

Short Communication

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Higher and Increasing Incidence of Cancer between the Age of 20-49 Years in the UAE Population; A Focus Analysis of the UAE National Cancer Registry Data 2015-2017

Humaid O. Al-Shamsi, MB, MRCP(UK), FRCPC(C), FACP¹⁻⁴ and Wael Shelpai, CTR⁵

¹ Department of Oncology – Burjeel Cancer Institute – Burjeel Medical City, Abu Dhabi, United Arab Emirates

² Innovation and Research Center – Burjeel Cancer Institute – Burjeel Medical City, Abu Dhabi, United Arab Emirates

³ College of Medicine, University of Sharjah, Sharjah, United Arab Emirates

⁴ Emirates Oncology Society, Dubai, United Arab Emirates

⁵ National Disease Registry, Statistics And Research Center (SARC), Ministry of Health and Prevention (MOHAP)

ABSTRACT

There is accumulating evidence that cancer incidence is increasing in younger adults. An earlier report indicating a higher incidence of breast and colorectal cancer in the younger population in the UAE. Open access data from the UAE National Cancer Registry (UAE-NCR) from the Ministry of Health and Prevention (MOHAP) for 2017 were extracted. Estimated data from the International Agency for Research on Cancer (IARC) for Saudi Arabia, Canada, United Kingdom, China, and India for the year 2020 were also extracted and analyzed. When analyzing the 2017 UAE published data with restriction to the age group between 20-49 years of age for both UAE citizens and Non-UAE citizens, The data indicates that, the percentage of cancer incidence in this age group was 45.4% from total number of new malignant cancer cases in 2017, compared with 42.4% in 2015 and 42.7% in 2016. In females the percentage of cancer incidence in this age group was 51.3% from total number of new malignant cancer cases among females in 2017, and 38.3% among males in the same year, compared with 2016 data (49.5% among females and 34.9% among males) and 2015 data (49.9% among females and 34.1% among males), data indicates that, there is a clear trend for an increase in the incidence annual percent change in this age group by 3% (from 42.4% in 2015 to 45.4% in 2017). This increased persisted regardless of sex (males increased incidence by 4.2% from 34.1% in 2015 to 38.3% in 2017 while in females increased incidence by 1.4% from 49.9% to 51.3%), which more females were diagnosed with cancer at the age of 20-49 than males between 2015 and 2017.

When re-analyzing the 2017 data and restriction to the UAE citizens population only with the age group of 20-49, the percentage of cancer incidence remains high at 37.2% (42.4% among females and 28.9% among males). The percentage of cancer incidence in this age group between 20-49 years of age in Saudi Arabia is 39.49% which is comparable to the UAE, yet these incidence rates are extremely high compared with the following countries; Canada 8% ($p < 0.005$), USA 8.75% ($p < 0.005$), United Kingdom 8.33% ($p < 0.005$), China 16.15% ($p < 0.005$) and India 26.75% ($p < 0.005$).

The current data indicated an increase in the cancer incidence in the UAE in the age group of 20 – 49 years of age. The incidence is alarming and requires focused research to address potential risk factors. Cancer screening is a vital component in reducing cancer mortality, yet utility and cost-effectiveness has not been evaluated fully in the younger population. UAE-based research to evaluate screening due to the higher incidence may be required to be addressed. A more collaborative regional and global effort is a must to address this global alarming phenomenon.

*Corresponding author

Humaid O. Al-Shamsi, MD, MRCP (UK), FRCPC(C), FACP, Associate professor, University of Sharjah, College of Medicine University City Road, P. O. Box 27272, Sharjah. United Arab Emirates. Tel:+97150-631-5388, Fax:+97165585099. Email: Humaid.Al-Shamsi@medportal.ca

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Introduction

Cancer statistics for adolescents and young adults (aged 15-39 years) are often presented in aggregate, masking important heterogeneity [1]. Multiple studies, each examining different cancer using US population-based data from the Surveillance, Epidemiology, and End Results (SEER) Program, have documented an increase in incidence in young adults, aged 25- to 39-years, compared with older age groups [2]. Anderson et al. reported a

2.7% (95% confidence interval [CI] ¼ 1.5% to 3.9%) per year increase in noncardia gastric cancer incidence in 25- to 39-year-old white women and men from 1977 to 2006 [2-4].

