latest indicators and smart analytical tools for early detection and cancer control. Moreover, this will facilitate the building of preventive strategies that help reduce mortality and change lifestyles so as to achieve the ambitious vision of the Ministry of Health and Prevention in representing an effective and sustainable health system for a happy society.

ABDUL RAHMAN BIN MOHAMMED AL OWAIS
MINISTER OF HEALTH & PREVENTION

Lastly, we hope that this registry will benefit the cadre of health workers and specialists, and become part of the national strategy to reduce the spread of cancer. We want this registry to serve as a pillar in meeting the needs of health policy makers by providing appropriate and reliable statistical data and research that contributes to the development of suitable health strategies and take a variety of preventive measures and precautions to combat the disease, and provide treatment and follow-up for cancer patients to enhance the health care system and lead the UAE towards being one of the best nations in the world.

WORD FROM THE UNDERSECRETARY

Ministry of health and prevention is a government body set up with the mandate leadership and stewardship within health sector. Our primary aim is to promote well-being and healthy lives for everyone. Therefore, injuries, diabetes, cancer and heart diseases are rapidly increasing and cannot be ignored. The UAE Ministry of Health and Prevention is considerably making efforts to tackle NCDs that predominantly takes into account development of national NCD strategies in addition to increased expansion and funding of health care services.

UAE is in the midst of a war on non-communicable diseases (NCDs). Innovation is important and as our contribution to tackle non-communicable diseases, we are continuously making efforts to conduct research into innovation as well as finding ways to introduce it on a larger scale. Too often, important innovations spread inadequately and slowly.

We therefore work in collaboration to improve the quality of life, well-being, and health for all the individuals, our wider society, and communities that are affected by non-communicable diseases.

For meeting this target, the significance of owning correct data cannot be overstated. Effective surveillance and monitoring are thought to be a cornerstone for tracking this progress. Systematic risk factors monitoring and vigorous records are essential. With accurate analysis and data, a nation will be capable of prioritizing vital resources and develop sound policy decisions.

This document will throw light on the cancer burden in United Arab Emirates, and it is perceived as a golden opportunity for understanding the environment and is predicted to bring improvements and change in future.

I would like to extend my appreciation to all stakeholders who gave support to the UAE-National Cancer Registry namely Heath Authority Abu Dhabi (HAAD), Dubai Health Authority (DHA) and all healthcare providers public and private all across UAE.

Dr. Mohamed Salim Al Olama

Undersecretary of the Ministry of Health & Prevention

WORD FROM THE DIRECTOR OF THE STATISTICS AND RESEARCH CENTER

Currently, cancer services in United Arab Emirates are improving day by day. These developments have spanned diagnosis, screening, early detection, prevention, palliative care, and management. The United Arab Emirates national cancer registry has made a vital contribution and has played an important role in monitoring this advancement.

The United Arab Emirates National Cancer Registry plays a crucial and important role in providing quality and standardized data, to inform all levels of government and health systems about this serious public health issue. This registry is part of Statistics and Research Center, it is equipped with professionals and a certified tumor registrar to enable the proper collection, management and production of cancer statistics. This report describes cancer incidence in both UAE citizens and Non UAE citizens for year 2014 and special report about breast, colorectal and thyroid gland are included. UAE National Cancer Registry systematically gathers, stores, summarizes, analyses, and distributes information about cancer patients who are diagnosed and/or treated in UAE. The report provides a fascinating insight into cancer patterns and trends over time and monitors cancer incidence in the UAE. This work marks an important step in the cancer care evaluation and ratifies the unlimited worth of the registry as a tool for public health.

I also extend my appreciation to all stakeholders and healthcare providers who shared the success of this endeavor, and also many thanks to the UAE national cancer registry team at MOHAP for their dedication and hard work. I am sure that this report will help all stakeholders to understand cancer burden in UAE.

I look forward to future reports in this series and regular annual report related to the changing processes of cancer care.

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ABBREVIATIONS

SEER	Surveillance, Epidemiology and End Results
ICD	International Statistical Classification of Diseases and Related Health Problems
UAE	United Arab Emirates
MOHAP	Ministry of Health And Prevention
HAAD	Health Authority Abu Dhabi
DHA	Dubai Health Authority
ASR	Age Standardized Rate
CTR	Certified Tumor Registrar
ICD 10	International Classification of Disease 10th Revision
ICD-O	International Classification of Diseases for Oncology, third Edition
UAE-NCR	United Arab Emirates, National Cancer Registry
HIMS	Health information management system
NCDs	Non-communicable diseases

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The production of this report has been made possible by the active cooperation of physicians, general practitioners, pathology laboratories, labs, nursing staff, technicians, information specialists, CTR's, medical records staff, clinical coders, and directors in the different UAE healthcare facilities.

We wish to express our sincere gratitude for the generous assistance, and hard work offered by the UAE-National Cancer Registry team:
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Special thanks go to our Statistics and Research Center team, **Ms. Hira Abdul Razzak, Ms. Suhair Akhlaq** and **Mr. Ahmad Yousef Qawas** for their scientific support and technical expertise in producing this report.

GLOSSARY

SEER Summary Staging 2000

Summary staging is the most basic way of categorizing how far a cancer has spread from its point of origin. Summary staging has also been called General Staging, California Staging, and SEER Staging. The 2000 version of Summary Stage applies to every anatomic site, including the lymphomas and leukemia's. Summary staging uses all information available in the medical record; in other words, it is a combination of the most precise clinical and pathological documentation of the extent of disease [1].

UAE Resident Population

The resident population of the UAE is an estimate of all people who are usually living in UAE permanently or on a long-term basis.

Staging

Staging describes the severity of a person's cancer based on the size and/or extent (reach) of the original (primary) tumor and whether or not cancer has spread in the body. Staging is important for several reasons:

- Staging helps the doctor plan the appropriate treatment.
- Cancer stage can be used in estimating a person's prognosis.
- Knowing the stage of cancer is important in identifying clinical trials that may be a suitable treatment option for a patient.
- Staging helps health care providers and researchers exchange information about patients, it also gives them a common terminology for evaluating the results of clinical trials and comparing the results of different trials [1, 2].

TNM Stage

The TNM Staging System was developed and is maintained by the American Joint Cancer Committee (AJCC) and the Union for International Cancer Control (UICC). It is the most commonly used staging system by medical professionals around the world. The TNM classification system was developed as a tool for doctors to stage different types of cancer based on certain, standardized criteria.

The TNM Staging System is based on the extent of the tumor (T), the extent of spread to the lymph nodes (N), and the presence of metastasis (M) [2].

International Classification of Diseases (ICD)

The International Classification of Diseases (ICD) is the standard diagnostic tool for epidemiology, health management and clinical purposes. This includes the analysis of the general health situation of population groups. It is used to monitor the incidence and prevalence of diseases and other health problems, proving a picture of the general health situation of countries and populations.

ICD is used by physicians, nurses, other providers, researchers, health information managers and coders, health information technology workers, policy-makers, insurers and patient organizations to classify diseases and other health problems recorded on many types of health and vital records, including death certificates and health records. In addition to enabling the storage and retrieval of diagnostic information for clinical, epidemiological and quality purposes, these records also provide the basis for the compilation of national mortality and morbidity statistics by WHO Member States. Finally, ICD is used for reimbursement and resource allocation decision-making by countries [3].

Crude Incidence rate

The number of new cancer cases (incidence cases) observed in the population during a defined period, divided by the number of population at risk in the same period. It is usually expressed per 100,000.

Crude Mortality rate

A crude rate is calculated simply by dividing the number of cancer deaths observed during a given time period by the corresponding number of person years in the population at risk. For cancer, the result is usually expressed as an annual rate per 100,000 persons at risk [4].

Carcinoma in situ

An early stage cancer in which the cancerous growth or tumor is still confined to the site from which it started, and has not spread to surrounding tissue or other organs in the body. When cancer in situ involves cells that line the internal organs, or epithelial cells, it is called carcinoma in situ.

Malignant Tumors

The tumor is malignant (cancerous) if the cells can grow into (invade) surrounding tissues or spread (metastasize) to distant areas of the body.

EXECUTIVE SUMMARY

Undoubtedly, cancer has become an overwhelming problem worldwide, and this is also evident in the United Arab Emirates, where the incidence and burden of cancer is increasing. This is an annual report of cancer incidence and epidemiology which aims to describe cancer cases in the year 2014. A total number of 3816 incident cancer cases (malignant and in-situ) were diagnosed among the UAE resident population during the period of 1st January and 31 December, 2014 (Table 1), representing an overall crude incidence rate of 42 cases per 100,000 (Table 60). Of which 3610 (94.6%) were malignant and 206 (5.4%) were in-Situ cases. Of these 1694 (44.4%) were reported in males and 2122 (55.6%) in females (Table 60). 1003 cases were UAE citizens (26.3%) and 2813 were non-UAE citizens (73.7%) (Table 1).The crude incidence rates for total male and female cancer patients were 25.31 and 88.72 per 100,000 UAE resident population respectively (Table 60).

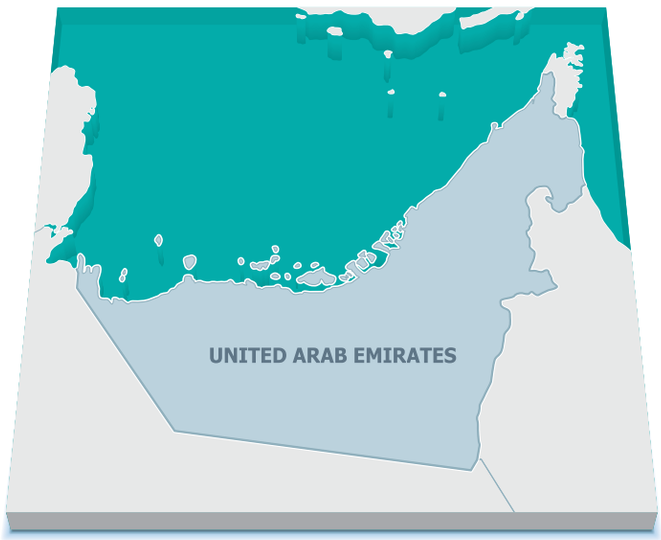
Figures for all invasive cancers (malignant), represented 94.6% of all registered cases and 3610 were registered; equivalent to an incidence rate of 39.73 cases per 100,000. Figures 2014 demonstrated a clear female predominance for cancer incidence. For the year 2014, the crude incidence rate for invasive cancers (malignant) is higher for females (81.99 cases per 100,000) than males (24.63 cases per 100,000). Summary of incidence data for individual cancers (ICD-10 code) is listed in Table 60. Breast, colorectal and thyroid cancer were the top ranked cancers among all new cancer cases in both genders (Table 23). Colorectal, prostate, and leukemia cancer were the top ranked cancers among the males resident population (Table 24). Among female residents, breast, thyroid and colorectal cancer were the top ranked cancers (malignant tumors) (Table 23).

Mortality

- The third leading cause of death in UAE after diseases of the circulatory system and injuries was found to be cancer.
- A total of 758 deaths from cancer occurred in 2014, equivalent to a crude mortality rate of 8.34 deaths per 100,000.
- Breast cancer (81 total deaths in 2014) was the leading cause of cancer death. Lung and colorectal cancers represented the next most common causes of cancer deaths and in conjunction with breast cancer made up almost (30%) of all cancer related deaths in 2014.

CHAPTER 1

INTRODUCTION



UAE Geography

The United Arab Emirates (UAE) was formed as a constitutional federation of seven emirates: Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al Quwain, Ras Al Khaimah and Fujairah, which came together as one state on 2nd December 1971 under the former president, His Highness the late Sheikh Zayed bin Sultan Al Nahyan. Through exploitation of the UAE's abundant oil and natural gas resources starting in the 1960s, the country has been transformed from a tribal society reliant on agriculture and fishing to a significant and respected supplier in global energy markets as well as an important member of the international community [5].

During this period, the UAE has forged a distinct national identity and enjoyed a high degree of political stability. The UAE is located at the tip of the Arabian Peninsula with coastlines on the Gulf of Oman and the Arabian Gulf. It lies between Oman and Saudi Arabia, and is a strategic location along the Strait of Hormuz, a vital transit point

for the world's crude oil [5]. According to the National Bureau of Statistics (NBS), the UAE's total land area is 71,023.6 square kilometers (km2). The Emirate of Abu Dhabi accounts for 59,435 km2 , 83.7% of the total land area, while the smallest emirate, Ajman, encompasses only 0.4% of it, 268 km2[5].

Four-fifth of the UAE is desert but has contrasting landscapes - from the towering red dunes of the Liwa to the rich palm-filled Oasis of Al Ain, from the precipitous Hajjar Mountains to the more fertile stretches of its coastal plains. The UAE has become an important player in regional and international affairs [6]. In 1971, the late President Sheikh Zayed bin Sultan Al Nahyan unified the small, underdeveloped states into a federation, the only one in the Arab world. With his visionary leadership, oil wealth was used to develop the UAE into one of the world's most open and successful economies. In 2004, His Highness Sheikh Khalifa bin Zayed Al Nahyan became the President and has since continued to strive towards an ambitious vision for the UAE [6].

Location

Bordered to the North by the Arabian Gulf, to the East by the Gulf of Oman and Sultanate of Oman, to the South by Saudi Arabia and Sultanate of Oman and to the West by Qatar and Saudi Arabia [7].

Cancer Registry

Cancer registration is a vital and essential tool in cancer control. A cancer registry has been defined as an organization for the storage, collection, analysis, and interpretation of data on individuals with cancer. A population-based cancer registry gathers the data from numerous healthcare providers in a defined geographic area and can serve to demonstrate incidence trends for cancer of different sites over time or between population subdivisions. It can offer data to assess the effects of different types of treatment over time and to assess the effects of early detection programs, such as colorectal screening or mammography. Cancer registry data can be used for epidemiologic studies to identify causes of cancer. It can be useful in identifying unusual clusters of cancer cases [8]. Information on the mortality as well as incidence of cancers, in addition to their changing trends, is an important element in the planning and monitoring of programs for early detection, cancer prevention, and treatment [9].

UAE National Cancer Registry

MOHAP aims to establish a unified accurate national disease registry. MOHAP has established the National Diseases Registry to enable the disease registries to access medical information while safeguarding data confidentiality. United Arab Emirates National Cancer Registry is the population based cancer registry for the United Arab Emirates established under the jurisdiction of the Ministry of Health and Prevention (MOHAP) by the order of UAE Cabinet and His Excellency the Minister of Health and Prevention.

UAE National Cancer Registry systematically collects, stores, summarizes, analyses and distributes information about cancer patients who are diagnosed and/or treated in UAE [10]. It provides information on cancer patterns and trends over time as well as monitors cancer incidence in UAE. The Cancer Registry is a part of the National Diseases Registry and it comes under the auspices of the Statistics and Research Center. UAE National Cancer Registry will produce a report about the cancer incidence on an annual basis, and as incidence data are accumulated over the years, the registry will eventually be able to produce certain trends which would help in studying the distribution of such conditions in different regions of the country.

The primary aim of UAE National cancer registry is to provide population based cancer incidence data to the public in a timely and accurate manner as well as other indicators like survival, prevalence, and mortality in UAE, planning cancer services, cancer control, cancer screening program, and cancer research projects.

Methods

The UAE National Cancer Registry (UAE-NCR), records demographic, cancer, staging, clinical, and treatment information for all cancers diagnosed in UAE in accordance with internationally accepted registration and coding standards. For UAE and Non- UAE citizens all malignant and in-situ cases diagnosed in UAE during 1st Jan- 31 - Dec.2014 were notified and registered to UAE national cancer registry.

There are two methods of data collection:

Active Method

Data was collected and abstracted by registry staff through regular visits to medical treatment abroad department at MOHAP.

Passive Method

The focal points from stakeholder and healthcare providers across UAE, collect cancer data from patient's files, HIMS (Health information management system), and pathology reports, complete a standardized form and submit it to the UAE National Cancer Registry. Mortality data of Abu Dhabi was provided by the HAAD and mortality data of other Emirates was provided by MOHAP, National

anonymized datasets for all cancer deaths are provided to the Registry annually.

Crude incidence and mortality rates were calculated by using total UAE population as estimated by United Nations-Department of Economic and Affairs, population division.

Source of Data and Data Processing

Comprehensive cancer registration was achieved through data obtained from a combination of sources, such as:

a) HAAD central cancer registry: highly qualified central based cancer registry in HAAD, this registry acts as a central one covering all cancer data in Abu Dhabi.

b) DHA central cancer registry: highly qualified central based cancer registry in DHA

c) Hospital admissions and medical records departments from all public, private, and university hospitals all over UAE through international classification of disease ICD-10 and ICD-O

d) Notifications by the medical profession

e) Pathology records

f) Mortality data, medical treatment abroad and others. Notifications were made mandatory since 2013.

Data were captured manually from relevant institutions. All relevant information of new cases would be checked for possible duplication against a master index. The clinical data would then be verified by CTR staff. The UAE National Cancer Registry using the ICD-10 for the classification of primary sites and morphology. Registered cases of carcinoma in-situ were included in the computation of crude incidence rate. All the results refer to the resident population (UAE citizens and Non-UAE citizens). Information presented in this report are based on the cancer data collected about patients newly diagnosed during 1st Jan to December 31, 2014 in UAE

Reportable list

Cases with a behavior code 2 and 3 of the International Classification of Diseases for Oncology, third Edition (ICD-O-3), malignant and in-situ cases of the ICD-10 were included in the registry.

Data Management

The UAE-National Cancer Registry received around 4370 cancer cases reported from different sources covering all sectors in UAE, like HAAD, DHA, and all hospitals and healthcare providers including governmental, private, university hospitals, treatment abroad office, and also histopathology reports. Distribution of reported cases shows 50% were from HAAD, 19% from DHA and 31% from other sources. After checking and filtering cancer data received, we updated the data and excluded any duplicate and already registered cases.

Total number of new cancer cases registered to UAE-NCR in 2014 were 3816. The database had cases of multiple reporting from multiple sources, which is a good quality indicator at the start this registry and shows good coverage and completeness of cancer cases in UAE.

The UAE Population used to calculate rates

In this report, we have used the UAE population as estimated by United Nations-Department of Economic and Affairs, population division to compute the crude incidence rates, and mortality rates in order to describe various indicators where ‘rates’ were calculated [11].

CHAPTER 2

OVERALL CANCER INCIDENT CASES

The incidence and mortality rates are essential epidemiological measures to quantify the pattern of cancer occurrence in a specific society, and in different sub-groups of the population [12]. These cancer rates can be used for predicting the occurrence of cancers and their future magnitude and also in estimating the future demands for treatment, diagnosis and prevention of cancers across the community. The natural data source on the cancer occurrence has long been considered to be a hospital based, where majority of the cancer patients are offered treatments [12].

In this report, we have presented the number of new cancer cases among UAE and Non-UAE citizens, who were diagnosed and treated in UAE. Malignant and In-situ behavior are reportable to UAE-NCR, while benign and borderline malignancy are not reportable in this registry in the year 2014.

Cancer Incidence (Malignant & In-Situ) -2014

During the period of 1st January to 31 December 2014, a total number of 3816 new cancer cases were diagnosed in UAE among both UAE and Non-UAE citizens; of which 3610 (94.6%) were malignant and 206 (5.4%) were In-Situ Cases. Among UAE citizen, a total number of 1003 cases were newly diagnosed with cancer; out of which 949 (94.6%) cases were malignant and 54 (5.4 %) were In-Situ cases. Similarly, in Non-UAE citizens, 2813 cases were newly diagnosed with cancer, 2661 (94.6%) cases were malignant and 152 (5.4 %) were In-Situ cases. Breast (594), Colorectal (279), and Thyroid (226) cancer were the top ranked cancers among the Non-UAE Citizens. While, breast (174), colorectal (125) and thyroid (88) cancer were the top ranked cancers among the UAE Citizens.

Table 1 represents the distribution of all types of cancer cases among UAE population (UAE and Non-UAE citizens) according to gender.

Table 1 Number of cancer cases in UAE in 2014 according to primary site, gender, and nationality

Primary site ICD-10	Non-UAE Citizens			UAE Citizens			Grand Total
	Female	Male	Total	Female	Male	Total	
C00-C14 Lip, Oral cavity & pharynx	22	63	85	11	18	29	114
C15 Esophagus	1	16	17	0	3	3	20
C16 Stomach	28	39	67	19	15	34	101
C17 Small intestine	4	12	16	3	2	5	21
C18-C21 Colorectal	97	182	279	51	74	125	404
C22 Liver and intrahepatic bile ducts	12	26	38	6	14	20	58
C23, C24 Gallbladder, other and unspecified part of biliary tract	10	14	24	6	4	10	34
C25 Pancreas	16	35	51	4	7	11	62
C30, C31 Nasal cavity, middle ear, accessory sinuses	1	7	8	0	0	0	8
C32 Larynx	2	19	21	0	8	8	29
C34 Bronchus and Lung	22	72	94	10	35	45	139
C40-C41 Bone and articular cartilage	3	3	6	3	3	6	12
C43 Skin melanoma	6	10	16	1	0	1	17
C44 Skin	29	79	108	6	11	17	125
C46 Kaposi sarcoma	0	2	2	0	0	0	2
C48 Retroperitoneum and peritoneum	3	3	6	1	1	2	8
C49 Connective and soft tissue	12	21	33	10	4	14	47
C50 Breast	588	6	594	174	0	174	768
C53 Cervix uteri	58	0	58	19	0	19	77
C54-C55 Uterus	75	0	75	31	0	31	106
C56 Ovary	61	0	61	17	0	17	78
C61 Prostate	0	129	129	0	38	38	167
C62 Testis	0	33	33	0	6	6	39
C64-C65 Kidney & Renal pelvis	22	48	70	13	13	26	96
C66, C68 Ureter and other urinary organs	2	0	2	0	0	0	2
C67 Urinary Bladder	12	71	83	4	36	40	123
C70-C72 Brain & CNS	28	55	83	9	18	27	110
C73 Thyroid	161	65	226	73	15	88	314
C74-C75 Other endocrine glands	0	6	6	1	1	2	8

Primary site ICD-10	Non-UAE Citizens			UAE Citizens			Grand Total
	Female	Male	Total	Female	Male	Total	
C76-C80 Unknown or unspecified sites	15	16	31	7	7	14	45
C81 Hodgkin's lymphoma	23	30	53	13	10	23	76
C82-C85, C96 Non-Hodgkin lymphoma	39	57	96	15	24	39	135
C88, C90 Multiple myeloma	9	11	20	6	3	9	29
C91-C95 Leukemia	46	97	143	22	34	56	199
Other malignancy	13	14	27	6	4	10	37
(C00-C96) All invasive cancers (Malignant Cases)	**1420**	**1241**	**2661**	**541**	**408**	**949**	**3610**
(D00-D09) Non-invasive cancers (In-Situ Cases)	**116**	**36**	**152**	**45**	**9**	**54**	**206**
All Cases (Malignant & In-Situ)	**1536**	**1277**	**2813**	**586**	**417**	**1003**	**3816**

Figure 1: Distribution of cancer cases among UAE population by type of tumor in 2014

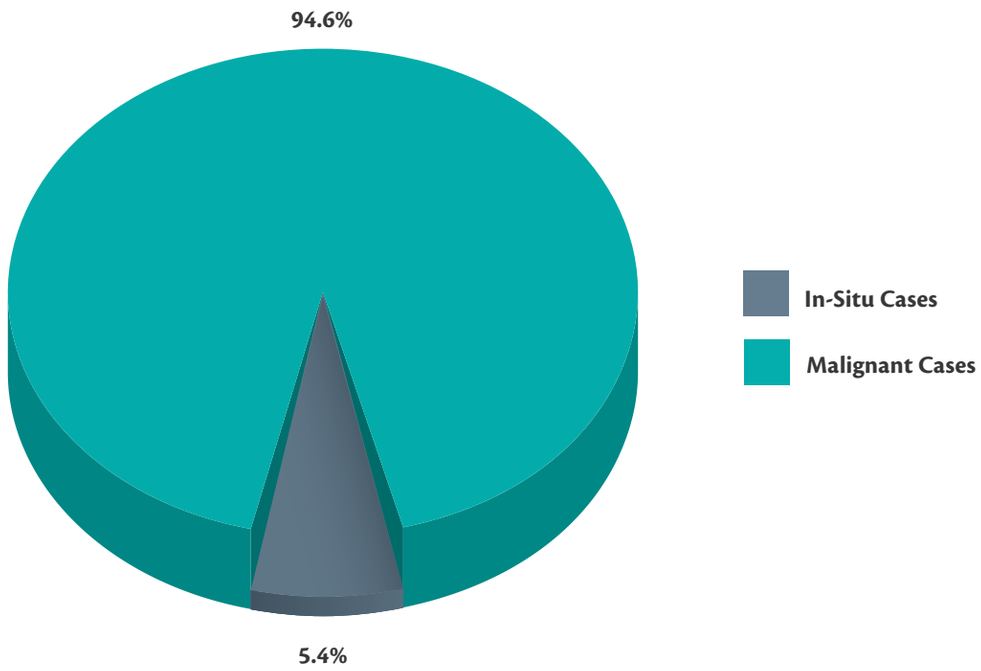


Figure 1 demonstrates the distribution of cancer cases among UAE population by the type of tumor in 2014, with 94.6% of malignant cases and 5.4% of the in-situ cases reported among both UAE and Non-UAE citizens respectively.

