

A Case Series of Immigrant Cancer Patients in Iran

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ABSTRACT

Background: Iran has recently experienced a recent influx of immigrants, mainly from neighboring countries such as Afghanistan and Iraq. We report a case series of immigrant cancer patients who were admitted at Imam Khomeini Hospital Complex in Tehran.

Methods: We conducted a retrospective cross-series using the medical records of immigrant patients diagnosed with cancer from March 2013 to March 2023. We performed descriptive analyses of the immigrant patients, including gender, age, country of birth, type of cancer, treatment courses, and metastasis status.

Results: The total number of immigrant cancer patients was 349, with 51.86% being female and 48.14% male. Among these patients, 8 (2.30%) were children (under 14 years old), 42 (12.07%) were young adults (aged 15-24), and 297 (85.59%) were older than 25 years. Most immigrants in the study were from Afghanistan (95.13%), followed by Iraq (4.58%). Additionally, 8.88% of the immigrants were second-generation, born in Iran. The most common cancer types were breast (32.04%), hematological (12.15%), ovarian (11.05%), and colorectal (7.18%) cancers in women and hematological (17.86%), colorectal (10.71%), musculoskeletal (10.12%), and skin (10.12%) cancers in men.

Conclusion: This study is the first description of cancer disparity among immigrants in Iran. The results of this study can be used for cancer surveillance and promoting care among immigrant populations in Iran.

Keywords: Immigrants, Cancer, Clinical Cancer Registry, Afghan immigrants

INTRODUCTION:

Migration has emerged as a significant global health issue in recent decades, with an estimated 281 million individuals residing outside their country of birth as of 2021 (1). Many of these individuals have been forcibly displaced due to conflicts, insecurity, human rights violations, economic hardship, and the pursuit of a better quality of life. In Iran, government data reported approximately 2.6 million undocumented Afghan refugees residing in the country by 2022 (2). With the increasing influx of migrants, it is crucial to understand their diverse healthcare needs, address health disparities, and acknowledge the unique challenges faced by this population (3).

Cancer is a leading cause of mortality worldwide, with rapidly rising incidence and mortality rates (4). In Afghanistan, it ranks as the second leading cause of mortality among non-communicable diseases (5). However, epidemiological data on cancer from Afghanistan is limited. According to available reports in the GLOBOCAN project, approximately 24,275 new cancer cases were estimated to be found in Afghanistan in 2022 (6). According to a review study GLOBOCAN 2020 data, the most common cancers in Afghanistan include stomach (11.3%), lung (9.1%), and lip and oral cavity cancers (6.1%) in men and breast (27.2%), cervical (9.3%), and stomach (6.2%) cancers in women (7). A study conducted in Kabul on 1,025 Afghan cancer patients found that the most common cancers were breast (45.8%), oesophageal (12.5%) and colorectal (4.8%) cancers in women and oesophageal (21.8%), stomach cancer (12.2%), and lymphoma (9.4%) in men (8). A study on Afghan refugees in Pakistan revealed that 56% of all cancer patients were diagnosed at stage III or IV (9). Additionally, a study conducted in Sweden has demonstrated that the risk of thyroid cancer was higher in Asian immigrants compared to native Swedes, potentially due to differences in iodine intake during childhood (10).

We aimed to use data from foreign-born individuals admitted to the Imam Khomeini Hospital Complex, the largest hospital in Iran, to describe the pattern of these patients and provide valuable insights into the disparities of cancer among the immigrant population in Iran.

Methods:

We conducted a case series and collected information

from the medical records of foreign-born cancer patients admitted between March 2013 and March 2023 to Imam Khomeini Hospital Complex in Tehran, Iran. The collected data included details on gender, age, nationality, type of cancer, and pathology. Overall, we obtained 437 data from the medical records department. Eighty-eight records were excluded because of duplication data or diagnosis of benign lesions. Staging was performed for solid cancer cases using clinical and pathological data. We used the Federation of Gynaecology and Obstetrics staging system (FIGO) for cervical cancer, the World Health Organization (WHO) for brain cancer, and the Union for International Cancer Control staging system (UICC) for other solid cancers. We used Stata statistical software to perform statistical analyses (Stata Ver.14, Stata Corp, College Station, Texas 77845 USA).