Bailey et al. reported a 2.0% (95% CI ¼ 1.5% to 2.5%) per year increase in colorectal cancer incidence in 20- to 34-year-old women and men of all races from 1975 to 2010 [3]. Johnson et al. reported a 2.1% (95% CI ¼ 1.6% to 2.6%) per year increase in

distant-stage breast cancer incidence in 25- to 39-year-old women of all races from 1976 to 2009 [4]. For each of these cancers, the annual percent change (APC) in incidence was higher for individuals younger than 40 years compared with older adults. Importantly, increases occurred in age groups that are not routinely screened for the cancers that have population screening tests like breast and colorectal cancers, thereby minimizing the possibility that the increase is screening related [5].

All the above studies are US population-based data. United Arab Emirates (UAE) based data are limited [6]. We have previously reported that in the UAE there is anecdotal evidence that 41% of UAE colorectal cancer patients are people younger than 50 years, and 22% of the colorectal cancer cases are patients below the age of 40 [7]. We have also reported 21.5% all breast cancer in the UAE were between the age of 30 and 40 in 2014 [8].

UAE National Cancer Registry (UAE-NCR) data are published annually since 2017, where the first data for the year 2014 were published. Clinically we observe an increasing number of younger populations with cancer compared with our clinical previous experience in Canada and the US. To our knowledge no specific studies addressed the incidence of cancer in UAE younger population between the age of 20-49 years. We aim to address the gap in the knowledge about the incidence and burden of cancer in this population and also assess the trend of the annual percent change between 2015 and 2017 data. We will also compare the UAE's current data for this population with the data from neighboring Saudi Arabia and other developed and developing countries to assess the burden of the disease in the UAE compared with other nations. This study will help the decision-makers to reassess and design specific research for this population based on the findings from our current study.

Method

Open access data from UAE-NCR were extracted [9]. Data from the International Agency for Research on Cancer for Saudi Arabia, USA, Canada, United Kingdom, China and India were also extracted and analyzed using Excel Microsoft office© 2019. A chi-square test was used and P-value considered to be significant if it is less than 0.05.

Results

The latest data published by the UAE-NCR for the year 2017 and was published in November 2020 [9]. Between 1st January – 31st December 2017, the total number of newly diagnosed cancer cases (malignant & in-situ) reported to the UAE-NCR was 4299. Of which 4123 (95.91%) were malignant and 176 (4.09%) were In-situ cases. Overall cancer was more among women than men; it affected 2370 (55.1%) females and 1929 (44.9%) males. Among UAE citizens, a total number of 1150 cases were newly diagnosed with cancer; out of which 1105 (96.1%) cases were malignant and 45 (3.9%) were in-situ cases. Similarly, in Non-UAE citizens, 3149 cases were newly diagnosed with cancer, 3018 (95.8%) cases were malignant and 131 (4.2%) were in-situ cases.

Representing an overall crude incidence rate of 46.2/100,000 for both genders. Figures showed a clear female predominance for cancer incidence. The crude incidence rate was higher for females 82.1/100,000 than for males 30.1/100,000. The overall age-standardized incidence rate (ASR) was 77.4/100,000, for females 120.3/100,000 and for males 62/100.000. Breast, colorectal, thyroid and leukemia were the top ranked cancers among all new cancer cases in both genders. Colorectal, leukemia and prostate were the top ranked cancers among the males. Among females, breast, thyroid, colorectal, leukemia, uterus and cervix uteri were the top ranked cancers (Table 1).