Figure 2: Distribution of cancer cases among UAE population by nationality and type of tumor in 2014

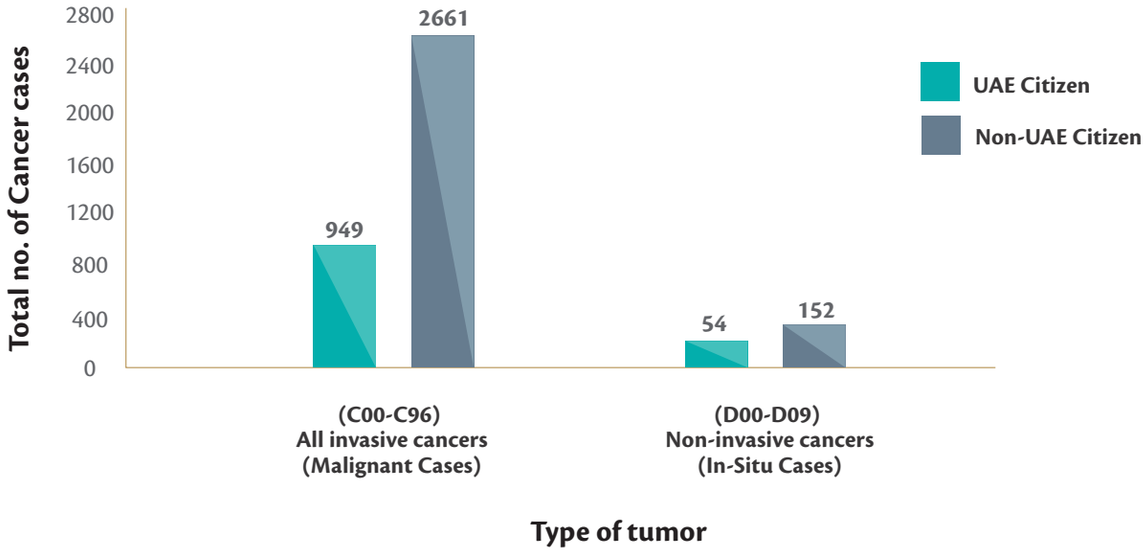


Figure 2 demonstrates the distribution of cancer cases among UAE population by nationality and type of tumor in 2014, with 949 cases being malignant (all invasive cancers) reported among UAE citizens, and 2661 cases being malignant (all invasive cancers) among Non- UAE citizens, while, 152 were in-situ cases reported in Non- UAE citizens and 54 were in-situ cases reported in UAE citizens.

Figure 3: Distribution of cancer cases among UAE population by gender and type of tumor in 2014

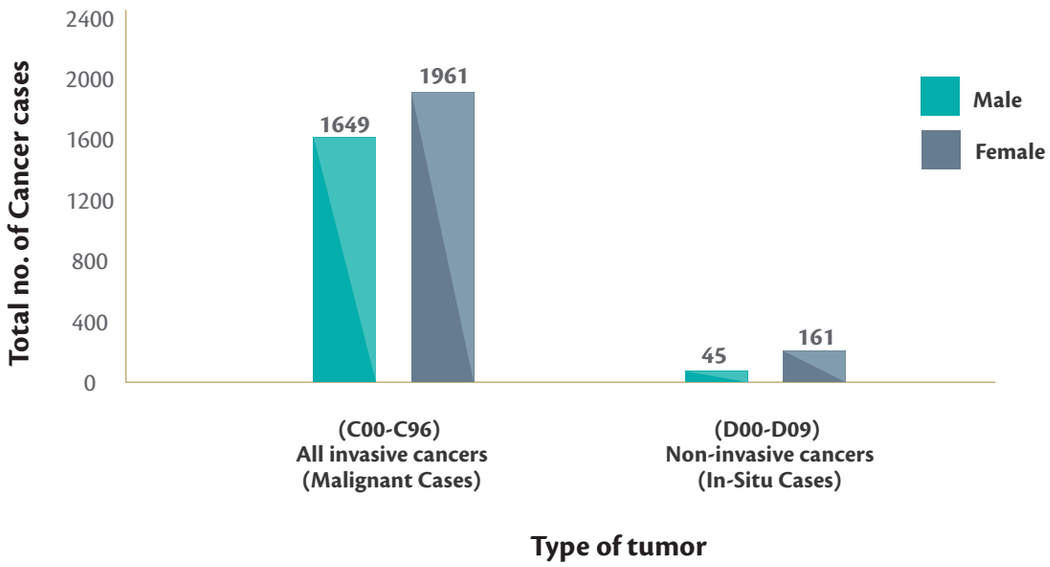


Figure 3 demonstrates the distribution of cancer cases among UAE population by gender and type of tumor in 2014, with 1649 cases being malignant (all invasive cancers) reported among males, and 1961 cases being malignant (all invasive cancers) among females, while, 45 were in-situ cases reported in males and 161 were in-situ cases reported in females.

CANCER CASES (MALIGNANT ONLY) -2014

During the period of January to December 2014, a total number of 3610 malignant cases were diagnosed in UAE among both UAE and Non-UAE citizens, of which represented 94.6% of all new cancer cases for 2014.

Malignant cases by nationality in UAE 2014

The cases of cancer by nationality in UAE in 2014 were determined. Table 2 demonstrates that 2661 and 949 patients having malignant cancers were Non-UAE and UAE citizens, respectively.

Table 2: Distribution of malignant cases by nationality in UAE 2014

Citizenship	Total number of Malignant cases
Non-UAE Citizens	2661
UAE Citizens	949

Figure 4: Cases of cancer reported by nationality in UAE 2014

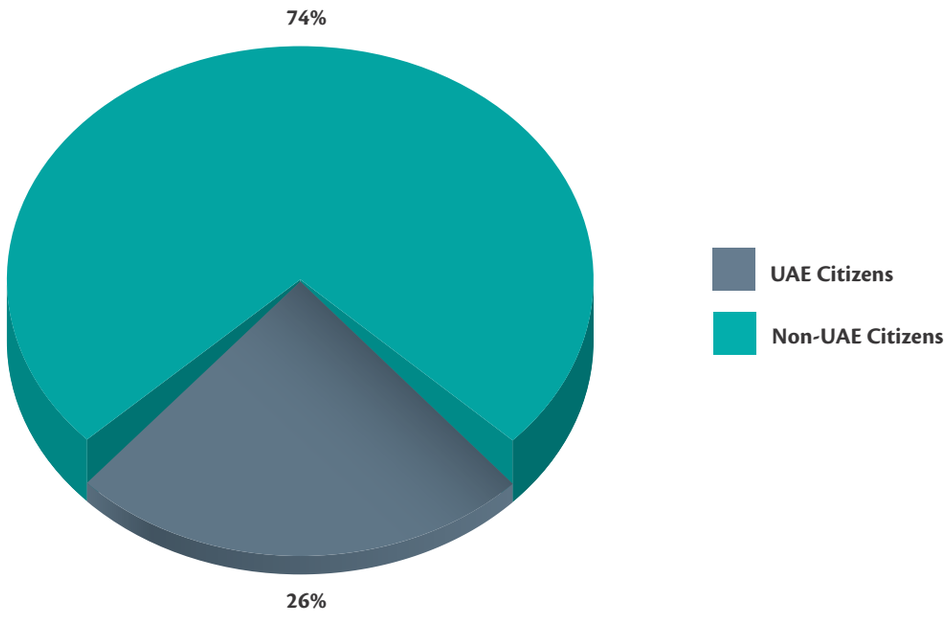


Figure 4 demonstrates the distribution of nationality in UAE in the year 2014, with 26 % of UAE citizens and 74 % of Non UAE citizens living in UAE who were suffering from malignant cancers.

Malignant cases by gender in UAE 2014

Table 3 Distribution of Malignant cases by gender in UAE 2014

Malignant Cases	Female	Male	Grand Total
Malignant cases by gender in UAE 2014	1961	1649	3610

Table 3 represents a total of 3610 malignant cases 1649 (46 %) males and 1961 (54 %) females, among both UAE citizens and Non-UAE citizens, were registered in the country in 2014 showing more of Non-UAE residents with malignant cancers.

Figure 5: Distribution of male and female malignant cases by gender

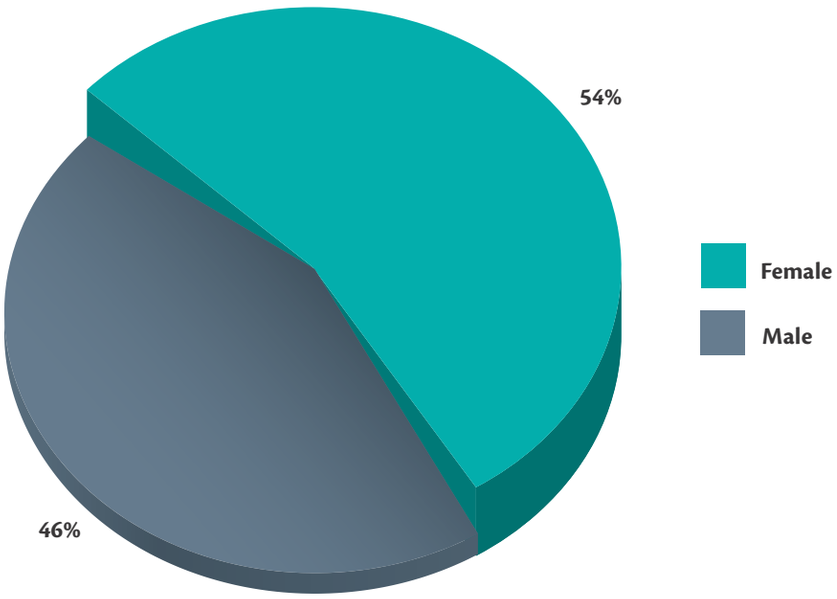


Figure 5 demonstrates the distribution of male and female malignant cases by gender. Out of 3610 individuals, 1649 (46%) were males and 1961 (54%) were females. The distribution of frequency indicates that more female were diagnosed with cancer than males in the UAE in 2014.

Malignant cases by gender in UAE citizens, 2014

A total of 949 malignant cases among UAE citizens were registered in 2014. These cases included 408 males and 541 females. Table 4 reveals that malignant cases were registered higher in females than in males among UAE citizens.

Table 4 Distribution of malignant cases by gender among UAE citizens.

Malignant Cases	Female	Male	Grand Total
Malignant Cases by Gender Among UAE Citizens, 2014	541	408	949

Figure 6: Distribution of malignant cases by gender among UAE citizens

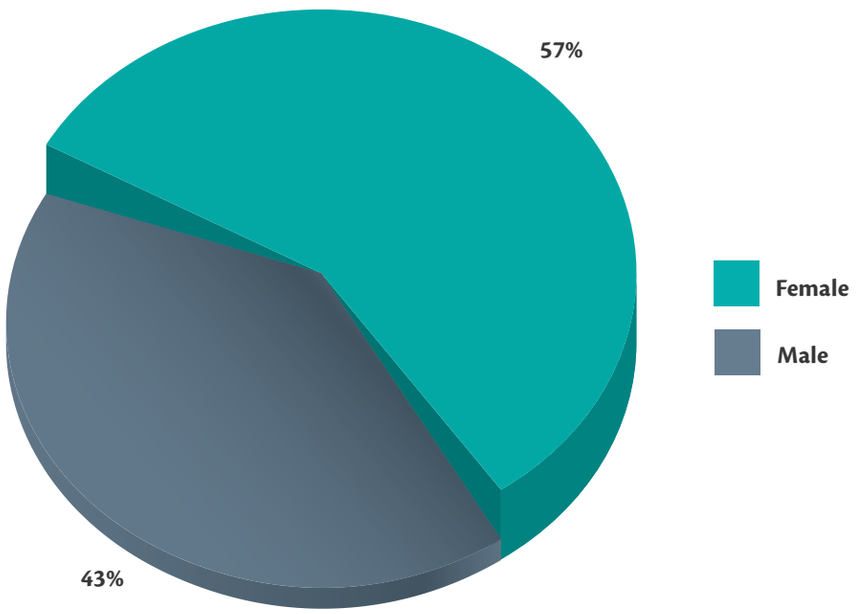


Figure 6 demonstrates the distribution of male and female cancer cases by gender. Out of 949 individuals, 408 (43%) males and 541 (57%) were females.

Malignant cases by gender among Non-UAE citizens, 2014

A total of 2661 malignant cases among Non-UAE citizens were registered in the country in 2014. These cases included 1241 males and 1420 females. Table 5 shows malignant cases registered were higher in females than in males among non-UAE citizens.

Table 5 Distribution of malignant cases by gender among Non-UAE citizens, 2014

Malignant Cases	Female	Male	Grand Total
Malignant Cases by Gender Among Non-UAE Citizens, 2014	1420	1241	2661

Figure 7: Distribution of malignant cases by gender among non-UAE citizens

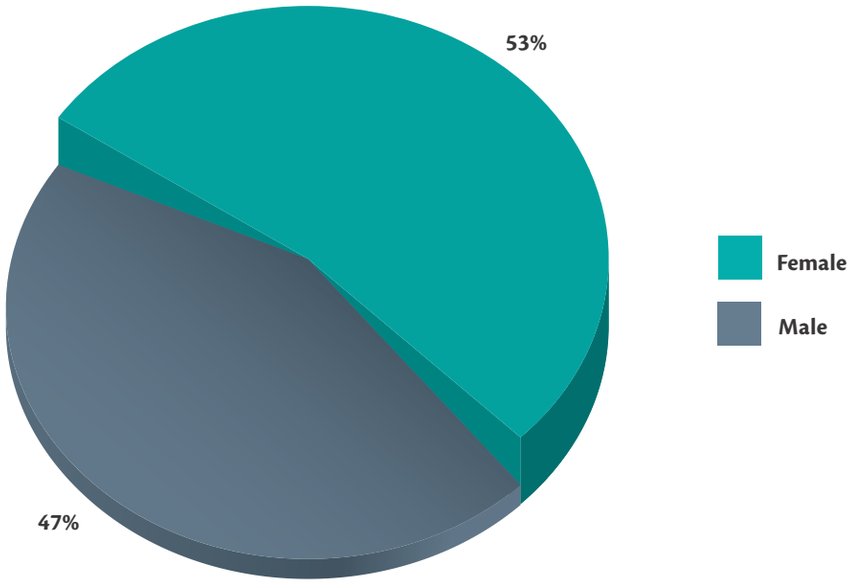


Figure 7 demonstrates the distribution of male and female malignant cases by gender among Non-UAE citizens. Out of 2661 individuals, 47% were males and 53% were females.

Frequency of incident cases of cancer according to primary site, in different age groups and genders

Primary site (malignant) distribution by gender, among all population, 2014

The information related to the cancer site is available through codes from the "International Classification of Diseases, 10th revision (ICD-10)". Table 6 reports data of primary site malignancy using the ICD-10 classification for consistency. The variables extracted include gender, and incident cases of cancer site. In 2014, the reported invasive incident cases were 3610 cases (1961 females, 1649 males). Overall, the most commonly occurring cancers were breast (768), colorectal (404), and thyroid (314). The 3 most commonly occurring cancers in males are Colorectal (256), Prostate (167), and Leukemia (131). The 3 most commonly occurring cancers in females were Breast (762), Thyroid (234), and Colorectal (148).

Table 6 Primary Site (Malignant) Distribution by Gender, among all UAE population, 2014

Primary Site - ICD 10	Female	Male	Grand Total
C00-C14 Lip, Oral cavity & pharynx	33	81	114
C15 Esophagus	1	19	20
C16 Stomach	47	54	101
C17 Small intestine	7	14	21
C18-C21 Colorectal	148	256	404

Primary Site - ICD 10	Female	Male	Grand Total
C22 Liver and intrahepatic bile ducts	18	40	58
C23, C24 Gallbladder, other and unspecified part of biliary tract	16	18	34
C25 Pancreas	20	42	62
C30, C31 Nasal cavity, middle ear, accessory sinuses	1	7	8
C32 Larynx	2	27	29
C34 Bronchus and Lung	32	107	139
C40-C41 Bone and articular cartilage	6	6	12
C43 Skin melanoma	7	10	17
C44 Skin	35	90	125
C46 Kaposi sarcoma	0	2	2
C48 Retroperitoneum and peritoneum	4	4	8
C49 Connective and soft tissue	22	25	47
C50 Breast	762	6	768
C53 Cervix uteri	77	0	77
C54-C55 Uterus	106	0	106
C56 Ovary	78	0	78
C61 Prostate	0	167	167
C62 Testis	0	39	39
C64-C65 Kidney & Renal pelvis	35	61	96
C66, C68 Ureter and other urinary organs	2	0	2
C67 Urinary Bladder	16	107	123
C70-C72 Brain & CNS	37	73	110
C73 Thyroid	234	80	314
C74-C75 Other endocrine glands	1	7	8
C76-C80 Unknown or unspecified sites	22	23	45
C81 Hodgkin's lymphoma	36	40	76
C82-C85, C96 Non-Hodgkin lymphoma	54	81	135
C88, C90 Multiple myeloma	15	14	29
C91-C95 Leukemia	68	131	199
Other malignancy	19	18	37
(C00-C96) All invasive cancers (malignant cases)	1961	1649	3610

The distribution of malignant cases according to gender among UAE citizens is depicted in Table 7. In 2014, the reported malignant cases were 949 (541females, 408 males) among UAE-citizens. The most commonly diagnosed cancers among UAE-citizens were breast (174), colorectal (125) and thyroid (88). The 3 most commonly occurring cancers in males are Colorectal (74), Prostate (38), and Urinary Bladder (36). The 3 most commonly occurring cancers in females were Breast (174), Thyroid (73), and Colorectal (51).

Table 7: Primary Site (malignant) distribution by gender, among UAE-Citizens, 2014

Primary Site - ICD 10	Female	Male	Grand Total
C00-C14 Lip, Oral cavity & pharynx	11	18	29
C16 Stomach	19	15	34
C17 Small intestine	3	2	5
C18-C21 Colorectal	51	74	125
C22 Liver and intrahepatic bile ducts	6	14	20
C23, C24 Gallbladder, other and unspecified part of biliary tract	6	4	10
C25 Pancreas	4	7	11
C32 Larynx	0	8	8
C34 Bronchus and Lung	10	35	45
C40-C41 Bone and articular cartilage	3	3	6
C44 Skin	6	11	17
C49 Connective and soft tissue	10	4	14
C50 Breast	174	0	174
C53 Cervix uteri	19	0	19
C54-C55 Uterus	31	0	31
C56 Ovary	17	0	17
C61 Prostate	0	38	38
C62 Testis	0	6	6
C64-C65 Kidney & Renal pelvis	13	13	26
C67 Urinary Bladder	4	36	40
C70-C72 Brain & CNS	9	18	27
C73 Thyroid	73	15	88
C76-C80 Unknown or unspecified sites	7	7	14
C81 Hodgkin's lymphoma	13	10	23
C82-C85, C96 Non-Hodgkin lymphoma	15	24	39

Primary Site - ICD 10	Female	Male	Grand Total
C88, C90 Multiple myeloma	6	3	9
C91-C95 Leukemia	22	34	56
Other malignancy	9	9	18
(C00-C96) All invasive cancers (malignant cases)	541	408	949

Primary site (malignant) distribution by gender, among Non- UAE citizens, 2014

The distribution of malignant cases according to gender among Non-UAE citizens is described in Table 8. In 2014, the malignant cases were 2661 (1420 females, 1241 males) among Non –UAE citizens. The most commonly diagnosed cancers among Non-UAE-citizens were breast (594), colorectal (279) and thyroid (226). The 3 most commonly occurring cancers in males are Colorectal (182), Prostate (129), and Leukemia (97). The 3 most commonly occurring cancers in females were Breast (588), Thyroid (161), and Colorectal (97).

Table 8 Primary site (malignant) distribution by gender, among Non-UAE-citizens, 2014

Primary Site - ICD 10	Female	Male	Grand Total
C00-C14 Lip, Oral cavity & pharynx	22	63	85
C15 Esophagus	1	16	17
C16 Stomach	28	39	67
C17 Small intestine	4	12	16
C18-C21 Colorectal	97	182	279
C22 Liver and intrahepatic bile ducts	12	26	38
C23, C24 Gallbladder, other and unspecified part of biliary tract	10	14	24
C25 Pancreas	16	35	51
C30, C31 Nasal cavity, middle ear, accessory sinuses	1	7	8
C32 Larynx	2	19	21
C34 Bronchus and Lung	22	72	94
C40-C41 Bone and articular cartilage	3	3	6
C43 Skin melanoma	6	10	16
C44 Skin	29	79	108
C48 Retroperitoneum and peritoneum	3	3	6
C49 Connective and soft tissue	12	21	33
C50 Breast	588	6	594

Primary Site - ICD 10	Female	Male	Grand Total
C53 Cervix uteri	58	0	58
C54-C55 Uterus	75	0	75
C56 Ovary	61	0	61
C61 Prostate	0	129	129
C62 Testis	0	33	33
C64-C65 Kidney & Renal pelvis	22	48	70
C67 Urinary Bladder	12	71	83
C70-C72 Brain & CNS	28	55	83
C73 Thyroid	161	65	226
C74-C75 Other endocrine glands	0	6	6
C76-C80 Unknown or unspecified sites	15	16	31
C81 Hodgkin's lymphoma	23	30	53
C82-C85, C96 Non-Hodgkin lymphoma	39	57	96
C88, C90 Multiple myeloma	9	11	20
C91-C95 Leukemia	46	97	143
Other malignancy	15	16	31
(C00-C96)All invasive cancers (malignant cases)	1420	1241	2661

Age-group distribution of malignant cases in UAE, all gender 2014

Table 9 reveals the distribution of malignant cancer cases in UAE by age group in the year 2014. The data indicates highest frequencies of malignant cases are found among age groups 55-59 years (11.41%), 45-49 year (11.14%), 50-54 year age group (11.02%) and 60-64 years age group (10.06%) It is noteworthy that 3610 cancer cases were reported in 2014 with less frequency of cancer reported in "15-19 year" age group (0.72%).

Table 9 Age-group distribution of malignant cases in UAE, all gender 2014

Age Group	Count of Malignant Cases 2014	%
(0-4)	77	2.13%
(5-9)	41	1.14%
(10-14)	36	1.00%
(15-19)	26	0.72%
(20-24)	71	1.97%
(25-29)	156	4.32%
(30-34)	255	7.06%
(35-39)	343	9.50%
(40-44)	327	9.06%
(45-49)	402	11.14%
(50-54)	398	11.02%
(55-59)	412	11.41%
(60-64)	363	10.06%
(65-69)	236	6.54%
(70-74)	199	5.51%
(75-79)	131	3.63%
(80-84)	67	1.86%
(85 and Over)	58	1.61%
Unknown	12	0.33%
Grand Total	**3610**	**100.00%**

Figure 8: Age-group distribution of malignant cases in UAE, All gender 2014

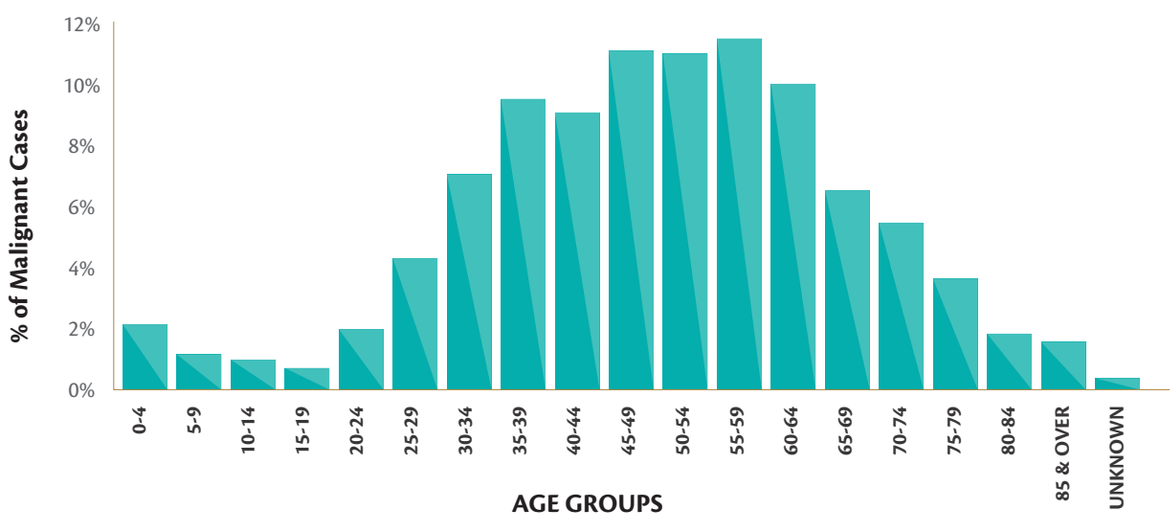


Figure 8 shows and summarizes the distribution of malignant cases by age group in UAE for the year 2014. The (55-59) year age group reached its highest peak showing highest frequency of cancer, but in contrast, malignant cases occurred relatively less frequently at young ages (15-19 year).

Age-group distribution of malignant cases in UAE, among female 2014

Table 10: Age-group distribution of malignant cases in UAE, among female, 2014

Age Group	Count of Malignant Cases 2014	%
(0-4)	36	1.84%
(5-9)	17	0.87%
(10-14)	16	0.82%
(15-19)	14	0.71%
(20-24)	42	2.14%
(25-29)	93	4.74%
(30-34)	150	7.65%
(35-39)	224	11.42%
(40-44)	207	10.56%
(45-49)	262	13.36%
(50-54)	224	11.42%
(55-59)	215	10.96%
(60-64)	179	9.13%
(65-69)	98	5.00%
(70-74)	83	4.23%
(75-79)	49	2.50%
(80-84)	25	1.27%
(85 and Over)	19	0.97%
Unknown	8	0.41%
Grand Total	1961	100.00%

Table 10 demonstrates the distribution by age group of malignant cases among females in UAE in the year 2014. The data indicates highest frequencies of malignant cases among females was observed in the age groups of 45-49 years (13.36%), the 2nd was in the age groups 35-39, 50-54 years (11.42%). It is noteworthy that 1961 malignant cases were reported in 2014 with less frequency of cancer reported in "15-19 year" age group (0.71%).