Results:

We studied data from 349 cancer patients with complete pathology reports and demographic information. The cohort comprised 168 males (48.18%) and 181 females (51.86%). First-generation Afghanistan patients were the most common immigrant groups (N=301,86.25%), followed by second-generation Afghani immigrants (N=31, 8.8%) and Iraqi immigrants (N=16, 4.6%) and only one patient was born in Bahrain. (Table 1).

While the most common age in female patients was between 25 and 49 years, it was between 50–74 years in men. The most frequent cancers were breast (N=58,32.04%), hematological (N=22,12.15%), ovarian (N=20,11.05%), colorectal (N=13,7.18%), and thyroid cancer in women and hematological (N=30,17.86%), colorectal (N=18,10.71%), musculoskeletal (N=17,10.12%), skin (N=17,10.12%), stomach (N=15,8.93%) and brain (N=15,8.93%) cancers in men. that also had similar incidence, and lastly, oesophageal cancer (N=10,5.95%).

Out of 297 solid cancers, we managed to stage 234 (79.7%) patients. Among these patients, 142 (60.68%) were diagnosed at an advanced stage, and 92 (39.32%) were diagnosed in the early stages.

Discussion:

Our results indicate that the most prevalent cancers among immigrant patients seeking care at the largest hospital in Iran were breast, hematological, colorectal, stomach, and musculoskeletal cancers. Hematological, colorectal, Musculoskeletal, and skin cancers were

Table 1. Personal Characteristics and Cancer Type of Immigrant Cancer Patients by Gender admitted to the Imam Khomeini Hospital between 2013 and 2023 (Figures are numbers and percentages if otherwise stated)

Variables		Men	Women
Overall		168 (100)	181 (100)
Age, Mean Age (SD)		47.27 (18.22)	43.33 (15.87)
Nationality	Afghan	156 (92.86)	176 (97.24)
	Iraqi	11 (6.55)	5 (2.76)
	Bahraini	1 (0.59)	-
Immigrant generation	First generation	151 (89.99)	167 (92.27)
	Second generation	17 (10.12)	14 (7.73)
Cancer types	Breast	2 (1.19)	58 (32.04)
	Hematological	30 (17.86)	22 (12.15)
	Ovarian	-	20 (11.05)
	Colorectal	18 (10.71)	13 (7.18)
	Musculoskeletal	17 (10.12)	6 (3.31)
	Stomach	15 (8.93)	8 (4.42)
	Brain	15 (8.93)	7 (3.87)
	Non-melanoma Skin	14 (8.33)	3 (1.66)
	Esophageal	10 (5.95)	7 (3.87)
	Lung	9 (5.36)	7 (3.87)
	Head & neck	7 (4.17)	5 (2.76)
	Hepatobiliary	7 (4.17)	3 (1.66)
	Gynecological	-	4 (2.21)
	Pancreas	6 (3.57)	3 (1.66)
Thyroid	6 (3.57)	10 (5.52)	
Cancer staging (n=234) *	Early stage	41 (29.71)	51 (32.08)
	Advanced stage	70 (50.72)	72 (45.28)
	Unknown	27 (19.57)	36 (22.64)

*Only solid tumors were staged

the most commonly diagnosed cancers among male patients, while among females, breast, hematological, and ovarian cancers were the most prevalent. Our study group was primarily middle-aged, originating from Afghanistan, and at an advanced stage of disease. According to our knowledge, this is the first study on epidemiologic and pathologic factors of immigrant cancer patients in Iran.