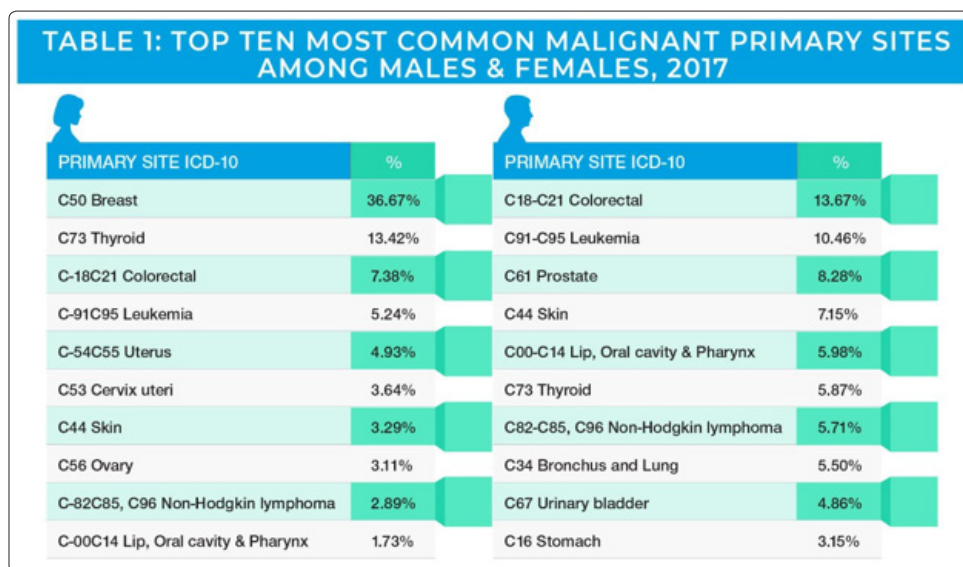


Table 1: Top ten most common malignant primary sites among males & females, 2017

When analyzing the published data with restriction to the age group between 20-49 years of age for both UAE citizens and Non-UAE citizens, the percentage of cancer incidence in this age group was 45.4% from total number of new malignant cancer cases in 2017, compared with 42.7% in 2016 and 42.4% in 2015. When re-analyzing the data and restriction to the UAE citizens population with the age group of 20-49, the percentage of cancer incidence remains high at 37.2% (42.4% among females and 28.9% among males). with increased incidence by 3.9% from 33.3% in 2015 to 37.2% in 2017.

When the percentage of cancer incidence from 2017 compared with the 2015, there is a clear trend for increased incidence in this age group by 3% (from 42.4% in 2015 to 45.4% in 2017). This increased persisted regardless of sex (males increased incidence by 4.2% from 34.1% in 2015 to 38.3% in 2017 while in females increased incidence by 1.4% from 49.9% to 51.3%) (Figure 1).

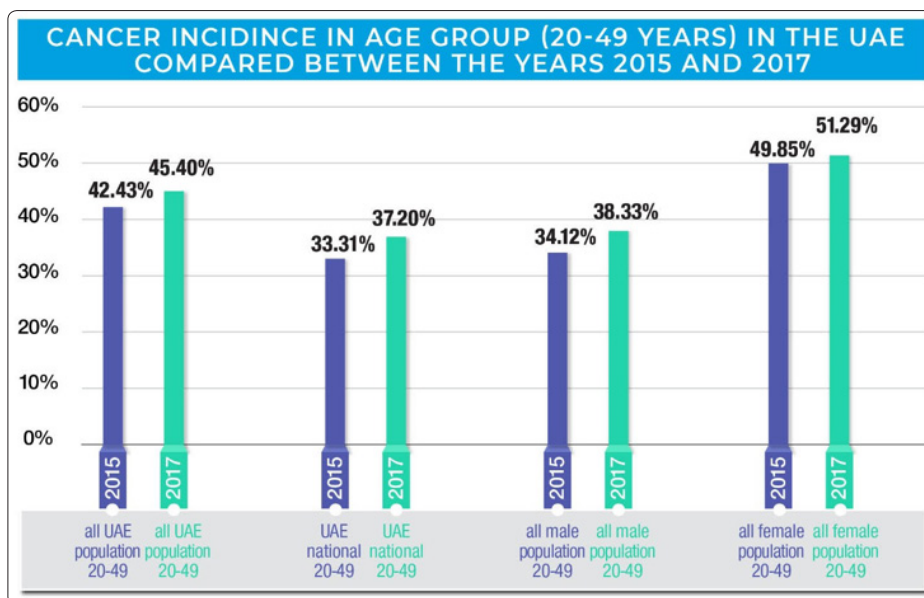


Figure 1

The percentage of cancer incidence in this age group between 20-49 years of age in Saudi Arabia is 39.49% which is comparable to the UAE, yet these percentages are extremely high compared with the following countries; Canada 8% ($p < 0.005$), USA 8.75% ($p < 0.005$), United Kingdom 8.33% ($p < 0.005$), China 16.15% ($p < 0.005$) and India 26.75% ($p < 0.005$) (Figure 2).