Figure 9: Age-group distribution of malignant cases in UAE, among female 2014

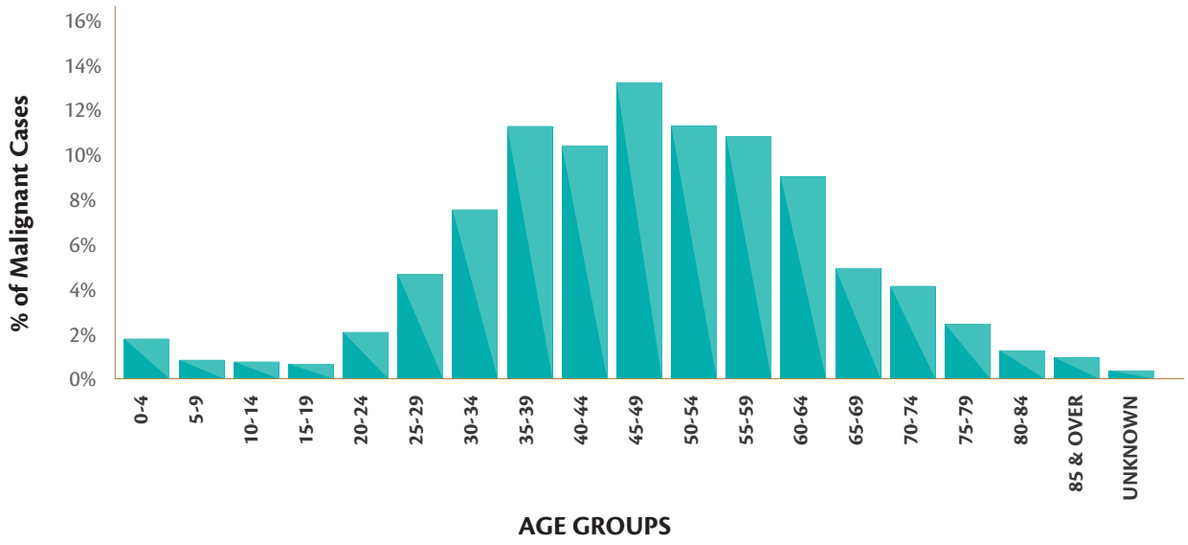


Figure 9 demonstrates and summarizes the distribution by age group of malignant cases among female in UAE in the year 2014. The 45-49 years (13.36%) age group reached its highest peak showing highest frequency of malignant cancer but in contrast, malignant cancer occurred relatively less frequently at young ages (15-19 year) (0.71%).

Age-group distribution of malignant cases in UAE, among males 2014

Table 11: Age-group distribution of malignant cases in UAE, among males 2014

Age Group	Count of Malignant Cases 2014	%
(0-4)	41	2.49%
(5-9)	24	1.46%
(10-14)	20	1.21%
(15-19)	12	0.73%
(20-24)	29	1.76%
(25-29)	63	3.82%
(30-34)	105	6.37%
(35-39)	119	7.22%
(40-44)	120	7.28%
(45-49)	140	8.49%
(50-54)	174	10.55%
(55-59)	197	11.95%
(60-64)	184	11.16%

Age Group	Count of Malignant Cases 2014	%
(65-69)	138	8.37%
(70-74)	116	7.03%
(75-79)	82	4.97%
(80-84)	42	2.55%
(85 and Over)	39	2.37%
Unknown	4	0.24%
Grand Total	**1649**	**100.00%**

Table 11 highlights the distribution of malignant cases among males in UAE by age group in the year 2014. The data indicates highest frequency of cancer among males was observed in the age group of 55-59 years (11.95%) then in the age group 60-64 (11.16%). It is noteworthy that 1649 cancer cases were reported in 2014 with less frequency of cancer reported in the "15-19 year" age group (0.73%).

Figure 10: Age-group distribution of malignant cases in UAE, among males 2014

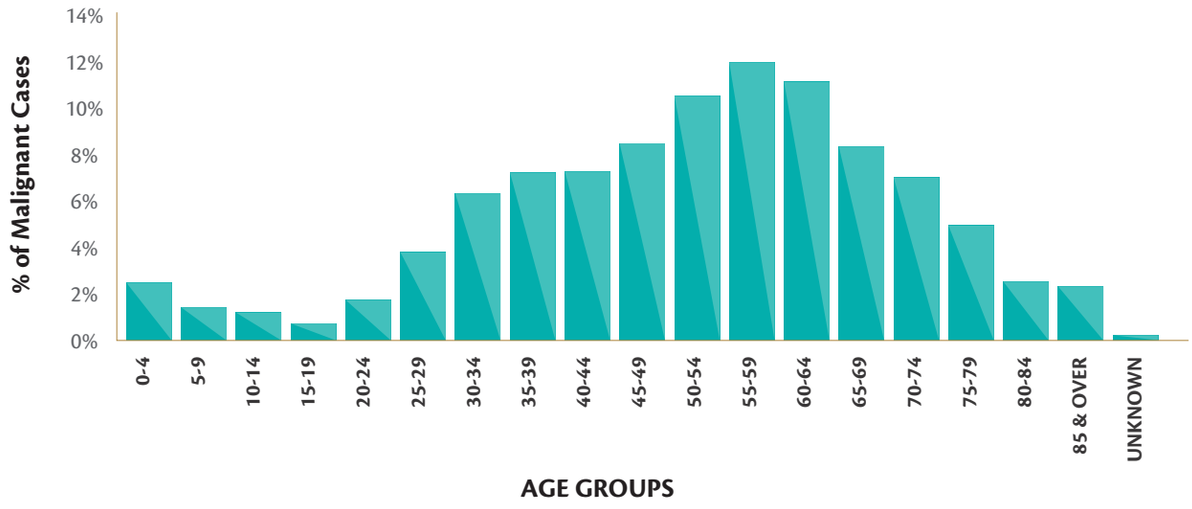


Figure 10 demonstrates and summarizes the distribution by age group of malignant cancer cases among males in UAE in the year 2014. The 55-59 years (11.95%) age group is found to carry highest frequency of cancer burden, but in contrast, malignant cancer occurred relatively less frequently at young ages (15-19 year) (0.73%).

Age-group distribution of malignant cases among UAE citizens, 2014

Table 12: Age-group distribution of malignant cases among UAE citizens, 2014

Age Group	Count of Malignant Cases 2014	%
(0-4)	21	2.21%
(5-9)	19	2.00%
(10-14)	16	1.69%
(15-19)	9	0.95%
(20-24)	18	1.90%
(25-29)	30	3.16%
(30-34)	62	6.53%
(35-39)	73	7.69%
(40-44)	58	6.11%
(45-49)	70	7.38%
(50-54)	88	9.27%
(55-59)	90	9.48%
(60-64)	104	10.96%
(65-69)	90	9.48%
(70-74)	75	7.90%
(75-79)	52	5.48%
(80-84)	42	4.43%
(85 and Over)	32	3.37%
Grand Total	**949**	**100.00%**

Table 12 demonstrates the distribution by age group of malignant cases among UAE citizens in the year 2014. The data indicates that the highest frequency of cancers was observed in the "60-64 year age" (10.96%) group. It is noteworthy that 949 malignant cases were reported in 2014 with less frequency of cancer reported in "15-19 year" age group (0.95%).

Figure 11: Age-group distribution of malignant cases among UAE citizens, 2014

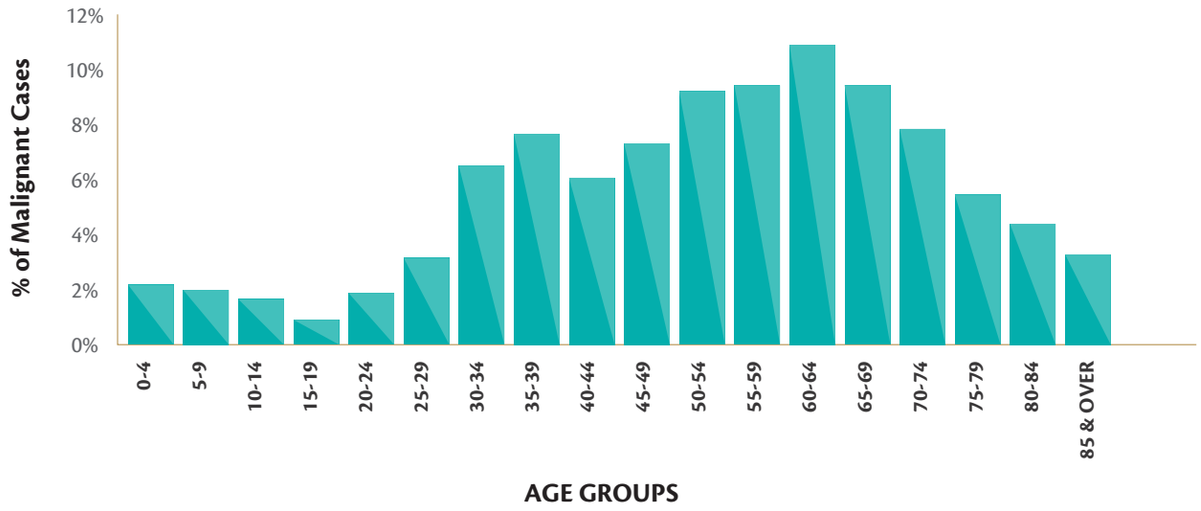


Figure 11 demonstrates and summarizes the distribution of malignant cases by age group among UAE Citizens in 2014. The 60-64 year age (10.96%) group shows the highest frequency of cancers, but in contrast, malignant occurred relatively less frequently at young ages (15-19 year).

Age-group distribution of malignant cases among UAE female citizens, 2014

Table 13: Age-group distribution of malignant cases among female UAE citizens, 2014

Age Group	Count of Malignant Cases 2014	%
(0-4)	9	1.66%
(5-9)	8	1.48%
(10-14)	4	0.74%
(15-19)	6	1.11%
(20-24)	12	2.22%
(25-29)	20	3.70%
(30-34)	35	6.47%
(35-39)	52	9.61%
(40-44)	42	7.76%
(45-49)	57	10.54%
(50-54)	57	10.54%
(55-59)	63	11.65%
(60-64)	60	11.09%

Age Group	Count of Malignant Cases 2014	%
(65-69)	37	6.84%
(70-74)	30	5.55%
(75-79)	22	4.07%
(80-84)	15	2.77%
(85 and Over)	12	2.22%
Grand Total	**541**	**100.00%**

Table 13 determines the distribution by age group of malignant cases among female UAE citizens in 2014. The data shows that the highest frequency of cancer among females was observed in the age group of 55-59 years (11.65%), second highest frequency was in the age group of 60-64 years (11.09%). It is notable that 541 cancer cases were reported in 2014 with less frequency of cancer reported in "10-14 year" age group (0.74%).

Figure 12: Age-group distribution of malignant cases among female UAE citizens, 2014

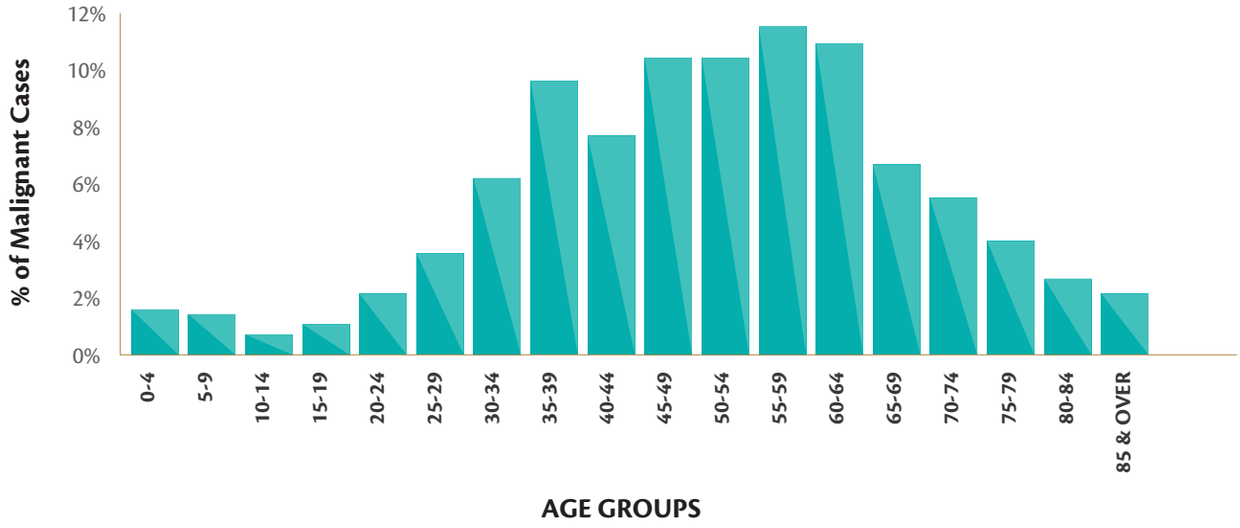


Figure 12 demonstrates and summarizes the distribution by age group of malignant cancer cases among females in UAE in the year 2014. The 55-59 years (11.65%) age group demonstrated highest frequency of cancer, but in contrast, malignant cancers occurred relatively less frequently at young ages "10-14 year" age group (0.74%).

Age-group distribution of malignant cases among male UAE citizens, 2014

Table 14: Age-group distribution of malignant cases among male UAE citizens, 2014

Age Group	Count of Malignant Cases 2014	%
(0-4)	12	2.94%
(5-9)	11	2.70%
(10-14)	12	2.94%
(15-19)	3	0.74%
(20-24)	6	1.47%
(25-29)	10	2.45%
(30-34)	27	6.62%
(35-39)	21	5.15%
(40-44)	16	3.92%
(45-49)	13	3.19%
(50-54)	31	7.60%
(55-59)	27	6.62%
(60-64)	44	10.78%
(65-69)	53	12.99%
(70-74)	45	11.03%
(75-79)	30	7.35%
(80-84)	27	6.62%
(85 and Over)	20	4.90%
Grand Total	**408**	**100.00%**

Table 14 demonstrates the distribution by age group of malignant cases among males UAE citizens in 2014. The data indicates highest frequency of cancer among males is observed in the age group of 65-69 years (12.99%), second highest frequency in the age group of 70-74 years (11.03 %). It is noteworthy that 408 cancer cases were reported in 2014 among males with less frequency of cancer reported in "15-19 year" age group (0.74%).

Figure 13: Age-group distribution of malignant cases among male UAE citizens, 2014

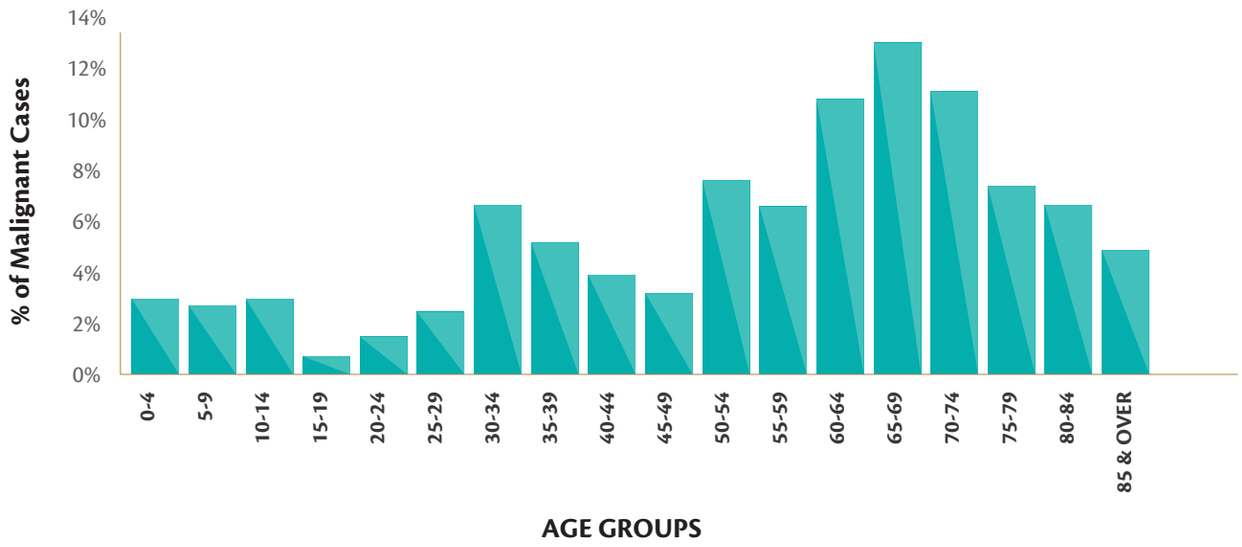


Figure 13 demonstrates and summarizes the distribution by age group of malignant cases among males UAE citizens in 2014. The 65-69 years (12.99%) age group demonstrated showing highest frequency of cancer, but in contrast, malignant cancer occurred relatively less frequently at young age (15-19 year) (0.74%).

Age-group distribution of malignant cases among Non-UAE citizens, 2014

Table 15: Age-group distribution of malignant cases among Non-UAE citizens, 2014

Age Group	Count of Malignant Cases 2014	%
(0-4)	56	2.10%
(5-9)	22	0.83%
(10-14)	20	0.75%
(15-19)	17	0.64%
(20-24)	53	1.99%
(25-29)	126	4.74%
(30-34)	193	7.25%
(35-39)	270	10.15%
(40-44)	269	10.11%
(45-49)	332	12.48%
(50-54)	310	11.65%
(55-59)	322	12.10%
(60-64)	259	9.73%

Age Group	Count of Malignant Cases 2014	%
(65-69)	146	5.49%
(70-74)	124	4.66%
(75-79)	79	2.97%
(80-84)	25	0.94%
(85 and Over)	26	0.98%
Unknown	12	0.45%
Grand Total	**2661**	**100.00%**

Table 15 displays the distribution by age group of malignant cases among Non-UAE citizens in the year 2014. The data indicates highest frequency of cancer is observed in the age group 45-49 years (12.48%), second highest frequency in the age group 55-59 years (12.10%). It is remarkable that 2661cancer cases were reported in 2014 with less frequency of cancer reported in "15-19 year" age group (0.64%).

Figure 14: Age-group distribution of malignant cases among Non-UAE citizens, 2014

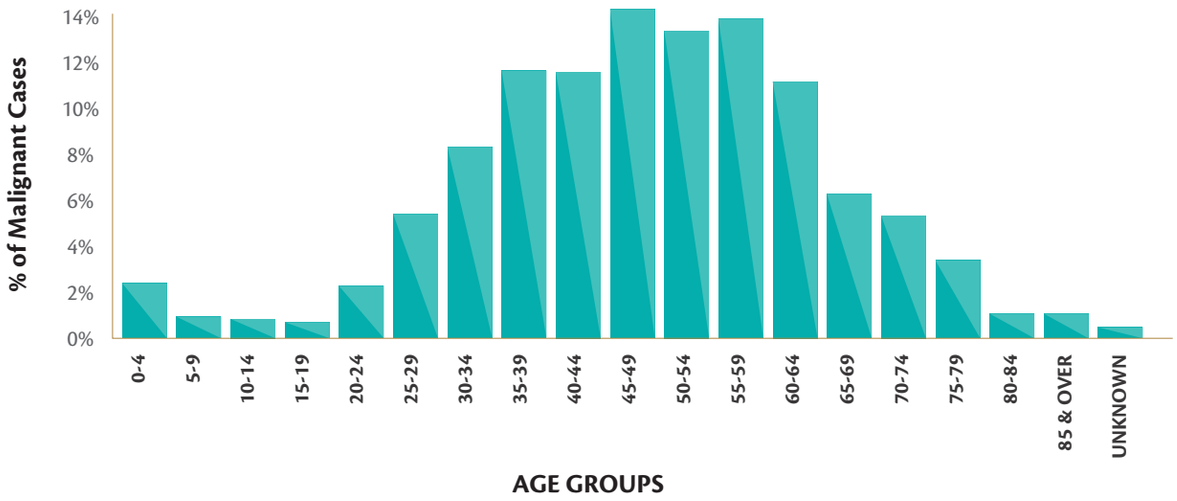


Figure 14 demonstrates and summarizes the distribution by age group of malignant cases among Non-UAE citizens in the year 2014. The 45-49 year (12.48%) age group showed highest frequency of cancer, but in contrast, malignant cancer occurred relatively less frequently at young age "15-19 year" age group (0.64%).

Age-group distribution of malignant cases among female Non-UAE citizens, 2014

Table 16: Age-group distribution of malignant cases among female Non-UAE citizens, 2014

Age Group	Count of Malignant Cases 2014	%
(0-4)	27	1.90%
(5-9)	9	0.63%
(10-14)	12	0.85%
(15-19)	8	0.56%
(20-24)	30	2.11%
(25-29)	73	5.14%
(30-34)	115	8.10%
(35-39)	172	12.11%
(40-44)	165	11.62%
(45-49)	205	14.44%
(50-54)	167	11.76%
(55-59)	152	10.70%
(60-64)	119	8.38%
(65-69)	61	4.30%
(70-74)	53	3.73%
(75-79)	27	1.90%
(80-84)	10	0.70%
(85 and Over)	7	0.49%
Unknown	8	0.56%
Grand Total	**1420**	**100.00%**

Table 16 reveals the distribution by age group of malignant cases among female Non-UAE citizens in the year 2014. The data indicates highest frequency of cancer is observed in the age group 45-49 year (14.44%), second highest frequency in the age group 35-39 year (12.11%). It is notable that 1420 malignant cases were reported in 2014 in females with less frequency of cancer reported in "85 and Over" age group (0.49%).

Figure 15: Age-group distribution of malignant cases among female Non-UAE citizens, 2014

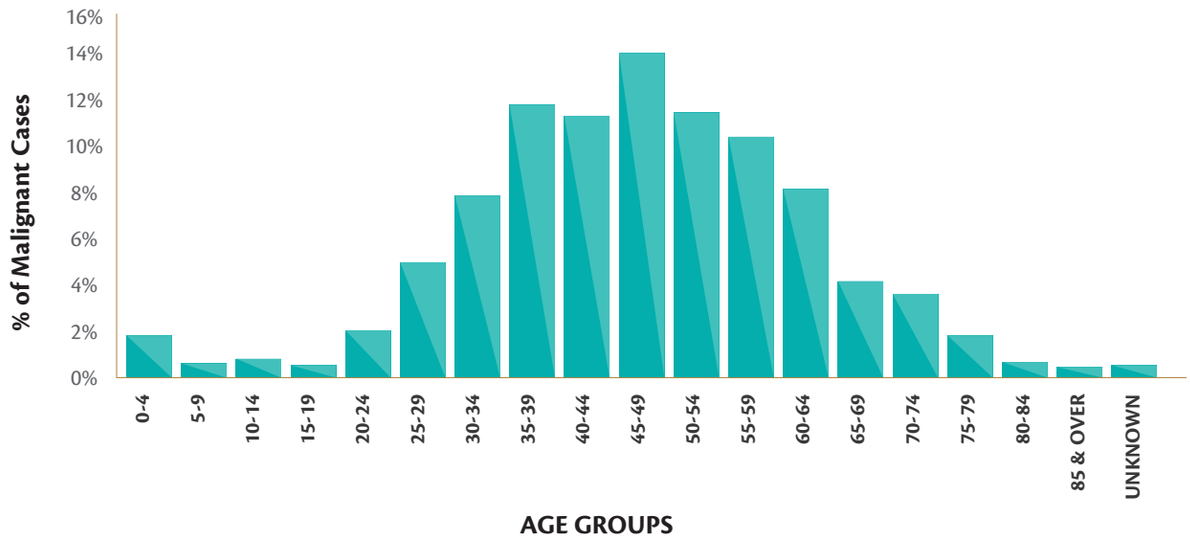


Figure 15 demonstrates and summarizes the distribution by age group of malignant cases among female Non-UAE citizens in the year 2014. The 45-49 year (14.44%) age group reached its highest peak showing highest frequency of cancer, but in contrast, malignant cancer occurred relatively less frequently at young age "85 and Over" age group (0.49%).

Age-group distribution of malignant cases among male Non-UAE citizens, 2014

Table 17: Age-group distribution of malignant cases among male non-UAE citizens, 2014

Age Group	Count of Malignant Cases 2014	%
(0-4)	29	2.34%
(5-9)	13	1.05%
(10-14)	8	0.64%
(15-19)	9	0.73%
(20-24)	23	1.85%
(25-29)	53	4.27%
(30-34)	78	6.29%
(35-39)	98	7.90%
(40-44)	104	8.38%
(45-49)	127	10.23%
(50-54)	143	11.52%
(55-59)	170	13.70%
(60-64)	140	11.28%

Age Group	Count of Malignant Cases 2014	%
(65-69)	85	6.85%
(70-74)	71	5.72%
(75-79)	52	4.19%
(80-84)	15	1.21%
(85 and Over)	19	1.53%
Unknown	4	0.32%
Grand Total	**1241**	**100.00%**

Table 17 demonstrates the distribution by age group of malignant cases among male Non-UAE citizens in the year 2014. The data indicates highest frequency of cancer is observed in the 55-59 year age (13.70%) group. It is noteworthy that 1241 cancer cases were reported in 2014 in males with less frequency of cancer reported in "10-14 year" age group (0.64%).