Cancer type patterns observed in our study align

with the previous report from Afghani patients, the major nationality of our study group. According to Shayan's investigation of GLOBOCAN 2020 data, 27.9% of female cancers were breast cancer as the most common female cancer in Afghanistan, and stomach cancer was the most prevalent one among Afghani men. Interestingly, leukemia was the second most frequent cancer in Shayan's report (7). Furthermore, a study on medical records in the oncology department

of Jamhuriat Hospital of Kabul, which is a referral hospital in Afghanistan, reported breast cancer as the most prevalent cancer among Afghan women (45.8%) and non-Hodgkin lymphoma as the third most prevalent cancer among Afghani men (9.4%) followed by esophageal and stomach cancer (8). Another study among Afghani refugees in 1997 has also shown that breast cancer was the most common malignancy among Afghan women, while esophagus, skin, and lymphoma were the most frequent cancers among men, respectively (11). A high incidence rate of hematologic malignancies observed in this study and other international reports is likely due to the young age structure of Afghani immigrants moving to other countries (8, 12). However, a high risk of stomach and esophageal cancer suggests designing specific studies to investigate potential risk factors of mentioned cancers among these populations. For instance, opium consumption is a common exposure in Afghanistan (13) and may contribute to the development of these cancers among immigrants in Iran.

The distribution of cancer stages at diagnosis among immigrant populations has shown variability in research findings. In our study, most immigrant cancer patients were diagnosed at a late stage, indicating a limited awareness about cancer and its warning signs among this population, combined with socio-economic constraints and barriers in accessing diagnostic and treatment facilities. Most studies on cancer among immigrants has been conducted in the high income countries and evidence from immigrants who moved to the low and middle income countries are sparse. A meta-analysis has demonstrated that migrants are less likely to be diagnosed with early-stage cancer compared to non-migrants (14). Similarly, it has been revealed these patients usually diagnose in an advanced stage than to native-born women, albeit varying by region and economic status of the birthplace(15). A report on Afghan patients in Pakistan showed that 56% of Afghan cancer cases were diagnosed at late stages. Low socio-economic status and taboos associated with cancer were cited as related reasons for these advanced diagnoses(9). These disparities extend beyond stage at diagnosis and receiving medical care; they also affect screening participation, which is influenced by behavioral factors, socio-economic status, insufficient knowledge, low risk perception, and difficulties accessing healthcare services. To promote participation rates, suggested strategies include culture-based

education and improving continuity of care (16-18). Conversely, other studies conducted in diverse geographic regions have reported no significant disparities in both stages at diagnosis and survival outcomes between immigrants and host populations. As an instance, a retrospective matched-pair analysis in Germany showed that migration background had no impact on cancer survival and response rates in cancer patients (19). Another experience in this country reported that tumor stage at diagnosis in colorectal cancer patients was not significantly different between migrants and non-migrants (20). Furthermore, a similar study in Canada found congruent results and stage of colorectal cancer diagnosis had no significant difference between two cohorts (21).

This study had several limitations. Firstly, it was a single-center study conducted exclusively among patients admitted to Imam Khomeini Hospital Complex, Tehran's largest referral tertiary hospital. Consequently, the findings may not be representative of all immigrant cancer patients in Iran. Additionally, the small sample size limited our ability to explore disparities across different cancer subsites. Furthermore, we were unable to compare the clinical outcomes and characteristics of cancer among Afghan immigrants in Iran with those of Iranian patients. To address these gaps, we recommend conducting comparative studies that evaluate such hypotheses using age- and gender-matched groups for each cancer site. It would also be valuable to compare outcomes among Afghan immigrants in Iran with those in other regional countries hosting similar immigrant populations.

In conclusion, as a first report on cancer among immigrants in Iran, we shed light on the disparity of cancer diagnosis and outcome among this population. It highlights the importance of a surveillance system to monitor health outcomes among these populations in Iran and other countries. We suggest further epidemiological research to study cancer disparity among the immigrant population in Iran.

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