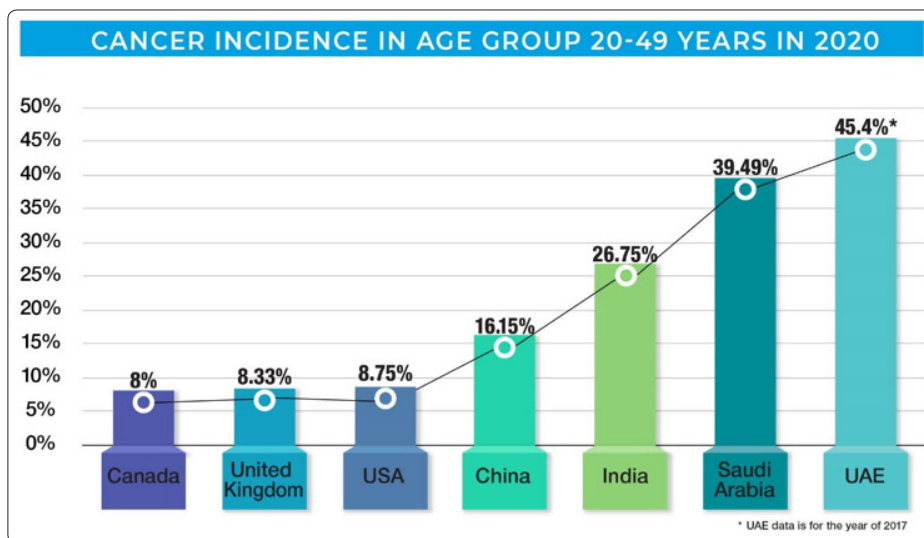


Figure 2

*UAE data is from 2017, rest of data is from the year 2020 by the International Agency for Research on Cancer

Discussion

There is accumulating evidence that cancer incidence is increasing in younger adults, particularly in young women [9]. There is a considerable variation in the scale of incidence and mortality worldwide the in the younger population [10]. Our current data is the first data specifically addressing the burden of cancer in the 20-49 years of age group in the UAE. With the 45.4% incidence of cancer in this age group compared with Canada 8% ($p < 0.005$), USA 8.75% ($p < 0.005$), this percentage is alarming and requires further research to address the factors which lead to such extremely high incidence.

One theory is that the majority of the UAE population (7.8 million in 2013) are younger expatriates from around the world, especially in Asia. 65.9% of the UAE population is between the age of 25-54 years of age [11]. A large part of this can be attributed to the expatriate population of working men and women who fall in this age category. only 1.4 million (15.2%) of the UAE population are Emirati (UAE citizens). Having a younger expatriate's population is unlikely to be the rationale for such a higher incidence of cancer in this age group (20-49) as the UAE citizens population cancer incidence after excluding the non-UAE citizens/expatriates remains high at 37.2%. This is also in keeping with Saudi Arabia's higher incidence of 39.49% (all Saudi population citizens and non-citizens) which is comparable to the UAE's high incidence in this age group. The UAE and Saudi Arabia have the common tribal genetic origin of the population from the Arabian Peninsula and similar lifestyle and environmental risk factors which may explain the

similarities between the high incidence of these 2 countries [12].

It may be also suggested that screening may be a potential cause for over diagnosis of cancer in this young and middle age population (as colorectal and breast cancer screening start at the age of 40 in the UAE [8, 9]. While participation in cancer screening may account for incidence patterns in older age groups, they are unlikely to explain the higher APCs in those younger than 40 years [5,13]. Also, the cancer screening uptake has been reported previously to be low in the eligible population (including the 40-49 years that eligible for colorectal and breast cancer screening) which again argues against the screening being a potential cause for this higher incidence of cancer in this population.

The increasing of incidence across all populations in the UAE regardless of various variables (UAE citizens Vs Non-UAE citizens and sex) is an indication for a likely true absolute increase in the incidence which is also in keeping with a reported increase from other regions [1]. Increasing overall cancer incidence in younger adults is concerning, especially given that the current trends are projected to continue in future years [5]. Hereditary factors cannot explain the surge of such cases, likely environmental factors, physical activities, diet, obesity, infections and exposures occurring earlier in life, including in utero and early childhood may interplay into potential exposomal elements that increasing the incidences of cancer in this population and should also be considered when assessing cancer etiology in young adults [1, 13-15].