Figure 16: Age-group distribution of malignant cases among male Non-UAE citizens, 2014

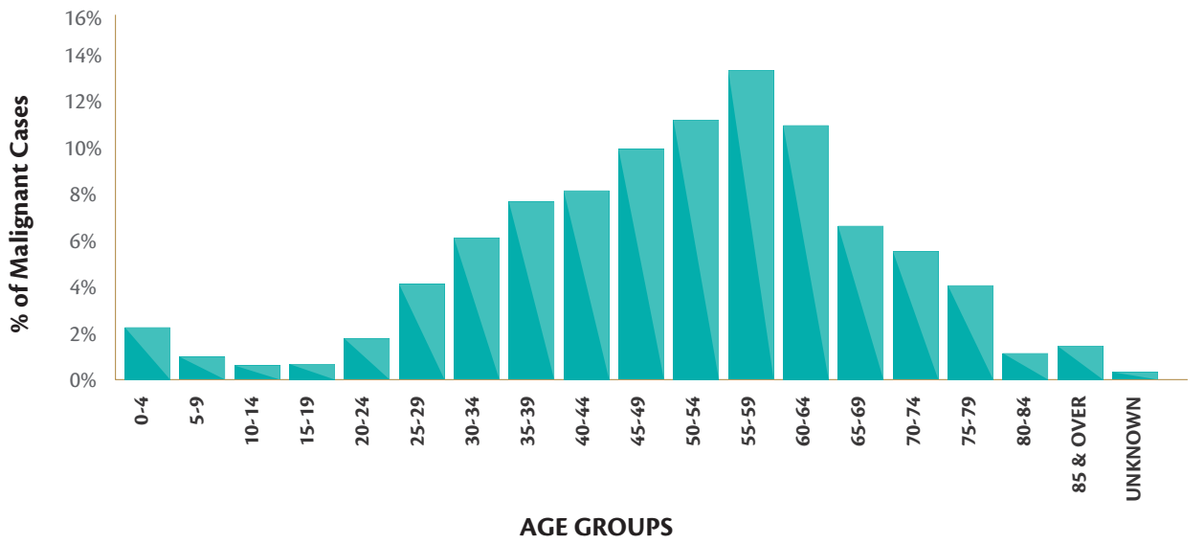


Figure 16 demonstrates and summarizes the distribution by age group of malignant cases among male Non-UAE citizens in 2014. The 55-59 year (13.70%) age group indicated highest frequency of cancer, but in contrast, malignant cancer occurred relatively less frequently at young age ("10-14 year" age group) (0.64%).

Primary site (Malignant) distribution by Age group, among all – 2014

The most commonly diagnosed cancers in the UAE population vary considerably by age group, with particular differences in the cancer types diagnosed in children (0-14), teenagers (15-24), young adults (25-49), adults (50-74) compared with the types diagnosed in older people (75 and over).

Table 18: Primary Site (Malignant) Distribution by Age Group, among all – 2014

Primary Site - ICD 10	(0-4)	(5-9)	(10-14)	(15-19)	(20-24)	(25-29)	(30-34)	(35-39)	(40-44)	(45-49)	(50-54)	(55-59)	(60-64)	(65-69)	(70-74)	(75-79)	(80-84)	(85 & Over)	Unknown
C00-C14 Lip, Oral cavity & pharynx	0	0	0	1	1	3	10	8	13	17	15	15	12	6	3	7	2	0	1
C15 Esophagus	0	0	0	0	0	0	0	1	3	2	3	2	3	4	2	0	0	0	0
C16 Stomach	0	0	0	0	0	1	4	7	5	11	12	8	11	16	8	4	6	8	0
C17 Small intestine	0	0	0	0	0	0	0	1	1	2	3	6	1	1	2	2	2	0	0
C18-C21 Colorectal	0	0	0	0	5	12	21	40	25	38	53	55	41	41	27	25	11	9	0
C22 Liver and intrahepatic bile ducts	2	2	0	0	0	0	1	0	3	5	3	7	9	9	9	7	0	1	0
C23, C24 Gallbladder, other and unspecified part of biliary tract	0	0	0	0	0	0	0	1	1	1	3	6	10	1	5	2	1	3	0
C25 Pancreas	0	1	0	0	1	1	3	2	1	2	5	15	12	4	7	2	6	0	0
C30, C31 Nasal cavity, middle ear, accessory sinuses	0	0	0	0	2	1	0	1	1	1	0	1	0	0	0	0	0	0	1
C32 Larynx	0	0	0	0	0	0	3	0	1	5	3	3	5	6	0	0	0	3	0
C34 Bronchus and Lung	0	0	0	0	0	2	4	7	11	8	14	21	23	21	7	13	5	2	0
C40-C41 Bone and articular cartilage	1	3	1	2	0	0	0	0	0	1	1	2	0	1	0	0	0	0	0
C43 Skin melanoma	0	0	0	0	1	1	1	2	3	2	1	2	3	0	0	1	0	0	0
C44 Skin	1	0	2	0	1	2	6	9	10	14	19	14	15	11	8	3	3	4	3
C46 Kaposi sarcoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
C48 Retroperitoneum and peritoneum	0	0	0	0	1	0	0	0	1	0	3	0	1	1	1	0	0	0	0
C49 Connective and soft tissue	2	1	1	0	0	3	4	9	6	6	4	4	3	0	2	1	0	0	1
C50 Breast	0	0	0	0	1	23	54	110	99	142	103	100	58	28	20	12	10	6	2
C53 Cervix uteri	0	0	0	0	0	2	7	6	18	12	9	10	10	3	0	0	0	0	0
C54-C55 Uterus	0	0	0	0	0	1	5	7	9	14	20	9	17	11	9	2	0	1	1
C56 Ovary	1	0	0	2	2	3	6	9	7	11	5	13	8	1	4	3	0	2	1
C61 Prostate	0	0	0	0	0	0	0	0	1	6	15	25	40	22	33	16	7	2	0
C62 Testis	1	1	1	1	4	9	8	8	2	2	1	1	0	0	0	0	0	0	0
C64-C65 Kidney & Renal pelvis	3	2	1	0	0	2	5	10	3	13	16	13	12	3	6	5	1	1	0

Primary Site - ICD 10	(0-4)	(5-9)	(10-14)	(15-19)	(20-24)	(25-29)	(30-34)	(35-39)	(40-44)	(45-49)	(50-54)	(55-59)	(60-64)	(65-69)	(70-74)	(75-79)	(80-84)	(85 & Over)	Unknown
C66, C68 Ureter and other urinary organs	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
C67 Urinary Bladder	0	0	0	1	1	3	4	2	6	7	12	20	21	15	13	7	4	7	0
C70-C72 Brain & CNS	11	7	4	4	8	8	17	12	11	8	4	5	5	3	1	1	0	1	0
C73 Thyroid	0	0	1	4	24	34	44	49	44	41	28	26	9	5	3	2	0	0	0
C74-C75 Other endocrine glands	3	0	0	1	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0
C76-C80 Unknown or unspecified sites	0	0	0	0	0	1	1	1	3	2	8	1	7	4	10	3	1	3	0
C81 Hodgkin's lymphoma	0	3	8	3	8	12	7	11	6	3	2	5	4	0	2	1	0	0	1
C82-C85, C96 Non-Hodgkin lymphoma	2	4	5	1	1	10	20	8	12	9	19	6	13	6	8	5	4	2	0
C88, C90 Multiple myeloma	0	0	0	0	0	0	1	1	0	3	4	2	3	6	4	3	1	1	0
C91-C95 Leukemia	40	16	11	6	9	17	16	18	15	13	8	12	4	5	3	3	2	1	0
Other malignancy	10	1	1	0	1	3	2	3	6	1	1	3	3	1	1	0	0	1	1
Grand Total	77	41	36	26	71	156	255	343	327	402	398	412	363	236	199	131	67	58	12

Primary site (Malignant) distribution by Age group, among UAE-citizens, 2014

The most commonly diagnosed cancers among UAE-citizens varies considerably by age group, with particular differences in the cancer types diagnosed in children (0-14), teenagers (15-24), young adults (25-49), adults (50-74) compared with the types diagnosed in older people (75 and over). The highest frequencies of breast cancer cases were found among age groups 45-49 years (29), followed by age group (55-59) years (28). It was also noted that the smallest percentage of breast cancer cases were diagnosed in the age group of 85 and over among UAE citizens. The highest frequencies of colorectal cancer cases were found among age groups (55-59 years (18), followed by age group (65-69) years (18). It was also noted that the smallest percentage of colorectal cancer cases were diagnosed in the age group of 20 and 24.

Table 19: Primary site (Malignant) distribution by Age group, among UAE-citizens – 2014

Primary Site - ICD 10	(0-4)	(5-9)	(10-14)	(15-19)	(20-24)	(25-29)	(30-34)	(35-39)	(40-44)	(45-49)	(50-54)	(55-59)	(60-64)	(65-69)	(70-74)	(75-79)	(80-84)	(85 & Over)
C00-C14 Lip, Oral cavity & pharynx	0	0	0	0	0	1	2	1	1	0	5	4	4	2	3	4	2	0
C15 Esophagus	0	0	0	0	0	0	0	0	0	1	0	1	0	1	0	0	0	0
C16 Stomach	0	0	0	0	0	0	2	1	1	3	3	0	4	6	1	4	4	5
C17 Small intestine	0	0	0	0	0	0	0	0	0	0	1	0	1	1	1	1	0	0
C18-C21 Colorectal	0	0	0	0	1	0	4	12	6	4	13	18	13	18	16	6	7	7
C22 Liver and intrahepatic bile ducts	0	0	0	0	0	0	0	0	1	0	2	0	3	6	5	2	0	1
C23, C24 Gallbladder, other and unspecified part of biliary tract	0	0	0	0	0	0	0	0	0	0	0	1	3	0	3	0	1	2
C25 Pancreas	0	1	0	0	0	0	0	0	0	0	0	0	7	0	1	0	2	0

Primary Site - ICD 10	(0-4)	(5-9)	(10-14)	(15-19)	(20-24)	(25-29)	(30-34)	(35-39)	(40-44)	(45-49)	(50-54)	(55-59)	(60-64)	(65-69)	(70-74)	(75-79)	(80-84)	(85 & Over)
C32 Larynx	0	0	0	0	0	0	2	0	0	1	0	1	2	1	0	0	0	1
C34 Bronchus and Lung	0	0	0	0	0	0	1	1	1	1	4	3	8	10	3	9	3	1
C40-C41 Bone and articular cartilage	0	2	1	2	0	0	0	0	0	1	0	0	0	0	0	0	0	0
C43 Skin melanoma	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
C44 Skin	0	0	2	0	0	0	3	0	0	0	0	0	2	5	2	1	1	1
C48 Retroperitoneum and peritoneum	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0
C49 Connective and soft tissue	1	1	0	0	0	2	0	3	1	2	1	0	1	0	1	1	0	0
C50 Breast	0	0	0	0	0	5	13	18	16	29	21	28	17	8	5	4	6	4
C53 Cervix uteri	0	0	0	0	0	0	0	1	3	2	3	4	4	2	0	0	0	0
C54-C55 Uterus	0	0	0	0	0	1	2	2	1	2	5	3	7	4	2	2	0	0
C56 Ovary	1	0	0	1	0	0	0	3	2	1	1	4	0	0	3	1	0	0
C61 Prostate	0	0	0	0	0	0	0	0	0	1	0	2	10	5	10	4	5	1
C62 Testis	0	0	0	0	2	0	1	1	0	0	1	1	0	0	0	0	0	0
C64-C65 Kidney & Renal pelvis	1	1	1	0	0	0	2	2	0	3	4	2	4	1	2	2	1	0
C67 Urinary Bladder	0	0	0	1	1	0	1	0	0	3	4	1	5	8	6	5	3	2
C70-C72 Brain & CNS	5	2	2	1	1	4	1	0	2	1	2	3	1	1	0	0	0	1
C73 Thyroid	0	0	0	2	7	10	12	17	11	9	8	7	0	3	1	1	0	0
C74-C75 Other endocrine glands	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
C76-C80 Unknown or unspecified sites	0	0	0	0	0	0	1	0	0	1	1	0	3	1	2	2	1	2
C81 Hodgkin's lymphoma	0	1	4	1	4	2	1	5	0	0	0	2	1	0	2	0	0	0
C82-C85, C96 Non-Hodgkin lymphoma	0	2	1	0	0	0	6	2	6	3	7	1	2	0	3		4	2
C88, C90 Multiple myeloma	0	0	0	0	0	0	0	0	0	1	0	0	1	4	0	1	1	1
C91-C95 Leukemia	9	9	5	1	2	5	7	2	3	0	2	4	0	2	2	2	1	0
Other malignancy	3	0	0	0	0	0	0	2	2	0	0	0	1	0	1	0	0	1
Grand Total	21	19	16	9	18	30	62	73	58	70	88	90	104	90	75	52	42	32

Primary site (Malignant) distribution by Age group, among Non –UAE citizens, 2014

The commonly diagnosed cancers among non UAE-citizens varies considerably by age group, with particular differences in the cancer types diagnosed in children (0-14), teenagers (15-24), young adults (25-49), adults (50-74) compared with the types diagnosed in older people (75 and over).The highest frequencies of breast cancer cases were found among age groups 45-49 years (113), followed by age group (35-39) years (92). It was also noted that the smallest percentage of breast cancer cases were diagnosed in the age group of 20-24 among non UAE-citizens. The highest frequencies of colorectal cancer cases were found among age groups (50-54 years) (40), followed by age group (55-59) years (37). It was also noted that the smallest percentage of colorectal cancer cases were diagnosed in the age group of 85 and over.

Table 20: Primary site (Malignant) distribution by Age group, among Non UAE-citizens – 2014

Primary Site - ICD 10	(0-4)	(5-9)	(10-14)	(15-19)	(20-24)	(25-29)	(30-34)	(35-39)	(40-44)	(45-49)	(50-54)	(55-59)	(60-64)	(65-69)	(70-74)	(75-79)	(80-84)	(85 & Over)	Unknown
C00-C14 Lip, Oral cavity & pharynx	0	0	0	1	1	2	8	7	12	17	10	11	8	4	0	3	0	0	1
C15 Esophagus	0	0	0	0	0	0	0	1	3	1	3	1	3	3	2	0	0	0	0
C16 Stomach	0	0	0	0	0	1	2	6	4	8	9	8	7	10	7	0	2	3	0
C17 Small intestine	0	0	0	0	0	0	0	1	1	2	2	6	0	0	1	1	2	0	0
C18-C21 Colorectal	0	0	0	0	4	12	17	28	19	34	40	37	28	23	11	19	4	2	0
C22 Liver and intrahepatic bile ducts	2	2	0	0	0	0	1	0	2	5	1	7	6	3	4	5	0	0	0
C23, C24 Gallbladder, other and unspecified part of biliary tract	0	0	0	0	0	0	0	1	1	1	3	5	7	1	2	2	0	1	0
C25 Pancreas	0	0	0	0	1	1	3	2	1	2	5	15	5	4	6	2	4	0	0
C30, C31 Nasal cavity, middle ear, accessory sinuses	0	0	0	0	2	1	0	1	1	1	0	1	0	0	0	0	0	0	1
C32 Larynx	0	0	0	0	0	0	1	0	1	4	3	2	3	5	0	0	0	2	0
C34 Bronchus and Lung	0	0	0	0	0	2	3	6	10	7	10	18	15	11	4	4	2	1	0
C40-C41 Bone and articular cartilage	1	1	0	0	0	0	0	0	0	0	1	2	0	1	0	0	0	0	0
C43 Skin melanoma	0	0	0	0	1	1	1	2	3	1	1	2	3	0	0	1	0	0	0
C44 Skin	1	0	0	0	1	2	3	9	10	14	19	14	13	6	6	2	2	3	3
C46 Kaposi sarcoma	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
C48 Retroperitoneum and peritoneum	0	0	0	0	1	0	0	0	0	0	3	0	1	0	1	0	0	0	0
C49 Connective and soft tissue	1	0	1	0	0	1	4	6	5	4	3	4	2	0	1	0	0	0	1
C50 Breast	0	0	0	0	1	18	41	92	83	113	82	72	41	20	15	8	4	2	2
C53 Cervix uteri	0	0	0	0	0	2	7	5	15	10	6	6	6	1	0	0	0	0	0
C54-C55 Uterus	0	0	0	0	0	0	3	5	8	12	15	6	10	7	7	0	0	1	1
C56 Ovary	0	0	0	1	2	3	6	6	5	10	4	9	8	1	1	2	0	2	1
C61 Prostate	0	0	0	0	0	0	0	0	1	5	15	23	30	17	23	12	2	1	0
C62 Testis	1	1	1	1	2	9	7	7	2	2	0	0	0	0	0	0	0	0	0
C64-C65 Kidney & Renal pelvis	2	1	0	0	0	2	3	8	3	10	12	11	8	2	4	3	0	1	0
C66, C68 Ureter and other urinary organs	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
C67 Urinary Bladder	0	0	0	0	0	3	3	2	6	4	8	19	16	7	7	2	1	5	0

Primary Site - ICD 10	(0-4)	(5-9)	(10-14)	(15-19)	(20-24)	(25-29)	(30-34)	(35-39)	(40-44)	(45-49)	(50-54)	(55-59)	(60-64)	(65-69)	(70-74)	(75-79)	(80-84)	(85 & Over)	Unknown
C70-C72 Brain & CNS	6	5	2	3	7	4	16	12	9	7	2	2	4	2	1	1	0	0	0
C73 Thyroid	0	0	1	2	17	24	32	32	33	32	20	19	9	2	2	1	0	0	0
C74-C75 Other endocrine glands	2	0	0	1	0	2	0	0	0	0	1	0	0	0	0	0	0	0	0
C76-C80 Unknown or unspecified sites	0	0	0	0	0	1	0	1	3	1	7	1	4	3	8	1	0	1	0
C81 Hodgkin's lymphoma	0	2	4	2	4	10	6	6	6	3	2	3	3	0	0	1	0	0	1
C82-C85, C96 Non-Hodgkin lymphoma	2	2	4	1	1	10	14	6	6	6	12	5	11	6	5	5	0	0	0
C88, C90 Multiple myeloma	0	0	0	0	0		1	1	0	2	4	2	2	2	4	2	0	0	0
C91-C95 Leukemia	31	7	6	5	7	12	9	16	12	13	6	8	4	3	1	1	1	1	0
Other malignancy	7	1	1	0	1	3	2	1	4	1	1	3	2	1	0	0	0	0	1
Grand Total	56	22	20	17	53	126	193	270	269	332	310	322	259	146	124	79	25	26	12

Primary site (Malignant) distribution by Nationality – 2014

Among 3610 cases of primary site malignancies that have been observed in UAE population, 2661 were Non-UAE and 949 were UAE citizens respectively. Table 21 demonstrates that the three most commonly diagnosed cancers in both UAE and Non-UAE citizens are, breast (Non UAE citizens 594; UAE citizens 174), colorectal (Non UAE citizens 279; UAE citizens 125), and thyroid (Non UAE citizens 226; UAE citizens 88) cancers.

Table 21: Primary Site (Malignant) Distribution by Nationality – 2014

Primary Site - ICD 10	Non-UAE Citizens	UAE Citizens	Total
C00-C14 Lip, Oral cavity & pharynx	85	29	114
C15 Esophagus	17	3	20
C16 Stomach	67	34	101
C17 Small intestine	16	5	21
C18-C21 Colorectal	279	125	404
C22 Liver and intrahepatic bile ducts	38	20	58
C23, C24 Gallbladder, other and unspecified part of biliary tract	24	10	34
C25 Pancreas	51	11	62
C30, C31 Nasal cavity, middle ear, accessory sinuses	8	0	8
C32 Larynx	21	8	29
C34 Bronchus and Lung	94	45	139

Primary Site - ICD 10	Non-UAE Citizens	UAE Citizens	Total
C40-C41 Bone and articular cartilage	6	6	12
C43 Skin melanoma	16	1	17
C44 Skin	108	17	125
C46 Kaposi sarcoma	2	0	2
C48 Retroperitoneum and peritoneum	6	2	8
C49 Connective and soft tissue	33	14	47
C50 Breast	594	174	768
C53 Cervix uteri	58	19	77
C54-C55 Uterus	75	31	106
C56 Ovary	61	17	78
C61 Prostate	129	38	167
C62 Testis	33	6	39
C64-C65 Kidney & Renal pelvis	70	26	96
C66, C68 Ureter and other urinary organs	2	0	2
C67 Urinary Bladder	83	40	123
C70-C72 Brain & CNS	83	27	110
C73 Thyroid	226	88	314
C74-C75 Other endocrine glands	6	2	8
C76-C80 Unknown or unspecified sites	31	14	45
C81 Hodgkin's lymphoma	53	23	76
C82-C85, C96 Non-Hodgkin lymphoma	96	39	135
C88, C90 Multiple myeloma	20	9	29
C91-C95 Leukemia	143	56	199
Other malignancy	27	10	37
Grand Total	**2661**	**949**	**3610**

Top malignant primary sites among all – 2014

In UAE population, breast is the most common site for cancer, representing 21.27% of all malignant cases in 2014. Table 22 demonstrates the 10 most commonly diagnosed cancers among the UAE population. Five most commonly diagnosed cancers among UAE population are breast (21.27%), colorectal (11.19%), thyroid (8.70%), leukemia (5.51%), and prostate (4.63%).

Table 22: Top ten most common malignant primary sites among all – 2014

Primary Site - ICD 10	Number of Malignant Cases	% of Total
C50 Breast	768	21.27%
C18-C21 Colorectal	404	11.19%
C73 Thyroid	314	8.70%
C91-C95 Leukemia	199	5.51%
C61 Prostate	167	4.63%
C34 Bronchus and Lung	139	3.85%
C82-C85, C96 Non-Hodgkin lymphoma	135	3.74%
C44 Skin	125	3.46%
C67 Urinary Bladder	123	3.41%
C00-C14 Lip, Oral cavity & pharynx	114	3.16%

Top malignant primary sites among all females – 2014

In females, breast is the most common cancer, representing 38.86% of all malignant cases in 2014. Five most commonly diagnosed cancers among females are breast (38.86%), thyroid (11.93 %), colorectal (7.55%), uterus (5.41%), and ovary (3.98%) (Table 23).

Table 23: Malignant primary sites among all females – 2014

Primary Site - ICD 10	Number of Cancer Cases	% of Total
C50 Breast	762	38.86%
C73 Thyroid	234	11.93%
C18-C21 Colorectal	148	7.55%
C54-C55 Uterus	106	5.41%
C56 Ovary	78	3.98%
C53 Cervix uteri	77	3.93%
C91-C95 Leukemia	68	3.47%
C82-C85, C96 Non-Hodgkin lymphoma	54	2.75%
C16 Stomach	47	2.40%
C70-C72 Brain & CNS	37	1.89%

Top malignant primary sites among all males – 2014

In males, colorectal is the most common cancer, representing 15.52% of all malignant cases in 2014. Five most commonly diagnosed cancers among men are: colorectal (15.52%), prostate (10.13%), leukemia (7.94%), bronchus and lung (6.49%), and urinary bladder (6.49%) (Table 24).

Table 24: Malignant primary sites among all males – 2014

Primary Site - ICD 10	Number of Cancer Cases	% of Total
C18-C21 Colorectal	256	15.52%
C61 Prostate	167	10.13%
C91-C95 Leukemia	131	7.94%
C34 Bronchus and Lung	107	6.49%
C67 Urinary Bladder	107	6.49%
C44 Skin	90	5.46%
C00-C14 Lip, Oral cavity & pharynx	81	4.91%
C82-C85, C96 Non-Hodgkin lymphoma	81	4.91%
C73 Thyroid	80	4.85%
C70-C72 Brain & CNS	73	4.43%

Top malignant primary sites among all males & females – 2014

Breast cancer in females and colorectal cancer in males have shown the fastest increase in incidence over the past decade across UAE. The incidence of breast, thyroid, & colorectal cancers in females and colorectal, prostate, and leukemia cancers in males has also been observed to increase markedly in 2014 (Table 25).

Table 25: Malignant primary sites among all males & females – 2014

Primary Site - ICD 10	% of Total	Primary Site - ICD 10	% of Total
C50 Breast	38.86%	C18-C21 Colorectal	15.52%
C73 Thyroid	11.93%	C61 Prostate	10.13%
C18-C21 Colorectal	7.55%	C91-C95 Leukemia	7.94%
C54-C55 Uterus	5.41%	C34 Bronchus and Lung	6.49%
C56 Ovary	3.98%	C67 Urinary Bladder	6.49%
C53 Cervix uteri	3.93%	C44 Skin	5.46%
C91-C95 Leukemia	3.47%	C00-C14 Lip, Oral cavity & pharynx	4.91%
C82-C85, C96 Non-Hodgkin lymphoma	2.75%	C82-C85, C96 Non-Hodgkin lymphoma	4.91%
C16 Stomach	2.40%	C73 Thyroid	4.85%
C70-C72 Brain & CNS	1.89%	C70-C72 Brain & CNS	4.43%

Top malignant primary sites among UAE-citizens, 2014

In UAE-citizens, breast is the most common cancer, representing 18.34% of all cases in 2014. The 5 most commonly diagnosed cancers among UAE-citizens are (in order of frequency): breast (18.34%), colorectal (13.17%), thyroid (9.27%), leukemia (5.90%) and bronchus and lung cancer (4.74%) (Table 26).