Cancer screening in the younger population is evolving. More recently the American Cancer Society revised the recommendation for average-risk people for colorectal cancer to start regular screening at the age of 45 instead of the previous screening age of 50 [16]. We have also previously discussed the value of breast cancer screening in the UAE population under the age of 40 [8]. Cancer screening recommendations should be made by a professionally diverse, independent panel of experts that make evidence-based recommendations regarding screening based on the benefits, harms, and available resources in that country's context [17]. We recommend addressing and evaluating the value of cancer screening in the younger population in the UAE. Existing methods of screening may be suboptimal and newer novel techniques including the utilization of next-generation sequencing of circulating tumor DNA should be evaluated and studied further to improve the early detection and screening in this population [18, 19].

When we compare the percentages of cancer incidence in age group (20-49) in other UAE neighboring countries, Oman and Kingdom of Saudi Arabia for the annual reports for 2015. There is a clear higher incidence in younger population 20-49 years of age in the UAE compared with these two countries and the same is also observed in males and females when the data analyzed based on gender (Figure.3) [20-22].

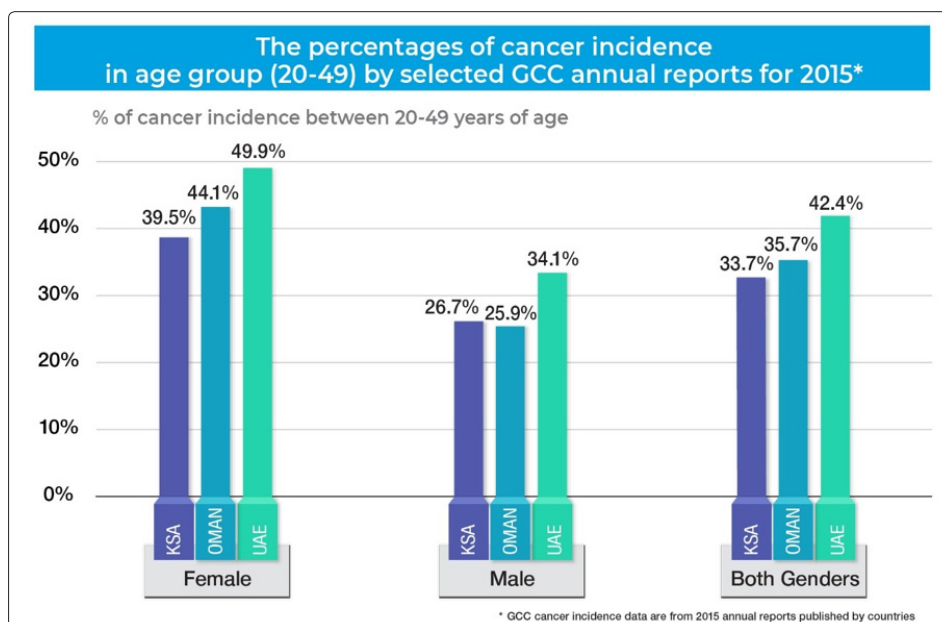


Figure 3

*GCC cancer incidence data are from 2015 annual reports published by the countries

The current study is limited by the lack of breakdown of the age-specific cancer type (currently only reported for breast, colorectal and, thyroid cancers) [9]. We recommend the reporting of all types of cancer with corresponding age-standardized rates (ASR) per 100 000 people per year [9].

Conclusion

Cancer in the younger population is increasing globally. The current data indicates an increase in cancer incidence in the UAE in the age group of 20-49 years of age with an increase in the APC. The incidence is alarming and requires focused research to address potential risk factors. Cancer screening is a vital component in reducing cancer mortality, yet utility and cost-effectiveness has not been evaluated fully in the younger population. Existing methods of screening may be suboptimal and newer novel techniques should be evaluated and studied further to improve the early detection and screening in this population. UAE-based research to evaluate screening due to the higher incidence may be required to be addressed. A more collaborative regional and global effort is a must to address this global alarming phenomenon.

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