Table 26: Malignant primary sites among UAE-citizens, 2014

Primary Site - ICD 10	Number of Cancer Cases	% of Total
C50 Breast	174	18.34%
C18-C21 Colorectal	125	13.17%
C73 Thyroid	88	9.27%
C91-C95 Leukemia	56	5.90%
C34 Bronchus and Lung	45	4.74%
C67 Urinary Bladder	40	4.21%
C82-C85, C96 Non-Hodgkin lymphoma	39	4.11%
C61 Prostate	38	4.00%
C16 Stomach	34	3.58%
C54-C55 Uterus	31	3.27%

Top malignant primary sites among female UAE-citizens, 2014

In female UAE-citizens, breast is the most common cancer, representing 32.16% of all malignant cases in 2014. The 5 most commonly diagnosed cancers among female UAE-citizens are breast (32.16%), thyroid (13.49%), colorectal (9.43%), uterus (5.73%), and leukemia (4.07%) (Table 27).

Table 27: Malignant primary sites among female UAE-citizens, 2014

Primary Site - ICD 10	Number of Cancer Cases	% of Total
C50 Breast	174	32.16%
C73 Thyroid	73	13.49%
C18-C21 Colorectal	51	9.43%
C54-C55 Uterus	31	5.73%
C91-C95 Leukemia	22	4.07%
C16 Stomach	19	3.51%
C53 Cervix uteri	19	3.51%
C56 Ovary	17	3.14%
C82-C85, C96 Non-Hodgkin lymphoma	15	2.77%
C64-C65 Kidney & Renal pelvis	13	2.40%

Top malignant primary sites among male UAE-citizens, 2014

In male UAE-Citizens, colorectal is the most common cancer, representing 18.14% of all malignant cases in 2014. In Table 28; 5 most commonly diagnosed cancers among male UAE-citizens are colorectal (18.14%), prostate (9.31%), urinary bladder (8.82%), bronchus and lung (8.58%), and leukemia (8.33%).

Table 28: Malignant primary sites among male UAE-citizens, 2014

Primary Site - ICD 10	Number of Cancer Cases	% of Total
C18-C21 Colorectal	74	18.14%
C61 Prostate	38	9.31%
C67 Urinary Bladder	36	8.82%
C34 Bronchus and Lung	35	8.58%
C91-C95 Leukemia	34	8.33%
C82-C85, C96 Non-Hodgkin lymphoma	24	5.88%
C00-C14 Lip, Oral cavity & pharynx	18	4.41%
C70-C72 Brain & CNS	18	4.41%
C16 Stomach	15	3.68%
C73 Thyroid	15	3.68%

Top malignant primary sites among all UAE-citizens males & females, 2014

Among UAE-citizens, colorectal is the most common cancer, representing 18.14% of all malignant cases among males and 32.16% of all breast cancer cases among females in 2014. (Table 29).

Table 29: Malignant Primary Sites among all UAE-Citizens Males & Females – 2014

Primary Site - ICD 10	% of Total
C50 Breast	32.16%
C73 Thyroid	13.49%
C18-C21 Colorectal	9.43%
C54-C55 Uterus	5.73%
C91-C95 Leukemia	4.07%
C16 Stomach	3.51%
C53 Cervix uteri	3.51%
C56 Ovary	3.14%
C82-C85, C96 Non-Hodgkin lymphoma	2.77%
C64-C65 Kidney & Renal pelvis	2.40%

Primary Site - ICD 10	% of Total
C18-C21 Colorectal	18.14%
C61 Prostate	9.31%
C67 Urinary Bladder	8.82%
C34 Bronchus and Lung	8.58%
C91-C95 Leukemia	8.33%
C82-C85, C96 Non-Hodgkin lymphoma	5.88%
C00-C14 Lip, Oral cavity & pharynx	4.41%
C70-C72 Brain & CNS	4.41%
C16 Stomach	3.68%
C73 Thyroid	3.68%

Top malignant primary sites among Non UAE-citizens, 2014

Among non UAE-citizens, breast is the most common cancer, representing 22.32% of all malignant cases found in Non UAE citizens in 2014. The 5 most commonly diagnosed cancers among Non UAE-citizens are breast (22.32%), colorectal (10.48%), thyroid (8.49%), leukemia (5.37%), and prostate (4.85%) (Table 30).

Table 30: Malignant primary sites among Non UAE-citizens, 2014

Primary Site - ICD 10	Number of Cancer Cases	% of Total
C50 Breast	594	22.32%
C18-C21 Colorectal	279	10.48%
C73 Thyroid	226	8.49%
C91-C95 Leukemia	143	5.37%
C61 Prostate	129	4.85%
C44 Skin	108	4.06%
C82-C85, C96 Non-Hodgkin lymphoma	96	3.61%
C34 Bronchus and Lung	94	3.53%
C00-C14 Lip, Oral cavity & pharynx	85	3.19%
C67 Urinary Bladder	83	3.12%

Top malignant primary sites among female Non- UAE citizens, 2014

Among Non UAE citizens, breast is the most common cancer, representing 41.41% of cases found in expatriate females in 2014. The 5 most commonly diagnosed cancers among female Non UAE-citizens are breast (41.41%), thyroid (11.34%), colorectal (6.83%), uterus (5.28%), and ovary (4.30%) (Table 31).

Table 31: Malignant primary sites among female Non UAE-citizens, 2014

Primary Site - ICD 10	Number of Cancer Cases	% of Total
C50 Breast	588	41.41%
C73 Thyroid	161	11.34%
C18-C21 Colorectal	97	6.83%
C54-C55 Uterus	75	5.28%
C56 Ovary	61	4.30%
C53 Cervix uteri	58	4.08%
C91-C95 Leukemia	46	3.24%
C82-C85, C96 Non-Hodgkin lymphoma	39	2.75%
C44 Skin	29	2.04%
C16 Stomach	28	1.97%

Top malignant primary sites among male Non UAE-citizens, 2014

Among Non UAE-citizens males, colorectal is the most common cancer, representing 14.67% of cases found in expatriate males in 2014. The 5 most commonly diagnosed cancers among male Non UAE-Citizens are colorectal (14.67%), prostate (10.39%), leukemia (7.82%), skin (6.37%), and bronchus and lung (5.80%) cancer (Table 32).

Table 32: Malignant primary sites among male Non UAE-citizens, 2014

Primary Site - ICD 10	Number of Cancer Cases	% of Total
C18-C21 Colorectal	182	14.67%
C61 Prostate	129	10.39%
C91-C95 Leukemia	97	7.82%
C44 Skin	79	6.37%
C34 Bronchus and Lung	72	5.80%
C67 Urinary Bladder	71	5.72%
C73 Thyroid	65	5.24%
C00-C14 Lip, Oral cavity & pharynx	63	5.08%
C82-C85, C96 Non-Hodgkin lymphoma	57	4.59%
C70-C72 Brain & CNS	55	4.43%

Top malignant primary sites among all Non UAE-citizens, males & females, 2014

Among Non UAE-citizens, colorectal is the most common cancer, representing 14.67% of cases diagnosed in males and 41.41% of breast cancer cases diagnosed in females in 2014 (Table 33).

Table 33: Malignant Primary Sites among all Non UAE-Citizens, Males & Females – 2014

Primary Site - ICD 10	% of Total
C50 Breast	41.41%
C73 Thyroid	11.34%
C18-C21 Colorectal	6.83%
C54-C55 Uterus	5.28%
C56 Ovary	4.30%
C53 Cervix uteri	4.08%
C91-C95 Leukemia	3.24%
C82-C85, C96 Non-Hodgkin lymphoma	2.75%
C44 Skin	2.04%
C16 Stomach	1.97%

Primary Site - ICD 10	% of Total
C18-C21 Colorectal	14.67%
C61 Prostate	10.39%
C91-C95 Leukemia	7.82%
C44 Skin	6.37%
C34 Bronchus and Lung	5.80%
C67 Urinary Bladder	5.72%
C73 Thyroid	5.24%
C00-C14 Lip, Oral cavity & pharynx	5.08%
C82-C85, C96 Non-Hodgkin lymphoma	4.59%
C70-C72 Brain & CNS	4.43%

CANCER CASES (IN SITU ONLY) AMONG UAE POPULATION

Primary Site (In Situ) Distribution by Gender, among all, 2014

In 2014, there were 51 new cases of in-situ breast carcinomas reported among UAE females. In 2014, majority of the cases were reported for the in- situ cervix uteri carcinoma in 92 females. Conversely, 26 Carcinoma in situ of other and unspecified sites cases were reported in male population. Thus, total distribution of primary site (In Situ) cases diagnosed among UAE population includes 206 individuals with 161 females and 45 males (Table 34).

Table 34: Primary Site (In Situ) Distribution by Gender, among all – 2014

Primary Site - ICD 10	Female	Male	Grand Total
D00 Carcinoma in situ of oral cavity, Esophagus and stomach	0	5	5
D01 Carcinoma in situ of other and unspecified digestive organs	3	7	10
D02 Carcinoma in situ of middle are and respiratory system	0	2	2
D03 Melanoma in situ	0	3	3
D04 Carcinoma in situ of skin	1	0	1
D05 Carcinoma in situ of breast	51	0	51
D06 Carcinoma in situ of cervix uteri	92	0	92
D07 Carcinoma in situ of other and unspecified genital organs	3	2	5
D09 Carcinoma in situ of other and unspecified sites	11	26	37
Grand Total	**161**	**45**	**206**

Top Primary Sites (In Situ) among all, 2014

Table 35 demonstrates latest top primary sites in- situ statistics for the UAE population. Carcinoma in situ of cervix uteri (44.66%) was most commonly observed among UAE population. The 10 most common types of cancer diagnosed in UAE population are mentioned (in order of frequency): Carcinoma in situ of cervix uteri (44.66%), carcinoma in situ of breast (24.76%), carcinoma in situ of other and unspecified sites (17.96%), carcinoma in situ of other and unspecified digestive organs (4.85%), carcinoma in situ of oral cavity, esophagus and stomach (2.43%), carcinoma in situ of other and unspecified genital organs (2.43%), melanoma in situ(1.46%), carcinoma in situ of middle ear and respiratory system (0.97%), and carcinoma in situ of skin (0.49%).

Table 35: Top Primary Sites (In Situ) among all – 2014

Primary Site - ICD 10	Grand Total	% of Total
D06 Carcinoma in situ of cervix uteri	92	44.66%
D05 Carcinoma in situ of breast	51	24.76%
D09 Carcinoma in situ of other and unspecified sites	37	17.96%
D01 Carcinoma in situ of other and unspecified digestive organs	10	4.85%
D00 Carcinoma in situ of oral cavity, Esophagus and stomach	5	2.43%
D07 Carcinoma in situ of other and unspecified genital organs	5	2.43%
D03 Melanoma in situ	3	1.46%
D02 Carcinoma in situ of middle ear and respiratory system	2	0.97%
D04 Carcinoma in situ of skin	1	0.49%
Grand Total	**206**	**100.00%**

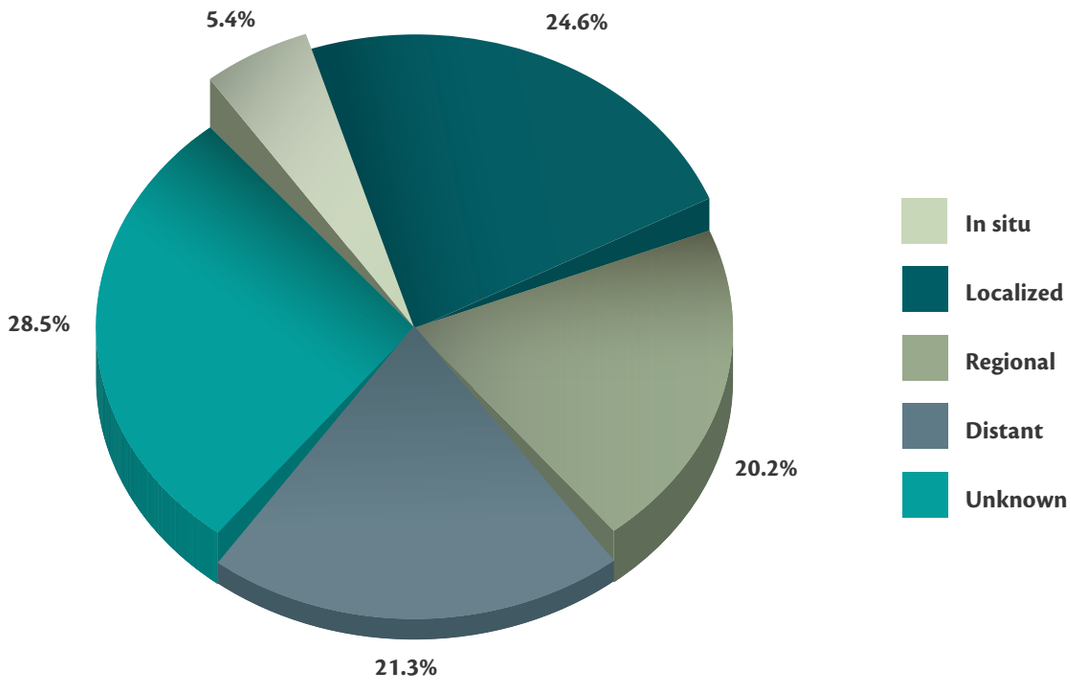
DISTRIBUTION OF CANCER CASES (MALIGNANT & IN-SITU) AMONG ALL, ACCORDING TO SURVEILLANCE, EPIDEMIOLOGY AND END RESULTS (SEER) STAGING, 2014

Table 36: SEER stage distribution of total cancer cases in UAE, 2014

SEER Summary Staging	Frequency	%
In situ	206	5.4%
Localized	939	24.6%
Regional	772	20.2%
Distant	811	21.3%
Unknown	1088	28.5%
Grand Total	**3816**	**100.0%**

Table 36 demonstrates the distribution by SEER stage at diagnosis of 3816 total tumor cases among UAE population in the year of 2014. The data signifies that the highest frequency of tumor cases (malignant & in-situ) was observed in the Localized (939; 24.6%) followed by, Distant (811; 21.3%), Regional (772; 20.2%) and the less number of tumor cases in In-situ stage (206; 5.4%). Similar type of findings are also demonstrated in the pie chart shown in figure 17.

Figure 17: SEER stage distribution of total cancer cases in UAE, 2014

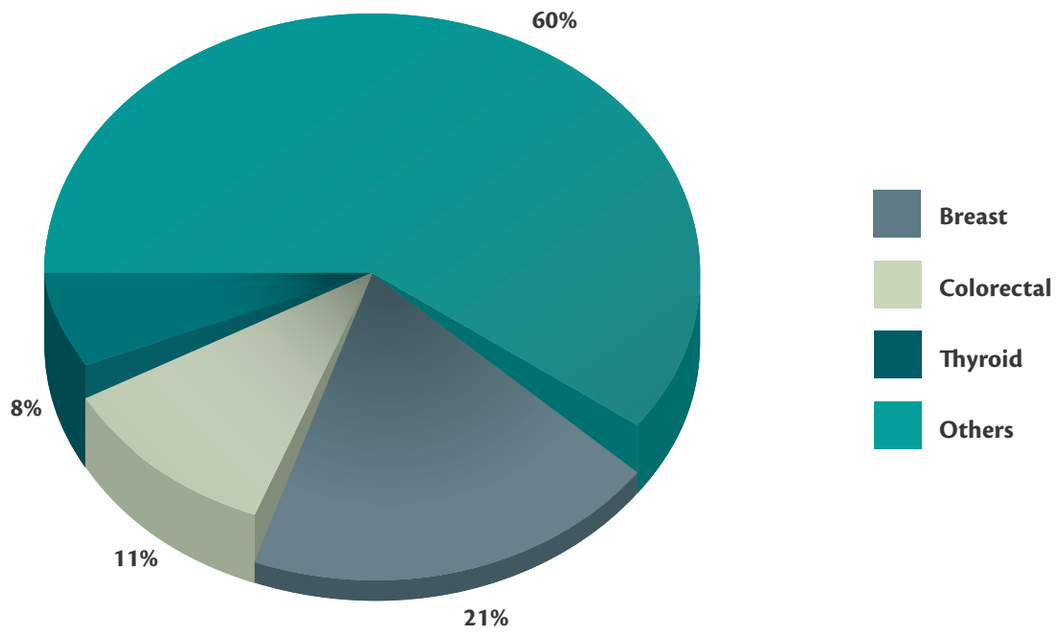


CHAPTER 3

SPECIAL REPORT ON BREAST, COLORECTAL AND THYROID GLAND

Cancer is the third leading cause of death in the UAE. In 2014, total number of cases diagnosed with cancer (malignant & In-situ) were 3816. The most common types of cancers among UAE population was breast (819; representing 21% of total malignant and in-situ cases) followed by colorectal cancer (413; 11%) and thyroid cancer (319; 8%) (Figure 18).

Figure 18: Most common types of cancers among UAE population



BREAST CANCER (MALIGNANT & IN-SITU)

Breast cancer is the most common of all females' cancer worldwide with an incidence of 16% and 22.9% of invasive cancers in women. 18.2% of all cancer deaths worldwide, counting both males and females, are from breast cancer [13].

Total breast tumor cases (malignant & in-situ) by nationality in UAE 2014

Breast cancer represents the most common cancer among UAE population regardless of nationality and gender [14]. During 2014, a total number of 819 new cases were diagnosed with breast cancer in UAE among both UAE and Non- UAE citizen respectively; of which 768 (93.8%) were breast malignant cases and 51 (6.2%) were breast In-Situ tumor cases.

Among the malignant tumors cases, 594 (77.3) % were Non-UAE citizens and 174 (22.7%) were UAE citizens. Similarly among the in-Situ of breast tumors, 42 (82.4%) were Non-UAE citizens and 9 (17.6%) were UAE citizens. The following table 37 represents the distribution of both types of tumors cases among UAE population (UAE citizens and Non-UAE citizens) among both gender.

Table 37: Distribution of total breast tumor cases (malignant & in-situ) by nationality in UAE 2014

ICD-10	Non-UAE Citizens	%	UAE Citizens	%	Grand Total
C50 Breast	594	77.3%	174	22.7%	768
D05 Carcinoma in situ of breast	42	82.4%	9	17.6%	51
Grand Total	**636**		**183**		**819**

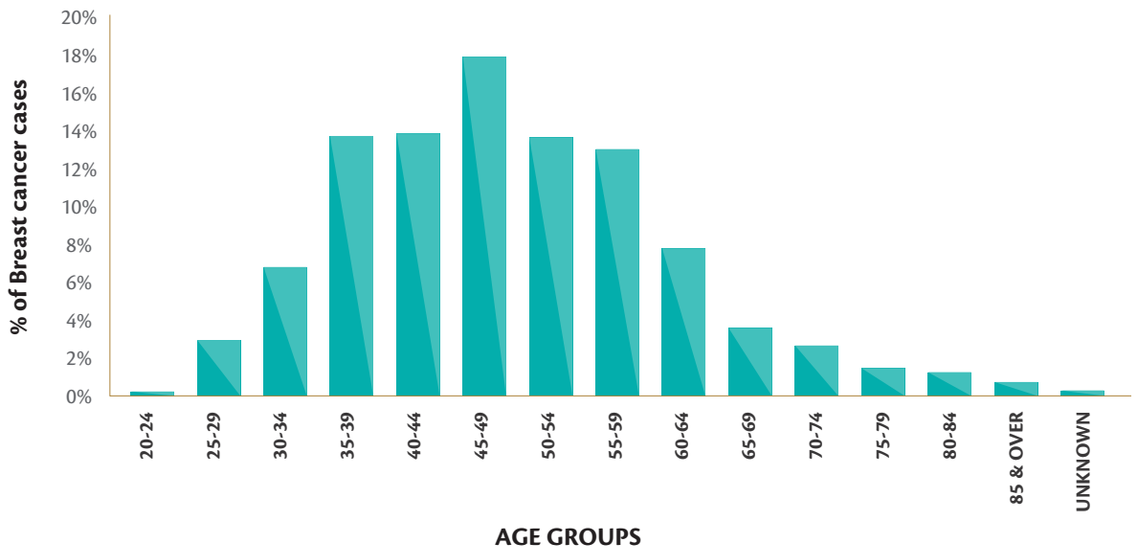
Distribution of breast cases (malignant & in-situ) by Age groups in UAE, 2014

Table 38: Age-Group Distribution of Breast (Malignant & In-Situ) Cases in UAE, 2014

Age Group	Number of Breast cases (Malignant & In-Situ)	% of Breast cases (Malignant & In-Situ)
(20-24)	1	0.1%
(25-29)	24	2.9%
(30-34)	56	6.8%
(35-39)	113	13.8%
(40-44)	114	13.9%
(45-49)	147	17.9%
(50-54)	112	13.7%
(55-59)	107	13.1%
(60-64)	64	7.8%
(65-69)	29	3.5%
(70-74)	22	2.7%
(75-79)	12	1.5%
(80-84)	10	1.2%
(85 and Over)	6	0.7%
Unknown	2	0.2%
Breast (Malignant & In-Situ)	**819**	**100.0%**

Table 38 reveals the distribution by age group of 819 breast (malignant& In-Situ) cases in UAE in the year 2014. The data specifies the highest frequencies of breast cancer cases was found among age groups 45-49 years (147; 17.9%), 40-44 (13.9%), 35-39 (13.8%) and 50-54 (13.7%) and it was noted that the minimum frequency of breast cancer was diagnosed in the age group of 20-24 years (1; 0.1%). In the similar fashion, figure 19 also represents such findings.

Figure 19: Age-group distribution of breast (malignant & in-situ) cases in UAE, 2014



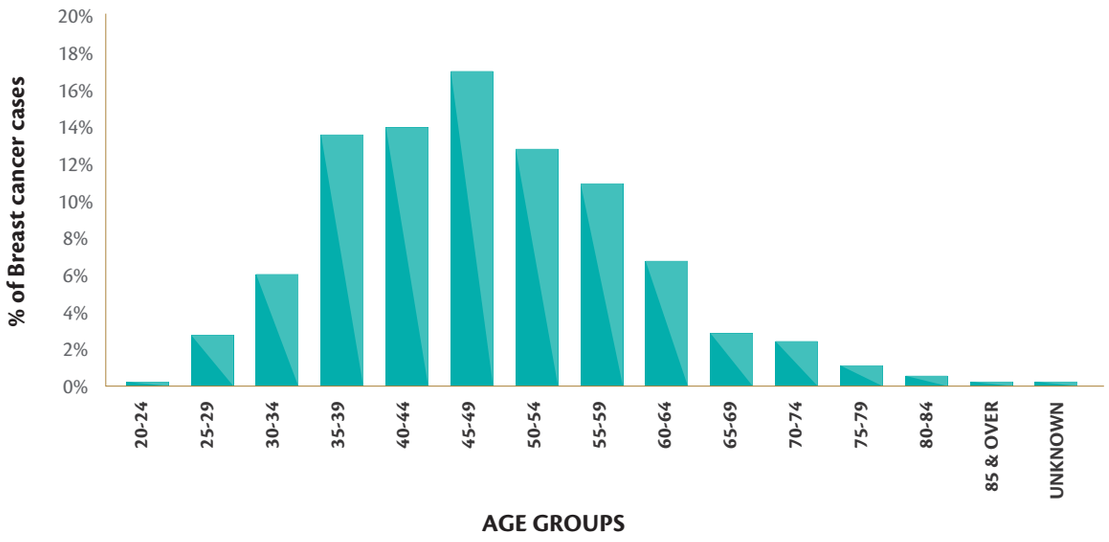
Distribution of breast cases (malignant & in-situ) among Non-UAE citizens by age groups

Table 39: Age-group distribution of breast (malignant & in-situ) among Non-UAE citizens, 2014

Age Group	Number of Breast cases (Malignant & In-Situ)	% of Breast cases (Malignant & In-Situ)
(20-24)	1	0.2%
(25-29)	19	3.0%
(30-34)	42	6.6%
(35-39)	94	14.8%
(40-44)	97	15.3%
(45-49)	118	18.6%
(50-54)	89	14.0%
(55-59)	76	11.9%
(60-64)	47	7.4%
(65-69)	20	3.1%
(70-74)	17	2.7%
(75-79)	8	1.3%
(80-84)	4	0.6%
(85 and Over)	2	0.3%
Unknown	2	0.3%
Grand Total	**636**	**100.0%**

Table 39 demonstrates the distribution by age group of 636 breast (malignant & In-situ) cases among Non-UAE citizens in the year of 2014. The data shows that the highest frequency of breast tumor was observed in the age group 45-49 year (118; 18.6%). It is also notable that the minimum frequency of breast tumor (malignant & In-Situ) among non-UAE citizens was reported in the age group "20-24 year i.e. (1; 0.2%). Figure 20 also shows similar type of findings regarding distribution of breast cancer among Non UAE citizens.

Figure 20: Age-Group Distribution of Breast (Malignant &In-Situ) among Non-UAE citizens, 2014



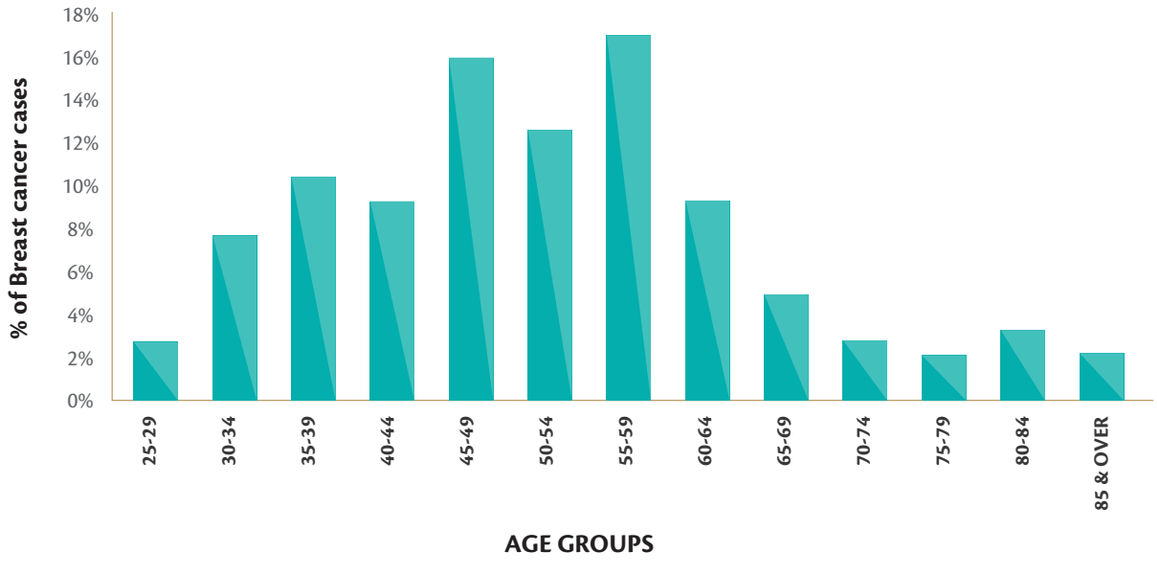
Distribution of breast cases (malignant & in-situ) among UAE citizens by age groups

Table 40: Age-group distribution of breast (malignant & in-situ) cases among UAE citizens, 2014

Age Group	Number of Breast cases (Malignant & In-Situ)	% of Breast cases (Malignant & In-Situ)
(25-29)	5	2.7%
(30-34)	14	7.7%
(35-39)	19	10.4%
(40-44)	17	9.3%
(45-49)	29	15.8%
(50-54)	23	12.6%
(55-59)	31	16.9%
(60-64)	17	9.3%
(65-69)	9	4.9%
(70-74)	5	2.7%
(75-79)	4	2.2%
(80-84)	6	3.3%
(85 and Over)	4	2.2%
Grand Total	**183**	**100.0%**

Table 40 demonstrates the distribution by age group of 183 breast (malignant & In-situ) cases among UAE citizens in the year of 2014. The data indicates that the highest frequencies of breast tumor was observed in the age groups 55-59 year (31; 16.9%), 45-49 yeas (15.8%) and 50-54 years (12.6%) But in contrast, it is noteworthy that the cases of breast tumor (malignant & In-Situ) were found relatively less in age groups (75-79) & (85 or above) that is (4; 2.2%) among UAE citizens.

Figure 21: Age-group distribution of breast (malignant & in-situ) cases among UAE citizens, 2014



On comparison between UAE citizens and Non UAE-citizens, it was observed that the most common age group are not same among both 55-59 and 45-49 year age group being most common age groups among UAE and non UAE citizens respectively with malignant and in situ cases of breast cancer.

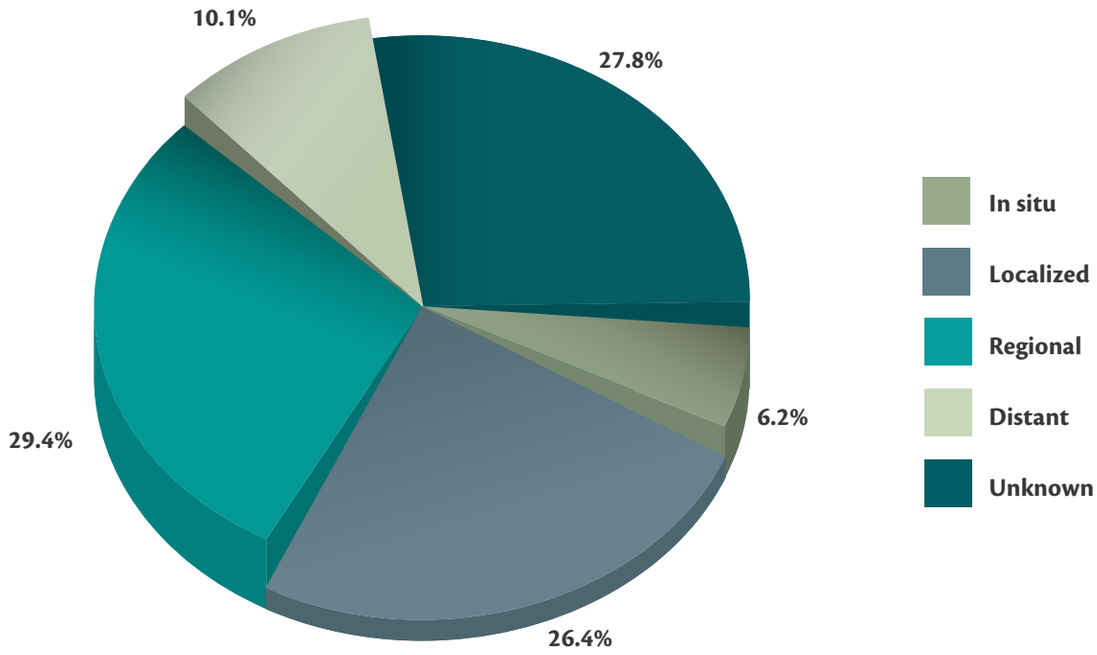
Distribution of breast cases (malignant & In-Situ) by SEER stage in UAE

Table 41: SEER stage distribution of breast cases (malignant & In-situ) in UAE, 2014

SEER Stage	No. of Breast Cases (Malignant & In-Situ)	% of Breast case (Malignant & In-Situ)
In situ	51	6.2%
Localized	216	26.4%
Regional	241	29.4%
Distant	83	10.1%
Unknown	228	27.8%
Grand Total	**819**	**100.0%**

Table 41 and Figure 22 demonstrate the distribution by SEER stage at diagnosis of 819 breast (malignant & In-situ) cases among UAE population in the year of 2014. The data signifies that the highest frequency of breast cases (malignant & In-Situ) was observed in the Regional stage (241; 29.4%) followed by Localized (216; 26.4%), Distant (83; 10.1%) and the less number of breast cases in In-Situ stage (51; 6.2%).

Figure 22: Distribution of breast cases (malignant & In-situ) by SEER stage in UAE, 2014



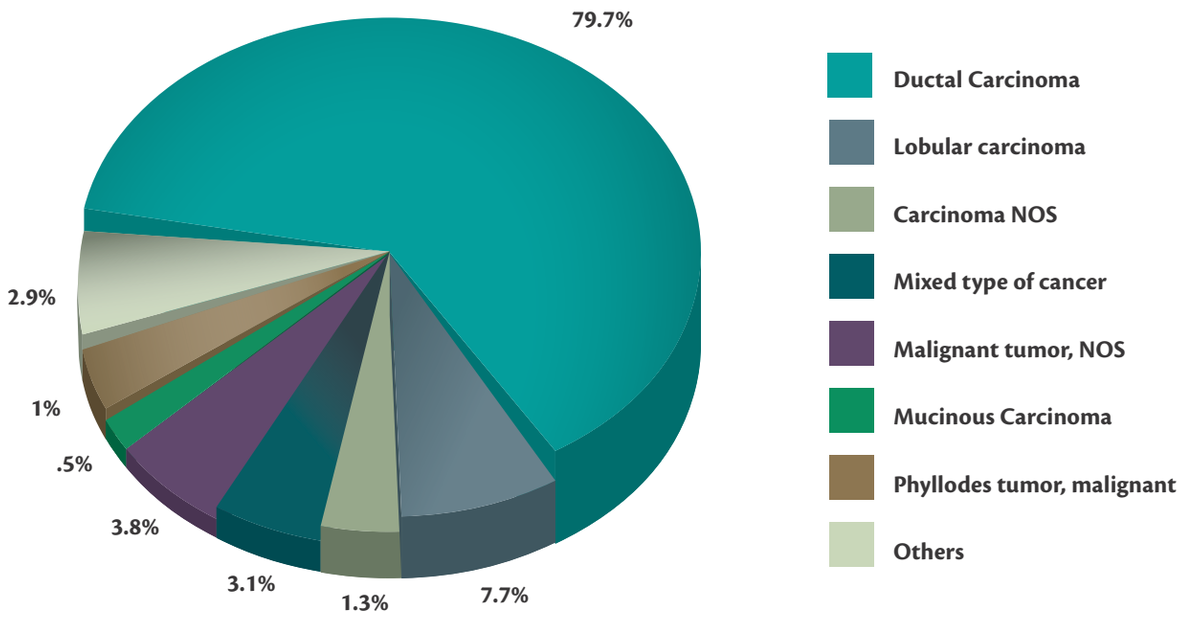
Distribution of breast cases (malignant & In-Situ) by morphology

Table 42: Distribution of breast cases (malignant & In-Situ) by morphology in UAE, 2014

Morphology	Number of cases	%
Ductal Carcinoma	653	79.7%
Lobular carcinoma	63	7.7%
Carcinoma NOS	11	1.3%
Mixed type of cancer	25	3.1%
Malignant tumor, NOS	31	3.8%
Mucinous Carcinoma	4	0.5%
Phyllodes tumor, malignant	8	1.0%
Others	24	2.9%
Grand Total	**819**	**100.0%**

Table 42 and Figure 23 show the distribution by morphology-specific breast cancer (malignant & In-Situ) of 819 cases among UAE population in the year of 2014. The data signifies that the Ductal and Lobular carcinoma were the most common form with the highest frequency of Ductal carcinoma (653; 79.7%) followed by Lobular (63; 7.7%), and the minimum number of breast cases were diagnosed in Mucinous carcinoma morphology (4; 0.5%).

Figure 23: Distribution of breast cases (malignant & in-situ) by morphology in UAE, 2014



COLORECTAL CANCER (MALIGNANT AND IN-SITU)

Colorectal cancer is one of the main leading cause of death among cancer patients in the UAE [15]. The risk of developing colorectal cancer rises after age 50 and is common in both men and women [16].

Total colorectal cancer cases by nationality in UAE 2014

Colorectal cancer represents the second most common cancer among UAE population regardless of nationality and gender [15], and the first most common cancer among males In the period from January to December of 2014, a total number of 413 new cases were diagnosed with colorectal cancer in UAE among both UAE citizens and Non- UAE citizen; of which 404 (97.8%) were malignant colorectal cases and 9 (2.2%) were carcinoma In-Situ of colorectal.

Among the malignant colorectal cases, 279 (69.1) % were Non-UAE citizens and 125 (30.9%) were UAE citizens. Similarly regarding the carcinoma In-situ of colorectal 7 (77.8%) were Non-UAE citizens and 2 (22.2%) were UAE citizens.

The following table 43, represents the distribution of both types of colorectal cancer cases among UAE population in both gender.

Table 43: Distribution of total colorectal (malignant and in-situ) cases by nationality in UAE, 2014

ICD-10	Non-UAE Citizens	%	UAE Citizens	%	Grand Total
C18-C21 Colorectal	279	69.1%	125	30.9%	404
D01 Carcinoma in situ of Colorectal	7	77.8%	2	22.2%	9
Grand Total	**286**		**127**		**413**

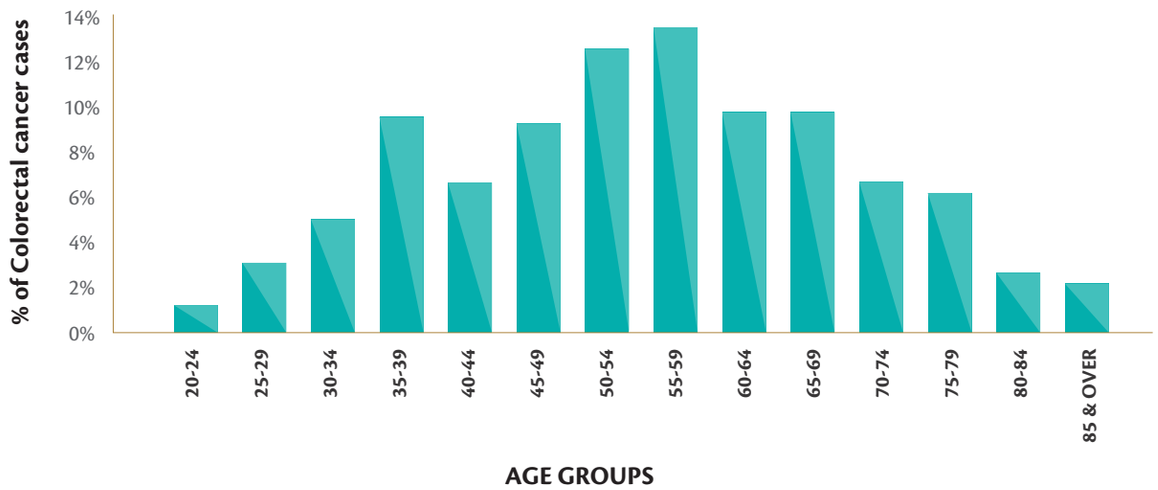
Distribution of colorectal cases (malignant & in-situ) by age groups

Table 44: Age-group distribution of colorectal (malignant & in-situ) cases in UAE, 2014

Age Group	% of Colorectal cases (Malignant & In-Situ)
(20-24)	1%
(25-29)	3%
(30-34)	5%
(35-39)	10%
(40-44)	7%
(45-49)	9%
(50-54)	13%
(55-59)	14%
(60-64)	10%
(65-69)	10%
(70-74)	7%
(75-79)	6%
(80-84)	3%
(85 and Over)	2%
Grand Total	100.0%

Table 44 represents the distribution by age group of 413 colorectal (malignant& In-situ) cases in UAE in the year 2014. The data indicates that the highest frequencies of colorectal cases were found among age groups 55-59 years (14.0%), followed by age group (50-54) years (13%) and it was also noted that the smallest percentage of colorectal cancer was diagnosed in the age group of <24 years (1%).

Figure 24: Age-group distribution of colorectal (Malignant & In-Situ) cases in UAE, 2014



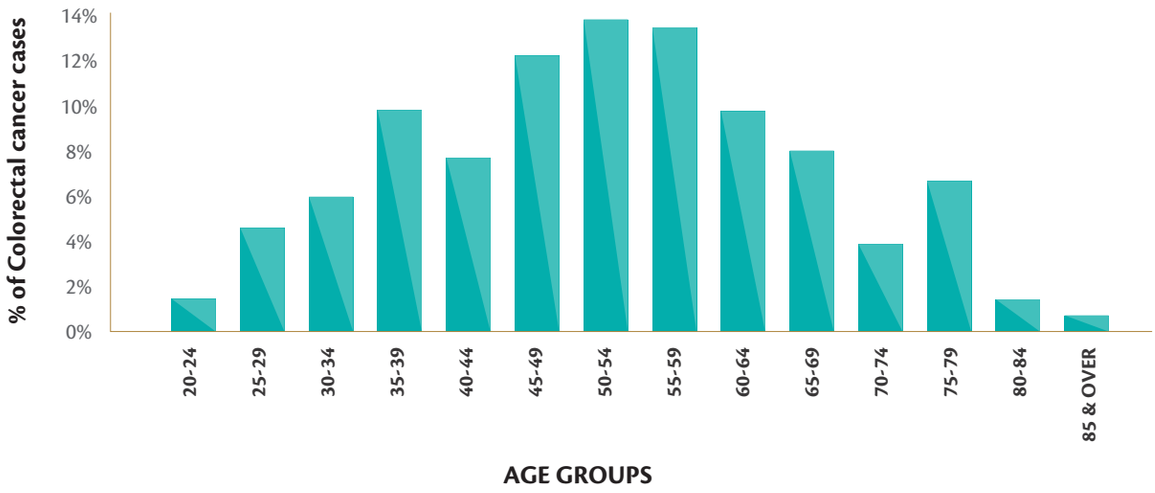
Distribution of colorectal (malignant & in-situ) cases among Non-UAE citizens by age groups

Table 45: Age-group distribution of colorectal (malignant & in-situ) among non-UAE citizens, 2014

Age Group	% of Colorectal cases (Malignant & In-Situ)
(10-14)	0%
(20-24)	1%
(25-29)	5%
(30-34)	6%
(35-39)	10%
(40-44)	8%
(45-49)	12%
(50-54)	14%
(55-59)	14%
(60-64)	10%
(65-69)	8%
(70-74)	4%
(75-79)	7%
(80-84)	1%
(85 and Over)	1%
Grand Total	**100%**

Table 45 and Figure 25 demonstrate the distribution by age group of 286 colorectal (malignant & In-situ) cases among Non-UAE citizens in the year of 2014. The data indicates that the highest and same percentages of colorectal tumor were observed in the age group (50-54) and (55-59) that is (14.0%). It is also noteworthy that the minimum percentage of colorectal tumor (malignant & In-Situ) among non-UAE citizens was reported in the age less than 24 years i.e. (1%).

Figure 25: Age-group distribution of colorectal (Malignant & In-Situ) among Non-UAE citizens, 2014



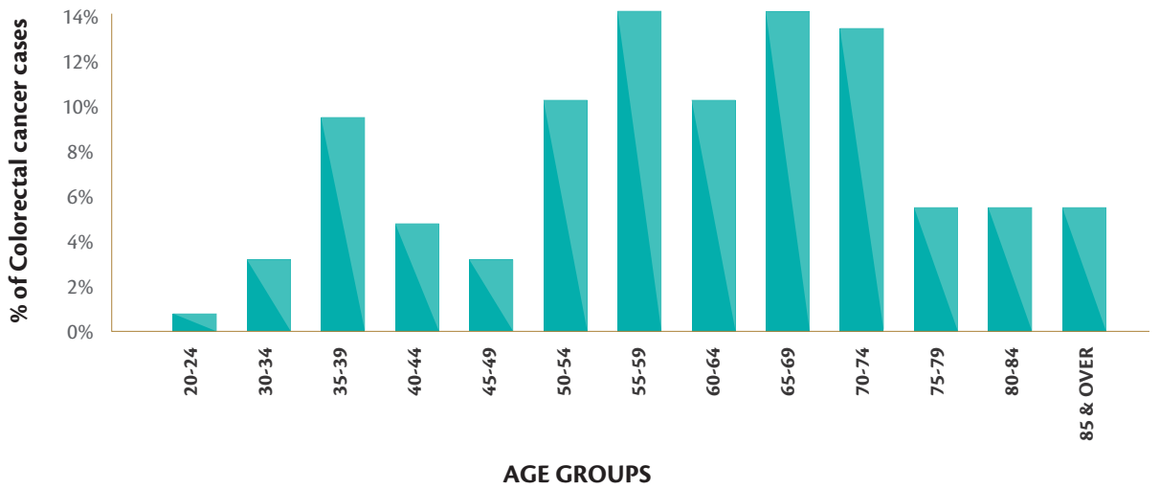
Distribution of colorectal cases (malignant & in-situ) among UAE citizens by age groups

Table 46: Age-group distribution of colorectal (Malignant & In-Situ) among UAE citizens, 2014

Age Group	% of Colorectal cases (Malignant & In-Situ)
(20-24)	1%
(30-34)	3%
(35-39)	9%
(40-44)	5%
(45-49)	3%
(50-54)	10%
(55-59)	14%
(60-64)	10%
(65-69)	14%
(70-74)	13%
(75-79)	6%
(80-84)	6%
(85 and Over)	6%
Grand Total	**100%**

Table 46 and Figure 26 demonstrate the distribution by age group of 127 colorectal (malignant & In-situ) tumor cases among UAE citizens in the year of 2014. The data specifies that the highest frequencies of colorectal tumor was observed in the age groups (55-59) & (65-69) years that is (14.0%). But in contrast, it is noteworthy that the cases of colorectal tumor (malignant & In-situ) were found relatively less in age groups (20-24) that is (1.0%) among UAE citizens.

Figure 26: Age-group distribution of colorectal (Malignant & In-Situ) among UAE citizens, 2014



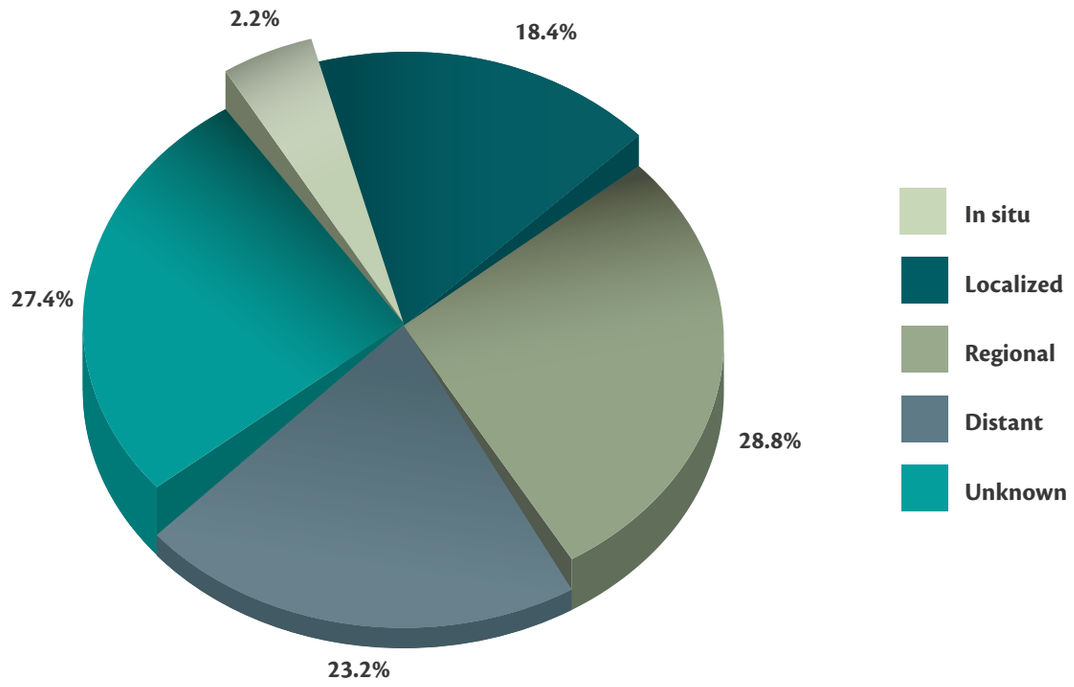
Distribution of colorectal cases (Malignant & In-Situ) by SEER stage

Table 47: SEER Stage Distribution of Colorectal Cases (Malignant & In-Situ) in UAE, 2014

SEER Stage	% of Colorectal cases (Malignant & In-Situ)
In situ	2.2%
Localized	18.4%
Regional	28.8%
Distant	23.2%
Unknown	27.4%
Grand Total	**100%**

Table 47 and Figure 27 demonstrate the distribution by SEER Stage at diagnosis of 413 colorectal (malignant & In-situ) cases among UAE population in the year of 2014. The data signifies that the highest percentage of colorectal cases (malignant & In-Situ) was observed in the Regional stage (28.8%) followed by Distant (23.2%), Localized (18.4%) and the less number of colorectal cases in In-situ stage (2.2%).

Figure 27: Distribution of colorectal cases (Malignant & In-Situ) by SEER stage in UAE, 2014



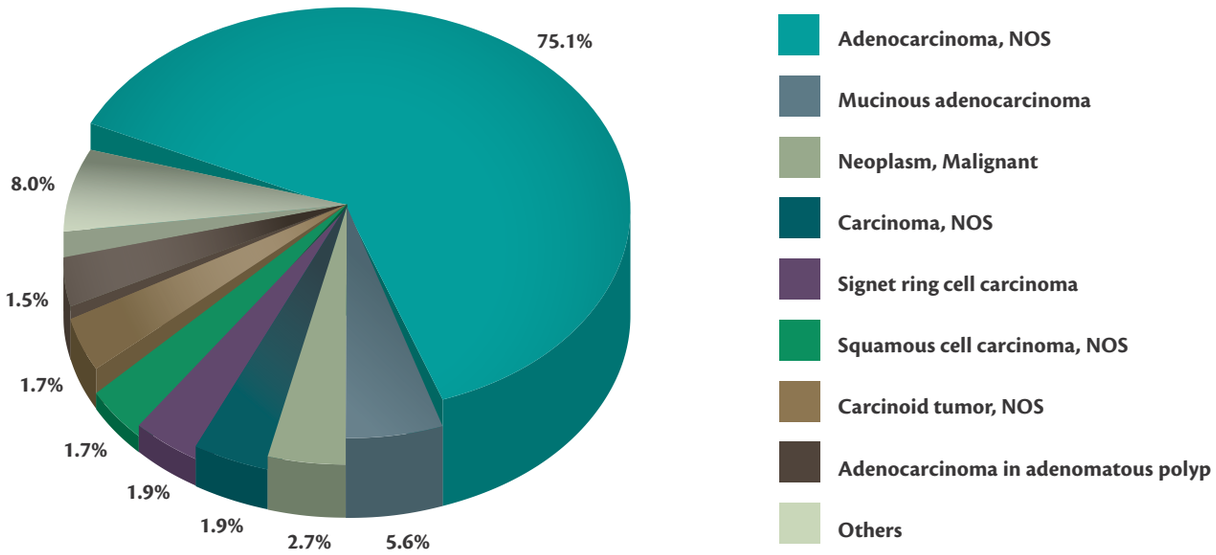
Distribution of colorectal cancer (malignant & in-situ) by morphology

Table 48: Distribution of colorectal cases (Malignant & In-Situ) by morphology in UAE, 2014

Morphology	%
Adenocarcinoma, NOS	75.1%
Mucinous adenocarcinoma	5.6%
Neoplasm, Malignant	2.7%
Carcinoma, NOS	1.9%
Signet ring cell carcinoma	1.9%
Squamous cell carcinoma, NOS	1.7%
Carcinoid tumor, NOS	1.7%
Adenocarcinoma in adenomatous polyp	1.5%
Others	8.0%
Total	**100.0%**

Table 48 and Figure 28 show the distribution by morphology-specific colorectal cancer (malignant & In-Situ) of 413 cases among UAE population in the year of 2014. The data indicates that the Adenocarcinoma, NOS was the most common morphology with the highest percentage of Adenocarcinoma, NOS (75.1%) followed by Mucinous adenocarcinoma (5.6%), Neoplasm, Malignant (2.7%), Carcinoma, NOS (1.9%), Signet ring cell carcinoma, NOS (1.9%) and the minimum number of Colorectal cases were diagnosed in Adenocarcinoma in adenomatous polyp morphology with a percentage of (1.5%).

Figure 28: Distribution of colorectal (malignant & in-situ) cases by morphology in UAE, 2014



THYROID CANCER (MALIGNANT AND IN-SITU)

Thyroid cancer has been rising worldwide over the past few decades [17].

Total thyroid cancer cases by nationality in UAE 2014

Thyroid cancer represents the third most common cancer in UAE [9]. During the period from January to December of 2014, a total number of 319 new cases were diagnosed with thyroid cancer in UAE among both UAE citizens 89 (27.9%) and Non- UAE citizen 230 (72.1%); of which 314 (98.4%) were malignant thyroid cases and 5 (1.6%) were carcinoma In-situ of thyroid.

Among the malignant thyroid cases, 226 (72.0) % were Non-UAE citizens and 88 (28.0%) were UAE citizens and similarly the carcinoma In-situ of thyroid 4 (80.0%) were Non-UAE citizens and 1 (20.0%) included UAE citizen. Table 49 represents the distribution of thyroid cancer cases by nationality among UAE population in both genders.

Table 49: Distribution of total thyroid cancer cases by nationality in UAE, 2014

ICD-10	Non-UAE Citizens	%	UAE Citizens	%	Grand Total
C73 Thyroid	226	72.0%	88	28.0%	314
D093 Carcinoma in situ of thyroid	4	80.0%	1	20.0%	5
Grand Total	**230**		**89**		**319**

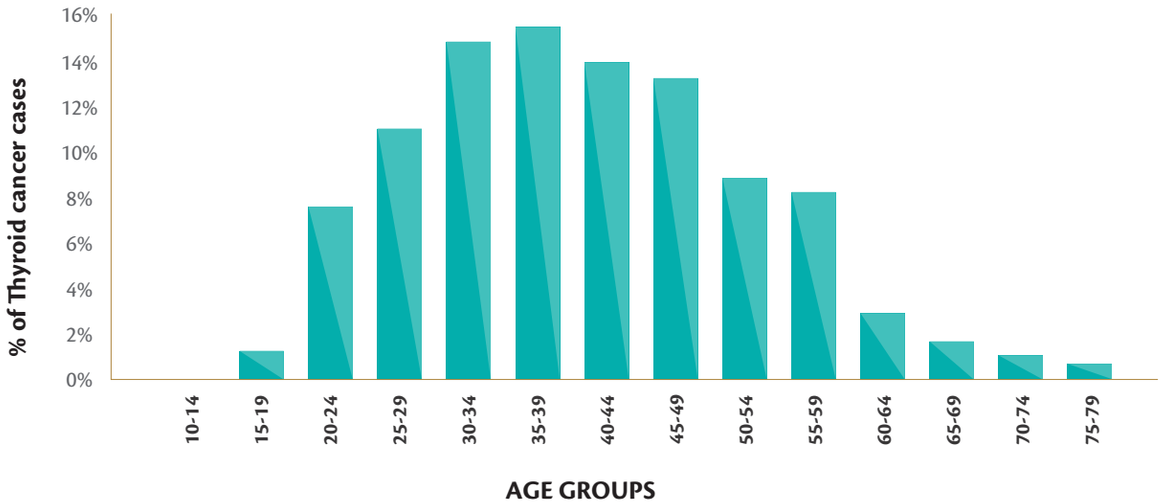
Distribution of thyroid cases (malignant & in-situ) by age groups

Table 50: Age-group distribution of thyroid (malignant & in-situ) cases in UAE, 2014

Age Group	% of Thyroid cases (Malignant & In-Situ)
(10-14)	0%
(15-19)	1%
(20-24)	8%
(25-29)	11%
(30-34)	15%
(35-39)	15%
(40-44)	14%
(45-49)	13%
(50-54)	9%
(55-59)	8%
(60-64)	3%
(65-69)	2%
(70-74)	1%
(75-79)	1%
Grand Total	100%

Table 50 represents the distribution by age group of 319 thyroid (malignant& In-situ) cases in UAE in the year 2014. The data indicates that the peak percentage of thyroid cases was found among age group (30-34) & (35-39) years i.e. (15.0%), followed by age group (40-44) years (14%) and (45-49) years (13%). It was noted that the smallest percentages of Thyroid cancer was diagnosed in the age group of <19 years (1%). This is also evident from Figure 29.

Figure 29: Age-group distribution of thyroid (Malignant & In-Situ) cases in UAE, 2014



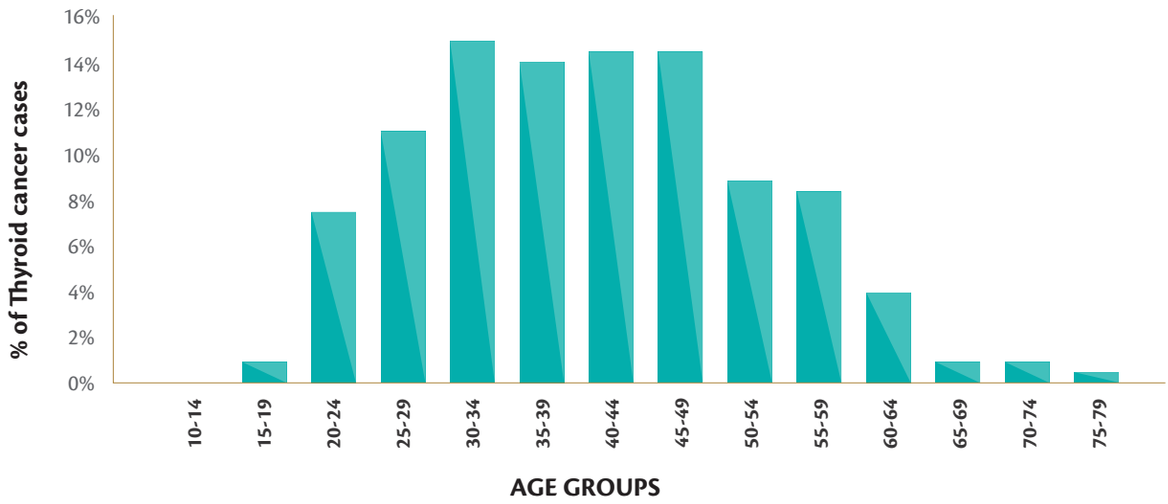
Distribution of Thyroid Cases (Malignant & In-Situ) among Non-UAE Citizens by Age Groups

Table 51: Age-group distribution of thyroid cases (malignant & in-situ) among Non-UAE citizens, 2014

Age Group	% of Thyroid cases (Malignant & In-Situ)
(10-14)	0%
(15-19)	1%
(20-24)	7%
(25-29)	11%
(30-34)	15%
(35-39)	14%
(40-44)	14%
(45-49)	14%
(50-54)	9%
(55-59)	8%
(60-64)	4%
(65-69)	1%
(70-74)	1%
(75-79)	0%
Grand Total	**100%**

Table 51 demonstrates the distribution by age group of 230 Thyroid (malignant & In-situ) cases among Non-UAE Citizens in the year of 2014. The data indicates that the highest percentages of thyroid cases was observed in the young age group (30-34) year that is (15.0%) followed by (35-39), (40-44), (45-49) years (14%), (14%) & (14%) respectively. It is also noteworthy that the minimum percentage of thyroid (malignant & In-Situ) among Non-UAE citizens reported in the age less than 19 years i.e. (1%).

Figure 30: Distribution of thyroid cases (malignant & in-situ) among Non-UAE citizens by age-group, 2014



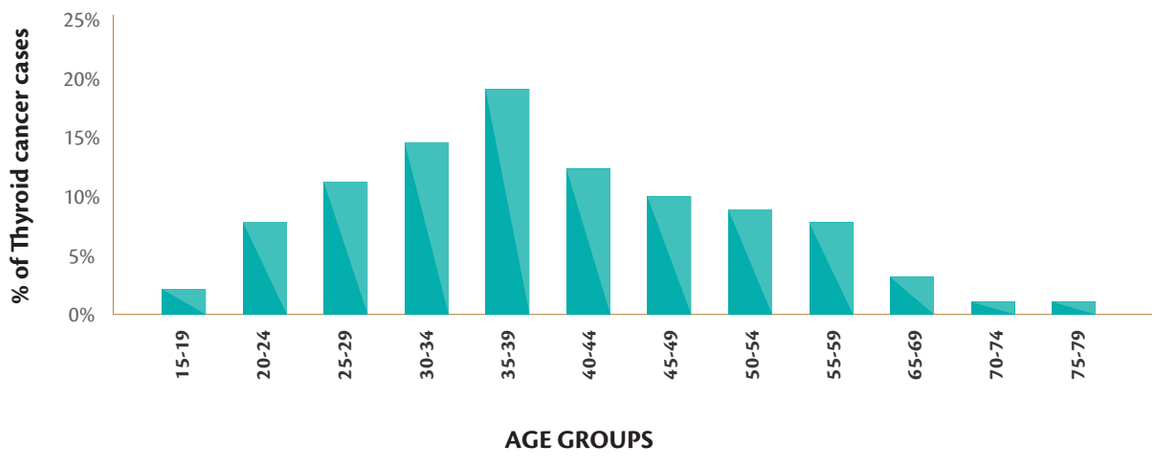
Distribution of thyroid cases (malignant & in-situ) among UAE citizens by age groups

Table 52: Age-group distribution of thyroid cases (malignant & in-situ) among UAE citizens, 2014

Age Group	% of Thyroid cases (Malignant & In-Situ)
(15-19)	2%
(20-24)	8%
(25-29)	11%
(30-34)	15%
(35-39)	19%
(40-44)	12%
(45-49)	10%
(50-54)	9%
(55-59)	8%
(65-69)	3%
(70-74)	1%
(75-79)	1%
Grand Total	100%

Table 52 reveals the distribution by age group of 89 thyroid (malignant & In-situ) cases among UAE citizens in the year of 2014. The data specifies that the peak percentage of thyroid cancer was observed in the age groups (35-39) years that is (19.0%) followed by (30-34) years (15%). But in contrast, it is worth mentioning that the cases of thyroid cancer (malignant & In-Situ) were found relatively less in age groups (70-74) & (75-79) comprising (1.0%) respectively among UAE citizens as shown in Figure 31 also.

Figure 31: Distribution of thyroid cases (malignant & In-situ) among UAE citizens by age-group, 2014



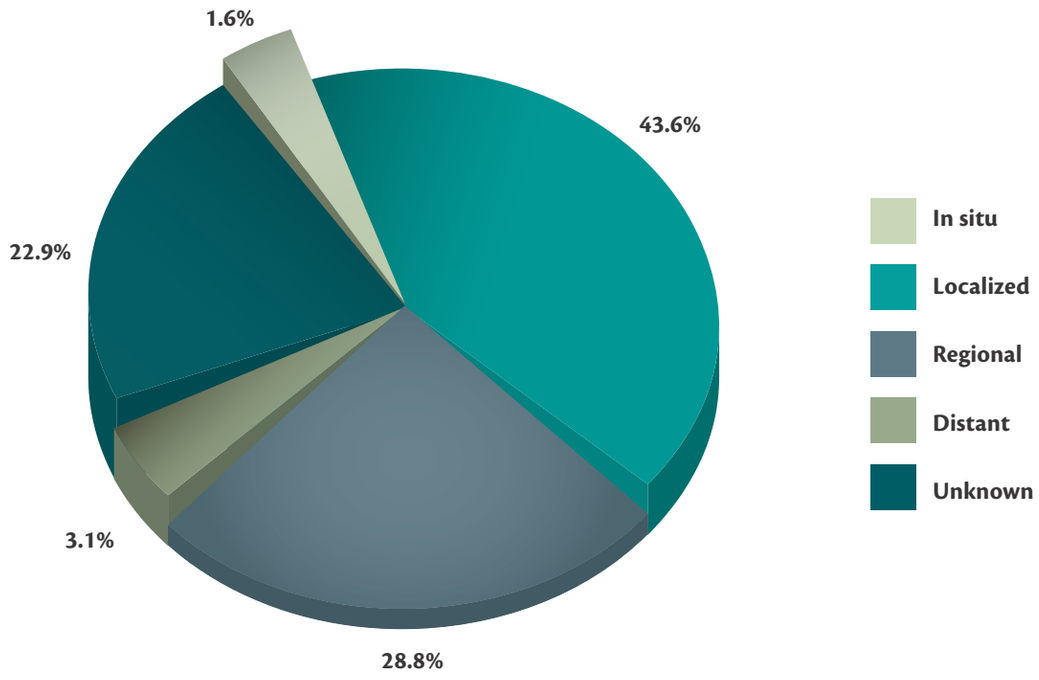
Distribution of thyroid cases (malignant & In-situ) by SEER stage

Table 53: SEER stage distribution of thyroid cases (malignant & in-situ) in UAE, 2014

SEER Stage	% of Thyroid cases (Malignant & In-Situ)
In situ	1.6%
Localized	43.6%
Regional	28.8%
Distant	3.1%
Unknown	22.9%
Grand Total	**100.0%**

Table 53 shows the distribution by SEER Stage at diagnosis of 319 thyroid (malignant & in-situ) cases among UAE population in the year of 2014. The data signifies that the highest percentage of thyroid cancer cases (malignant & in-Situ) was observed in the Localized stage (43.6%) followed by Regional (28.8%), Distant (3.1%) and the fewer number of thyroid cases in In-Situ stage (1.6%). Similar findings are presented in Figure 32.

Figure 32: Distribution of thyroid cases (Malignant & In-Situ) by SEER stage in UAE, 2014



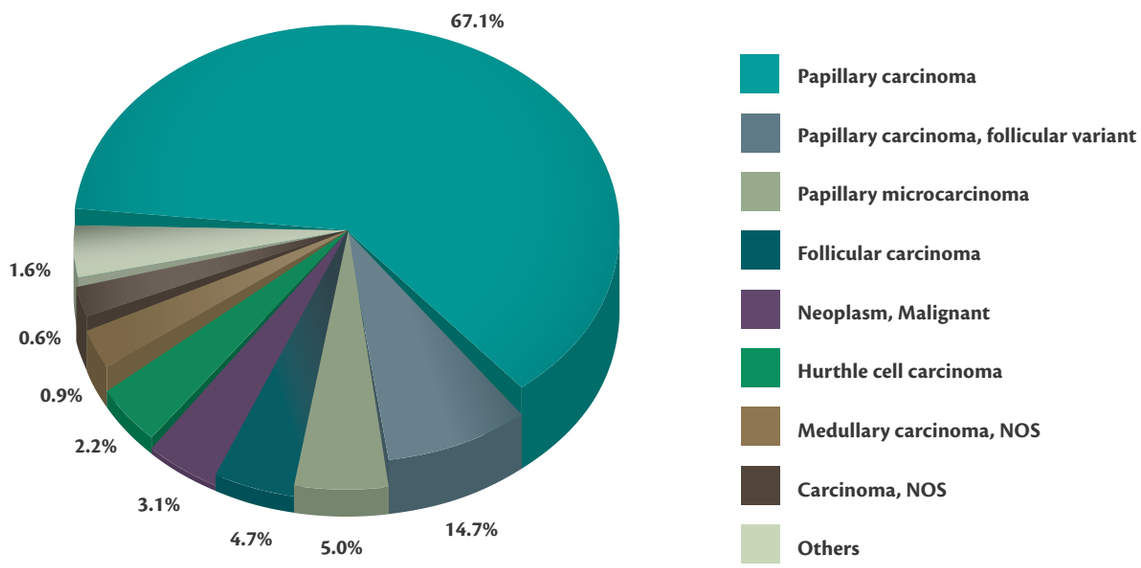
Distribution of thyroid cancer (Malignant & In-Situ) by morphology

Table 54: Distribution of thyroid cancer (Malignant & In-situ) by morphology in UAE, 2014

Morphology	%
Papillary carcinoma	67.1%
Papillary carcinoma, follicular variant	14.7%
Papillary microcarcinoma	5.0%
Follicular carcinoma	4.7%
Neoplasm, Malignant	3.1%
Hurthle cell carcinoma	2.2%
Medullary carcinoma, NOS	0.9%
Carcinoma, NOS	0.6%
Others	1.6%
Grand Total	**100.0%**

Table 54 illustrates the distribution by morphology-specific thyroid cancer (malignant & in-situ) of 319 cases among UAE population in the year of 2014. The data indicates that the Papillary thyroid carcinoma was the most common type with the highest percentage comprising (67.1%) followed by Papillary carcinoma, follicular variant involved (14.7%), Papillary microcarcinoma (5.0%), Follicular carcinoma (4.7%).

Figure 33: Distribution of thyroid cases (malignant & in-situ) by morphology in UAE, 2014



CHAPTER 4

PEDIATRIC MALIGNANCIES IN UAE

Until now cancer is the second prominent cause of death (following accidents) in children aged 5 to 14 years [18]. Incidence of pediatric cancers differ worldwide representing between 0.5% and 4.6% of all cancers. Overall incidence rates fluctuate between 50 and 200 per million children across the world [19].

Pediatric Malignancies in UAE, 2014

In the year of 2014, there were (154) children at the age-group of 0-14 years diagnosed with new cancer in UAE. This constitutes about (4.3%) of all registered malignant cases.

Pediatric cancer cases by gender in UAE 2014

Figure 34: Distribution by gender of new pediatric cancer cases in UAE, 2014

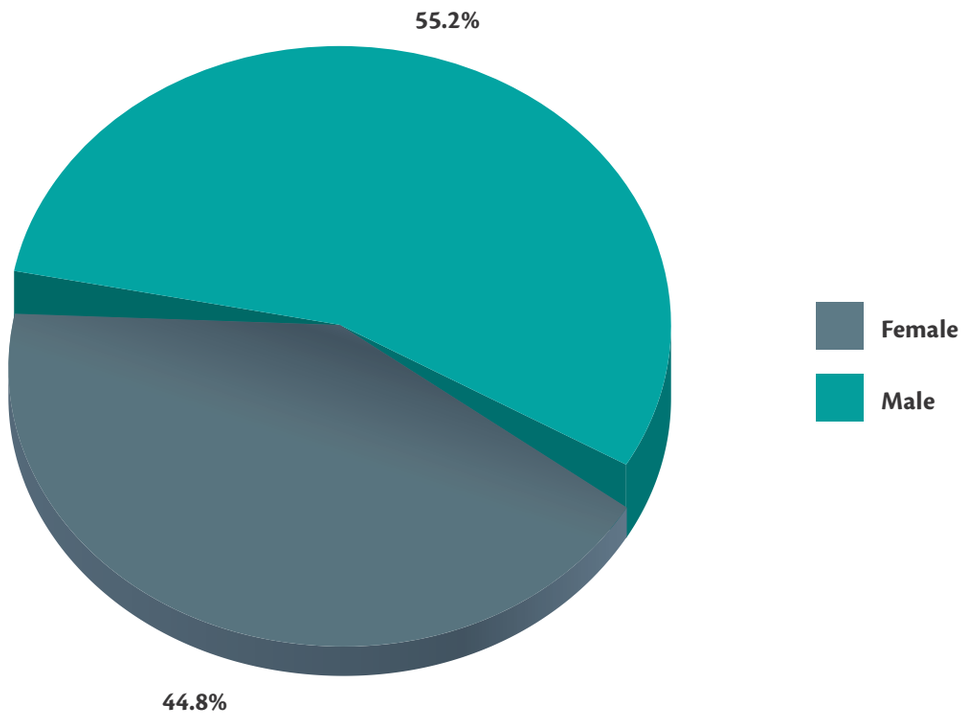


Figure 34 represents a total of 154 new child cancer cases that were registered out of which 44.8 % were females and 55.2 % were males, among both UAE citizens and Non-citizen.

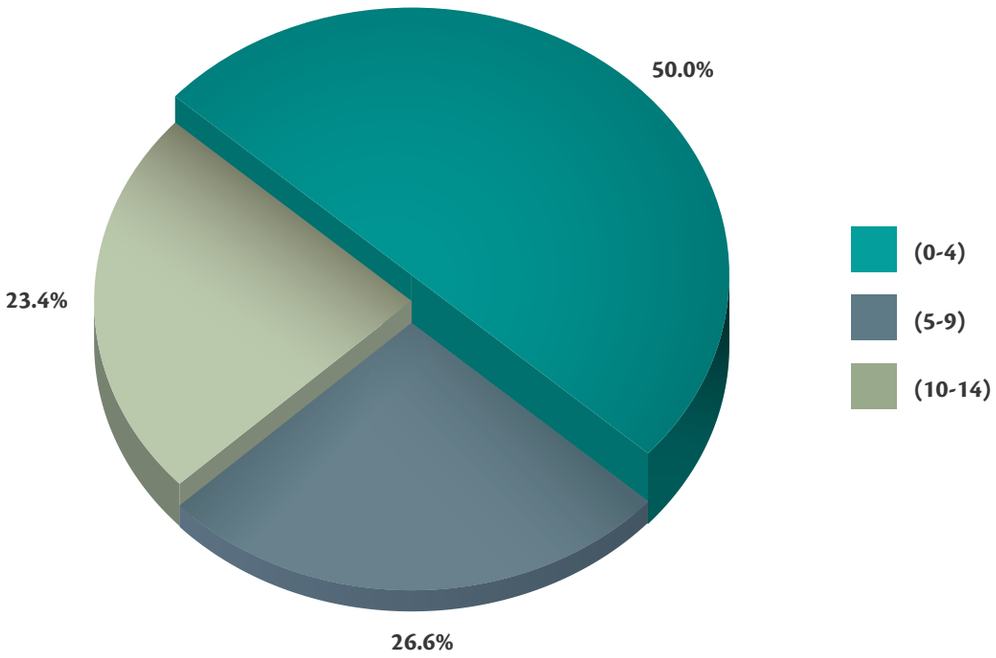
Distribution of pediatric cancer cases by age group in UAE, 2014

Table 55: Age-group distribution of pediatric cancer cases in UAE, 2014

Age Group	Frequency	%
(0-4)	77	50.0%
(5-9)	41	26.6%
(10-14)	36	23.4%
Grand Total	**154**	**100.0%**

Table 55 shows the distribution by age group of 154 pediatric cancer cases in UAE in the year of 2014. The data indicates that the top most frequency of pediatric cancer cases was found among age group (0-4) years (77; 50.0%), followed by age group (5-9) years (41; 26.6%). It was noted that the less number of cancer cases in pediatric population were diagnosed in the age group of (10-14) years i.e. (36; 23.4%).

Figure 35: Distribution of pediatric cancer cases by age groups in UAE, 2014



Distribution by primary sites of pediatric cancers cases in UAE, 2014

Table 56: Distribution of pediatric cancer cases by primary sites in UAE, 2014

Primary Sites ICD-10	Frequency	%
C91-C95 Leukemia	67	43.5%
C70-C72 Brain & CNS	22	14.3%
C81 Hodgkin's lymphoma	11	7.1%
C82-C85, C96 Non-Hodgkin lymphoma	11	7.1%
C64-C65 Kidney & Renal pelvis	6	3.9%
C40-C41 Bone and articular cartilage	5	3.2%
C22 Liver and intrahepatic bile ducts	4	2.6%
C49 Connective and soft tissue	4	2.6%
C62 Testis	3	1.9%
C74-C75 Other endocrine glands	3	1.9%
Other malignancy	18	11.7%
Grand Total	**154**	**100.0%**

Table 56 indicates the distribution of pediatric cancer cases by types in UAE among both gender in the year of 2014. The data illustrates that out of 154 cancer cases, the highest frequency of malignancy was for Leukemia (67; 43.5%) followed by Brain &CNS (14.3%).

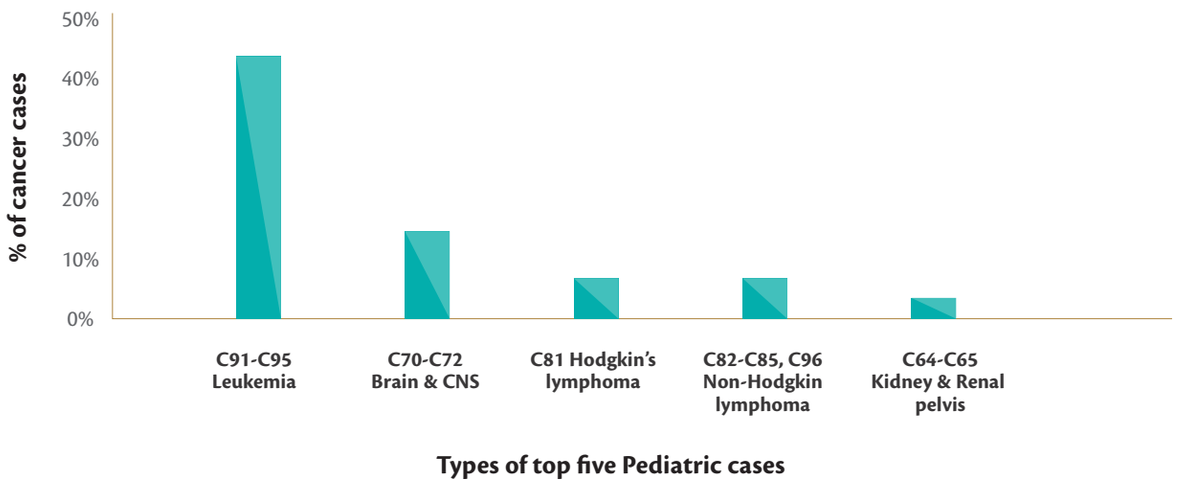
Top five pediatric cancers by primary sites among both genders in UAE, 2014

Table 57: Distribution of top five pediatric cancer cases by primary sites in UAE,

Primary site ICD-10	%
C91-C95 Leukemia	43.5%
C70-C72 Brain & CNS	14.3%
C81 Hodgkin's lymphoma	7.1%
C82-C85, C96 Non-Hodgkin lymphoma	7.1%
C64-C65 Kidney & Renal pelvis	3.9%
C40-C41 Bone and articular cartilage	3.2%

Table 57 demonstrates the distribution of top five pediatric cancer sites among both gender in UAE population in the year 2014. The data represents that most common occurring cancer was Leukemia (43.5%) followed by Brain & CNS (14.3%), Hodgkin's lymphoma (7.1%) Non-Hodgkin lymphoma (7.1%), Kidney & Renal pelvis (3.9%), & Bone and articular cartilage (3.2%).

Figure 36: Distribution of top five pediatric cancer cases in UAE, 2014



Distribution of pediatric cancer cases by primary site and age groups in UAE, 2014

Table 58: Distribution of pediatric cancer cases by primary site and age groups in UAE, 2014

Primary Site ICD-10	(0-4)	(5-9)	(10-14)	Total	%
C91-C95 Leukemia	40	16	11	67	43.5%
C70-C72 Brain & CNS	11	7	4	22	14.3%
C81 Hodgkin's lymphoma	0	3	8	11	7.1%
C82-C85, C96 Non-Hodgkin lymphoma	2	4	5	11	7.1%
C64-C65 Kidney & Renal pelvis	3	2	1	6	3.9%
C40-C41 Bone and articular cartilage	1	3	1	5	3.2%
C22 Liver and intrahepatic bile ducts	2	2	0	4	2.6%
C49 Connective and soft tissue	2	1	1	4	2.6%
C62 Testis	1	1	1	3	1.9%
C74-C75 Other endocrine glands	3	0	0	3	1.9%
Other malignancy	12	2	4	18	11.7%
Grand Total	**77**	**41**	**36**	**154**	**100.0%**

Table 58 shows the distribution of pediatric cancer sites among both gender by age group in UAE population in the year 2014. The data represents that most commonly occurring cancer was Leukemia (67; 43.5%) among all age groups; (0-4) years (40; 51.9%), (5-9) years (16; 39.0%) and (10-14) years (11; 30.6%), followed by brain & CNS, then lymphoma.

CHAPTER 5

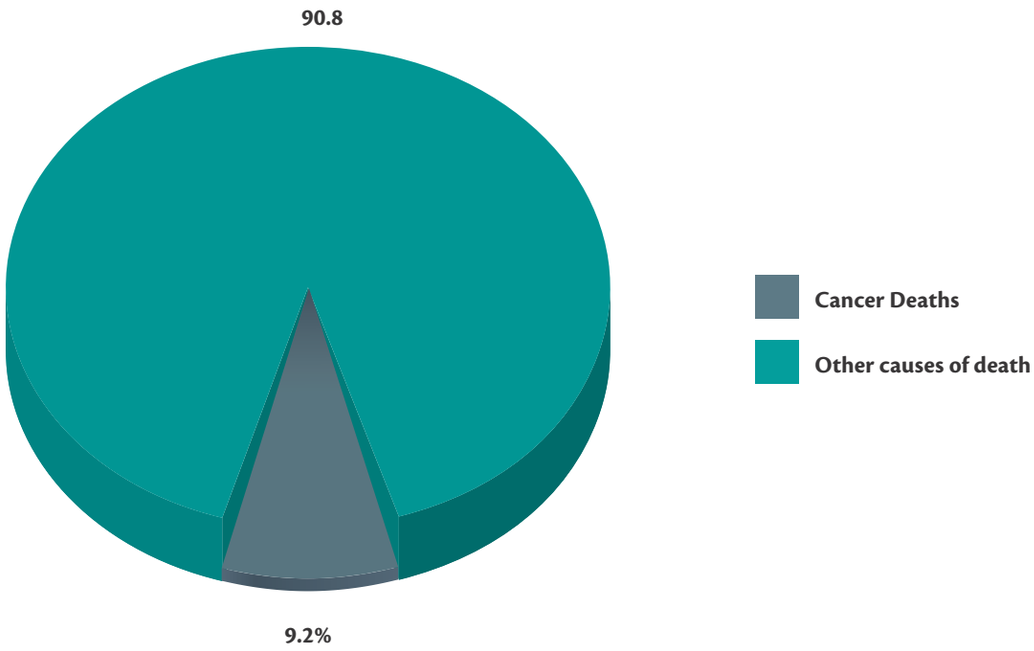
CANCER MORTALITY, 2014

Total Number of Deaths

Cancer mortality has been contributed as the third leading cause of death in the United Arab Emirates after diseases of the circulatory system and injuries [20]. In 2014, a total number of 8265 death cases were reported in UAE among both UAE citizens and Non-UAE citizens regardless of the gender.

Of which, the total number of reported cancer deaths in UAE counted for 758 (9.2%) cases regardless of nationality, type of cancer or gender. Figure 37 represent the percentage of the reported cancer deaths as compared to other causes of death among UAE population in 2014

Figure 37: Percentage of reported cancer deaths among in UAE population in 2014.



Mortality according to the Primary Sites

Breast cancer represented the most common type of cancer among UAE population in 2014. As a consequence, malignant breast cancer had been reported as the leading cause of death amongst all malignant cancer death cases in UAE population in 2014 with respect to nationality and gender (Table 59).

In 2014, a total number of 81 (10.7 %) malignant breast cancer death cases were reported; coming in second place, malignant lung cancer had been reported as the second leading cause of death counting for 79 (10.4 %) cases. The following table represents distribution and percentage of the top leading causes of cancer death cases classified by the type of malignant cancers in UAE, 2014.

Table 59: Distribution of malignant cancer death cases by type of cancer among UAE population in 2014

Underlying cause of death	Number	Percentage
Malignant Neoplasm of Breast	81	10.7%
Malignant Neoplasm of Trachea Bronchus& Lung	79	10.4%
Malignant Neoplasm of Colorectal	67	8.8%
Leukemia	60	7.9%
Malignant Neoplasm of Stomach	41	5.4%
Malignant Neoplasm of Cervix Uteri	11	1.5%
Other Malignant Neoplasm	419	55.3%
Grand Total	**758**	**100.0%**

CHAPTER 6

INCIDENCE AND MORTALITY RATES

Cancer Incidence Rates

The UAE population has substantially increased over the past few decades, and this is primarily due to the high net inward migration of the expatriate workers. Among UAE citizen, a total number of 1003 cases were newly diagnosed with cancer; of which 949 (94.6%) cases were malignant and 54 (5.4 %) were In-Situ cases. Correspondingly, in Non-UAE citizens, 2813 cases were newly diagnosed with cancer, 2661 (94.6%) cases were malignant and 152 (5.4 %) were In-Situ cases. The risk of Breast, colorectal and thyroid cancers was significantly higher for both sexes in UAE. For men, the risk of colorectal, prostate, and leukemia cancer was higher in resident population and, for women, cancer of the breast, thyroid and colorectal cancer (malignant tumors).

A total of 3816 new cancer cases (malignant and in-situ) were registered between 1st January and 31 December, 2014, representing a crude incidence rate of 42 per 100,000 in 2014. Of these diagnosed cases, 206 and 3610 cases were in-situ and malignant, respectively.

Records for all invasive cancers (malignant cases), demonstrated 94.6% of all registered cases in addition to 3610 invasive cases; corresponding to a crude incidence rate of 39.73 cases per 100,000. Figures showed a clear female predominance for cancer incidence. The crude incidence rate for malignant cases were higher for females (81.99 cases per 100,000) than for males (24.63 cases per 100,000). Summary incidence data for 2014 for individual cancers (ICD-10 code) is listed in Table 60.

Table 60: Cancer Crude Incidence rates (The main primary sites ICD-10) among the male and female population in UAE, 2014

Primary site ICD-10	Cancer incidence cases 2014			Cancer incidence rates 2014 Rate per 100,000 population		
	Female	Male	Total	Female	Male	Total
C00-C14 Lip, Oral cavity & pharynx	33	81	114	1.38	1.21	1.25
C15 Esophagus	1	19	20	0.04	0.28	0.22
C16 Stomach	47	54	101	1.97	0.81	1.11
C17 Small intestine	7	14	21	0.29	0.21	0.23
C18-C21 Colorectal	148	256	404	6.19	3.82	4.45
C22 Liver and intrahepatic bile ducts	18	40	58	0.75	0.60	0.64
C23, C24 Gallbladder, other and unspecified part of biliary tract	16	18	34	0.67	0.27	0.37
C25 Pancreas	20	42	62	0.84	0.63	0.68
C30, C31 Nasal cavity, middle ear, accessory sinuses	1	7	8	0.04	0.10	0.09
C32 Larynx	2	27	29	0.08	0.40	0.32
C34 Bronchus and Lung	32	107	139	1.34	1.60	1.53
C40-C41 Bone and articular cartilage	6	6	12	0.25	0.09	0.13
C43 Skin melanoma	7	10	17	0.29	0.15	0.19
C44 Skin	35	90	125	1.46	1.34	1.38
C46 Kaposi sarcoma	0	2	2	0.00	0.03	0.02
C48 Retro peritoneum and peritoneum	4	4	8	0.17	0.06	0.09
C49 Connective and soft tissue	22	25	47	0.92	0.37	0.52
C50 Breast	762	6	768	31.86	0.09	-
C53 Cervix uteri	77	-	77	3.22	-	-
C54-C55 Uterus	106	-	106	4.43	-	-
C56 Ovary	78	-	78	3.26	-	-
C61 Prostate	-	167	167	-	2.49	-
C62 Testis	-	39	39	-	0.58	-
C64-C65 Kidney & Renal pelvis	35	61	96	1.46	0.91	1.06
C66, C68 Ureter and other urinary organs	2	0	2	0.08	0.00	0.02
C67 Urinary Bladder	16	107	123	0.67	1.60	1.35
C70-C72 Brain & CNS	37	73	110	1.55	1.09	1.21

Primary site ICD-10	Cancer incidence cases 2014			Cancer incidence rates 2014 Rate per 100,000 population		
	Female	Male	Total	Female	Male	Total
C73 Thyroid	234	80	314	9.78	1.20	3.46
C74-C75 Other endocrine glands	1	7	8	0.04	0.10	0.09
C76-C80 Unknown or unspecified sites	22	23	45	0.92	0.34	0.50
C81 Hodgkin's lymphoma	36	40	76	1.51	0.60	0.84
C82-C85, C96 Non-Hodgkin lymphoma	54	81	135	2.26	1.21	1.49
C88, C90 Multiple myeloma	15	14	29	0.63	0.21	0.32
C91-C95 Leukemia	68	131	199	2.84	1.96	2.19
Other malignancy, not listed	19	18	37	0.79	0.27	0.41
(C00-C96) All invasive cancers (Malignant Cases)	**1961**	**1649**	**3610**	**81.99**	**24.63**	**39.73**
(D00-D09) Non-invasive cancers (In-Situ Cases)	**161**	**45**	**206**	**6.73**	**0.67**	**2.27**
All Cases (Malignant & In-Situ)	**2122**	**1694**	**3816**	**88.72**	**25.31**	**42.00**

Crude incidence rate: number of new cases per 100,000 population per year, we used an estimated population from United Nations (Department of Economic and Affairs, Population Division) to calculate Crude incidence rate [8].

Cancer Mortality Rates

A cancer mortality rate is the number of deaths, with cancer as the underlying cause of death, occurring in a specified population during a year. In 2014, cancer was the third most common leading cause of death, after diseases of the circulatory system and injuries, and a total of 758 deaths from cancer were reported. This represented approximately 9.2% of all deaths in 2014 and a crude mortality rate of 8.34 deaths per 100,000. All cancer deaths were from invasive cancers.

CHAPTER 7

INTERPRETATION OF FINDINGS

The main objective of this cancer registry report is to describe cancer cases in the year 2014. The goal of creating cancer registries was the improvement of the approach to problems relevant to cancer. Increased knowledge of the incidence and prevalence of malignant diseases, their distribution, incidence, and mortality is of primary significance for cancer control, and the relevant figures can only be obtained through registries.

Summary of the findings

The maintenance of a register of cancer cases aids numerous purposes; the recording of cases treated and diagnosed in a certain hospital principally has a clinical function, and is a valuable resource for evaluating as well as monitoring the work of the institution concerned, including the end results achieved. National cancer registries that are responsible to record the cancer cases arising in a defined population have rather different goals, which can be broadly categorized as helping in evaluating & planning cancer-control activities for the populations concerned, and offering a data resource for epidemiological studies of cancer causation. This report is therefore concerned almost entirely with the functions of such population-based cancer registries, crude incidence and mortality rates.

Cancers, besides being the second leading cause of death worldwide, it is the third principal cause of death in the UAE preceded by circulatory system and injuries [22]. Our report shows the annual data representing the incidence of cancer cases from 1st of January 2014 till 31st December 2014. In this time period, 3816 cancer cases whether it be malignant or in-situ were diagnosed which makes a crude incidence rate of 42/100,000. Among these cases, 94.6% were diagnosed as having malignant cases while the remaining 5.4% were in-situ cases. When stratified according to the UAE nationality, 1003 new cancer cases were registered in UAE citizens while 2813 were from Non-

UAE citizens. In both the categories, majority of the cases were malignant.

The proportion of females was higher i.e. 55.6%, than those of males i.e. 44.4% in having cancer incident cases for the year 2014. A predominance of females was also seen in having high crude incidence rate of invasive cancers (81.99/100000) as compared to males (24.63/100,000). The report also highlights the presence of highest occurrence of malignant cases in individuals 55-59 years of age followed by 45-49 age. However, 15-19 years age group was found to have least occurrence of malignant cases. As described previously, the female gender carried the highest burden of malignant cases in 45-59 years age group while males between the ages of 55-59 years, suffered from the highest number of cancers.

In the year of 2014, among the pediatric population in 0-14 year age group 154 new cancer cases were identified; constituting 4.3% of all reported malignancies. Out of these, 44.8 % were females and 55.2 % were males, among both UAE citizens and Non UAE citizen. The data illustrates that the most frequently occurring pediatric malignancies included Leukemia (43.5%) followed by CNS and brain cancers (14.3%).

The most common types of cancers found in females, according to data include breast, thyroid and colorectal cancers. Similarly, colorectal cancer was the most prevalent type of cancer found in male residents followed by prostate cancer and leukemia. Overall, breast, colorectal, and thyroid cancer were found to be the most common type of cancers among both genders. Specifically, the type of cancers reported in UAE citizens included breast, colorectal, thyroid, leukemia, and Bronchus and Lung; breast cancer being the most common cancer in females (32.16%) while colorectal in males 18.14%. Similarly, five top most malignancies diagnosed among Non UAE-citizens were breast, colorectal, thyroid, leukemia, and prostate. Breast cancer representing the most prevalent cancer among non-UAE females (41.41%), while colorectal cancer in males (14.67%).

Regarding the mortality due to cancers in 2014, a total of 758 patients died of cancers with a crude mortality rate of 8.34/100,000. The leading cause of death was breast cancer responsible for 81 (10.7 %) deaths. The next common cancer deaths were due to lung 79 (10.4 %) and colorectal 67 (8.8 %).

Discussion

The history of appearance of cancer cases in UAE goes back to 1981 when five cases of cancers were identified among 209 liver disease patients at Al-Qassimi Hospital in Sharjah. These first figures were followed by a report published by the Dubai Health Authority which indicated the detection of 1,379 cancer cases from 2004 and 2007 [23, 24]. According to Loney, 2013, there was an estimation of 12.7 million new malignant cases across the globe in 2008 and Emirates cancer trend followed the worldwide patterns [33].

In 2013, a study concluded that the incidence of all cancers is predicted to be double by 2020; The crude incidence rate of all cancers described by the Gulf Center for Cancer Registration in 1998 was 39.3/ 100,000 [25] while in our report it is estimated to be 42/100,000.

According to Abu Dhabi statistics of 2014, 1'768 incident cancer cases were encountered via Abu Dhabi Central Cancer Registry. Out of which 24.2% were UAE citizens and 75.2% were Non UAE citizens and gender distribution demonstrates that 53.3%were females, 46.7% were males [30]. Our report indeed presents a very reliable measurement of cancer incident case during the year 2014 i.e. 3816 malignancies.

Ghafoor and colleagues (2003) published a study which was prospectively analyzed using the records of patients suffering from prostate cancer who were treated at Tawam Hospital and Al-Ain teaching Hospital from the time period of 1982 to 2000 which showed 85 patients in the age group of 51 to 60 years, majority being UAE citizens (44%) while 40% were Non-UAE citizens [24]. However, our report demonstrates that the most commonly occurring malignancy among both UAE and Non UAE citizen (15.52%) males is colorectal cancer in the age group of 55-59 years. This shows that the type of cancer has been changed but the age group is same when compared to last one decade. A study [24] indicated that prostate cancer to be the second common cancer among UAE citizen males in accordance with the statistics from the Dubai Health Authority, which showed that 28 out of total 216 cancer cases were of prostate cancer while in this report 167 out of 3816 showing a downward trend in the occurrence of prostate cancer.

Literature shows limited knowledge regarding genetic predisposition of breast cancer in Arab women but like other countries, breast cancer was found to be the most prevalent cancer in females in UAE as reported in 2004 [24]. This trend is easily visible in the data obtained in 2014 demonstrating the most frequent cancer in females is breast cancer across UAE citizens (32.16%) as well as Non-UAE citizens (41.41%).Females in the UAE with a tendency to develop the disease at least a decade earlier than their counterparts in western countries.

There were five most frequent cancers by gender in the UAE and US, 2008 as identified by the Globocan data which is given in the below table:

Table 61: Five most common cancers by gender in UAE, 2008

Males:	Females	Both
Colorectum	Breast	Breast
Lung	Thyroid	Colorectum
Leukemia	Colorectum	Leukemia
Non Hodgkin lymphoma	Cervix uteri	Lung
Prostate	leukemia	Non Hodgkin lymphoma

Table 62: Five most common cancers by gender in USA, 2008

Males:	Females	Both
Prostate	Breast	Lung
Lung	Lung	Prostate
Colorectum	Colorectum	Breast
Bladder	Corpus uteri	Colorectum
Non Hodgkin lymphoma	Non Hodgkin lymphoma	Bladder

In addition to the above findings, the rates for the different types of cancer in UAE were found to be much lower than many Western as well as other Gulf countries like Qatar, Bahrain, and Kuwait. This can be attributed towards the younger age of the population, less exposure to a few risk factors, lower trend of screening and possible incomplete registries when compared to Western countries [25]. However, current reports obtained from 2014 indicate that the top five cancers among all UAE residents include breast, colorectal, thyroid, leukemia and prostate. Breast cancer was the most common cancer in females while colorectal in males across all nationalities.

Various countries have various types of cancers that are prevailing in their population. This can be due to the difference in population genetics, exposures, infections, radiations, risk factors or ethnicity [28, 29]. For instance, cervical cancer is the foremost cancer causing mortality in sub-Saharan Africa. While cancers of the cervix, stomach and liver were leading types with infection-related etiology in low-middle income countries like India and China.

According to the Global report on non-communicable diseases 2010, a snapshot of common cancers according to WHO regions incorporates that the incidence of cancers was lowest among the countries in the Eastern Mediterranean Region. Males were reported to have higher rates for all types of cancer as compared to females. Lung cancer rates were the highest among both sexes across Western pacific region followed by Europe and then America; excluding South Asian countries and being lowest in Africa. African women were found to have increased incidence of cervical cancer while was lower in Eastern Mediterranean regions. Breast and colon cancer had the peak rates in Europe and then America. Prostate cancer was least in South East Asia. Western pacific region of WHO had the highest number of stomach and liver cancer cases while this was lowest in Africa [32].

Men are reported to have substantially higher collective rates of all types of cancer than women. Male residents of the Western Pacific Region had almost five times higher rate of liver cancer as compared to other areas of the world except for the African while women of the Western Pacific Region also had a significantly greater incidence of liver cancer incidence than women in other counties [32]. Regarding pediatric oncology, Whel and colleagues in 1995 issued updated data from Tawam Hospital the last 11 years showing childhood malignancies. 62.7% of all tumors were leukemia and lymphoma. They also concluded that the pediatric population of sub continental origin (Indian and Pakistani) had significantly increased acute

lymphoblastic leukemia occurrence while less lymphoma when compared to Arab origin [26]. The analysis of 2014 data for pediatric malignancies show that 154 children at the age-group of 0-14 years suffered cancers, among those 55.2 % were boys while 44.8 % were girls and, across both UAE and Non-UAE citizenship. In line with the study discussed, leukemia carried the highest burden of pediatric malignancies i.e. 43.5% followed by CNS and Brain tumors accounting for 14.3% cases.

The Abu Dhabi record of cancer cases of 2014 showed there were 12.9% (406) of all cancer deaths in the Emirate (33% UAE citizens and 67% Non UAE citizens). Gender distribution revealed 45% of deaths were in females and 55% were in males. Trachea, bronchus and lung (11.6%), leukemia (11.3%), and Breast (11.1%) cancers cause most of cancer deaths in Abu Dhabi 2014 [33]. While, our findings demonstrates that the leading cause of death in both sexes was breast cancer i.e. (10.7 %) followed by (10.4 %) deaths due to lung cancer and then colorectal (8.8 %) [30]. The cancer-mortality rate according to our report is 8.34/100,000 in 2014, i.e. 758 patients died of cancers during this year. According to World Health Organization Non-communicable Diseases (NCD) Country Profiles, 2014, the total deaths in UAE in 2014 were Total deaths 9,700 among these, 13% were due to cancers.

Regarding the types of cancers causing deaths in various parts of the world, the Global status report on non-communicable diseases 2010 by WHO compared these deaths and types of cancers across many countries of the world [31]. According to it, around two third cancer death are reported in lower-middle income countries in which Lung, breast, colorectal, stomach and liver cancers are the dominant causes. In contrast, among the high income countries, the principal causes of cancer related mortality was are lung cancer among men and breast cancer among women [31]. This is in accordance with the findings of our 2014 data analysis.

Cancer-related mortality was reported as 12.9% of all deaths in Abu Dhabi in 2014 [33] and then 13.5% of all deaths in Abu Dhabi in 2015 [30]. A comparison of Cancer incidence rate per 100'000 population and cancer death rate per 100'000 in 2014 for Abu Dhabi is given below. This is clearly evident from the information given below that females are more prone to have cancers and ultimately cancer related mortality which is in contrast with the trend in western countries where males share the major burden of it [32].

Table 63: Cancer incidence per 100,000 for Abu Dhabi -2014

	Cancer incidence cases 2014			Cancer incidence rates 2014 Rate per 100,000 population		
	Total	Female	Male	Total	Female	Male
Total	1'768	942	826	64.2	113.0	43.0
UAE citizens	427	258	169	84.3	99.6	68.3
Non UAE citizens	1'329	676	653	59.1	117.6	39.0
NA	12	8	4			

Table 64: Cancer death rate per 100,000 for Abu Dhabi -2014

	Cancer death cases 2014			Cancer death rates 2014 Rate per 100,000 population		
	Total	Female	Male	Total	Female	Male
Total	406	182	224	14.7	21.8	11.7
UAE citizens	135	54	81	26.7	20.9	32.7
Non UAE citizens	270	128	142	12	22.3	8.5
NA	1		1			

Future Opportunities and Challenges

Cancer poses a significant present and future public health challenge. In an effort to prevent and control cancer at a population level, it is vital that we continue to develop the evidence, ensuring through research that we endure to strive to understand the variation in the incidence of cancer, the implications for preventative strategies, and the potential to identify new contributory factors. Increased knowledge of the frequency of malignant diseases, their incidence, distribution, and mortality is of primary significance for controlling cancer, and the relevant figures can only be obtained through registries. This information is the primary resource not only for the epidemiological determinants found through cancer research but also for evaluating and planning health services for the diagnosis, prevention, and treatment of the diseases. Variations in the quality of data and coverage [national vs regional] across different countries are not unexpected and a concerted effort in the GCC to standardize important epidemiological data would ensure the success of cancer prevention programs in the region. It is expected that the operational techniques addressed in this report will encourage the establishment of more cancer registries, especially in a nation where characteristics and incidence of diseases are as yet described poorly, as well as it will also help to maximize the usefulness of data gathered by the adoption of uniform techniques in all cancer registration aspects.

This report, the most recent manifestation of the collaboration between the cancer registries in UAE and the MOHAP, HAAD, DHA, provides a most valuable synopsis and overview of cancer distribution. It describes the geographical distribution of some of the commonest cancers, highlighting the variation in the incidence of a variety of cancer types. Whilst much of the variation in modifiable cancer burden is already known, this variation poses many questions that both researchers and policy makers alike will need to fully consider and study. It is believed that this report will make a significant contribution to our growing understanding of cancer prevention with the potential to make a real impact in reducing risk of cancer in UAE.

Conclusion

The main objective of this cancer registry report is to describe cancer cases in the year 2014. This report is intended as a practical resource for those interested in starting such a registry as well as to provide assistance to existing registries facing operating problems. It offers population based cancer incidence data to the public in an appropriate and precise manner as well as other indicators like prevalence, survival, and mortality in UAE, planning cancer services, cancer control, cancer screening program, and cancer research projects. The results of this report show crude incidence and mortality rates in UAE on a regional and national level and clearly demonstrated the seriousness of the cancer problem in UAE.

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