



DIAGNOSED CANCERS AMONG AFGHANS BASED ON DATA FROM A REFERRAL AND TERTIARY HOSPITAL IN KABUL, AFGHANISTAN

Abdulhafiz Rahmati ¹, Ahmad Wali Ataye ², Wakill Ahmad Wadan ³

¹ Department of Behavioral Sciences and Health Education, Kabul University of Medical sciences “Abu Ali Ibn Sina”, Kabul-Afghanistan.

² Department of Microbiology, Kabul University of Medical sciences “Abu Ali Ibn Sina”, Kabul-Afghanistan.

³ WHO supervisor at MOPH in Kabul-Afghanistan

Abstract

Background: Research indicates that cancer ranks as a primary cause of death in many developed nations, while in developing countries, it stands as the second leading cause of mortality. This study aims to examine the prevalence of various cancer types diagnosed within the oncology department of Jamhoriat Hospital in Kabul.

Methods and Materials: This descriptive cross-sectional study utilized the medical records of patients diagnosed with different types of cancers between March 2022 and September 2023 at the public referral Jamhoriat Hospital in Kabul, Afghanistan.

Results: In the current study involving 3,001 patients, 62.2% were female and 37.8% were male, with the majority aged between 39 and 57 years. The most prevalent cancers among females were breast cancer (20.7%) and esophageal cancer (20.1%), followed by stomach cancer (8.1%), uterine and cervical cancers (6.7%), gastroesophageal junction cancer (6.6%), and colorectal cancer (6.5%). Other notable cancers included ovarian (4%), liver (3.4%), sarcoma (2.9%), gallbladder (2.1%), kidney (1.8%), non-Hodgkin lymphoma (1.4%), Hodgkin lymphoma (1.3%), skin melanoma (1.2%), lung (1.1%), and urinary bladder cancer (1.1%). In males, the leading cancers were esophageal (26.5%), stomach (12.1%), colorectal (9.4%), and gastroesophageal junction cancer (8.5%). Other cancers included testicular (6%), liver (5.1%), sarcoma (4.1%), non-Hodgkin lymphoma (2.8%), skin melanoma (2.7%), Hodgkin lymphoma (2.6%), lung (2%), gallbladder (1.6%), kidney (1.2%), and urinary bladder cancer (1.1%). Ethnically, the majority of patients were Pashtun (42.4%), followed by Tajik (35%), Hazara (10.3%), and Uzbek (7.1%). Regarding residence, most patients lived in the central zone (38.8%), followed by the northeast (16.3%), southeast (11.8%), north (10.6%), east (9.3%), south (8.6%), and west (4.6%).

Conclusion: Overall, the present study revealed that cancer was more prevalent among women than men. The most prevalent cancers among Afghan males were esophageal, stomach, colorectal, gastroesophageal junction, testicular, and liver cancers. In Afghan females, the most frequently observed cancers were breast, esophagus, stomach, uterine and cervical cancers, gastroesophageal junction, colorectal, ovaries, and liver cancers. Most patients fell within the middle-aged group. There is a need for greater awareness of cancer and its prevention among everyone.

Keywords: Cancer, Hospital, types, Afghan

1. Introduction

Around the world, cancers are one of the leading causes of death. Globally, approximately 19.3 million new occurrences of cancer and nearly 10.0 million cancer-related fatalities were recorded in 2020. Female breast cancer took precedence over lung cancer as the most prevalent cancer type, constituting an estimated 2.3 million new cases (11.7%), followed by lung (11.4%), colorectal (10.0%), prostate (7.3%), and stomach (5.6%) cancers. Despite this, lung cancer retained its status as the primary cause of cancer-related mortality, accounting for around 1.8 million deaths (18%), trailed by colorectal (9.4%), liver (8.3%), stomach (7.7%), and female breast (6.9%) cancers (1).

According to GLOBOCAN 2022, the top five common cancers in both sexes in Afghanistan were breast (n = 3173, 14.3%), stomach (n = 2913, 7.8%), lung (n = 1470, 6.6%), cervix uteri (n = 1200, 5.4%), and colorectum (n = 1084, 4.9%) (2).

The prevalent cancers among men in Iran included skin, stomach, bladder, prostate, and colorectal cancers in that order. Similarly, for women in Iran,

the common cancers were breast, skin, colorectal, stomach, and esophagus cancers respectively. There's a rising incidence of cancer in Iran, with the burden being higher in the Northern and Northwest provinces (3). The findings of a study based on the prevalence of cancer in Pakistan indicated that the most common types of cancers in Pakistan are breast, lip and oral cavity, cervix uteri, colorectal, and bladder, in that order (4). Based in a study in Malawi between 2007 and 2010, recorded a total of 18,946 new cancer cases. Females accounted for 55.9% of these cases, with 7.2% affecting children under 15 years, 76.5% affecting adults aged 15-59 years, and 16.4% affecting the elderly aged 60 years or older. The most prevalent cancer type among females was cervical cancer, making up 45.4% of cases, followed by Kaposi sarcoma (21.1%), esophageal cancer (8.2%), breast cancer (4.6%), and non-Hodgkin lymphoma (4.1%). Among males, Kaposi sarcoma was the most common at 50.7%, followed by esophageal cancer (16.9%), non-Hodgkin lymphoma (7.8%), prostate cancer (4.0%), and urinary bladder cancer (3.7%) (5).

¹ Corresponding author:

Abdulhafiz Rahmati, Department Behavioral Sciences and Health Education, Kabul university of medical sciences “Abu Ali Ibn Sina”, Kabul-Afghanistan.

Email:abdu1hafiz.rahmati@gmail.com

The latest WHO Afghanistan country profile report revealed 19,450 documented cases of cancer and 14,746 cancer-related fatalities in 2018. This report identified breast, stomach, lip/oral cavity, esophagus, and lung cancers as having the highest incidence rates, mirroring the trends in cancer-related deaths. Due to a scarcity of studies on cancer epidemiology and risk factors in Afghanistan, WHO reports stand as the primary dependable source for such data in the country (6). Furthermore, a study conducted in a hospital-based in Kabul-Afghanistan findings indicates that out of the 1025 patients with complete documentation, 403 (39.3%) were male, and 622 (60.7%) were female. The majority of patients fell within the age range of 20 to 70 years old. Among women, breast cancer was the most prevalent at 45.8%, followed by oesophageal cancer (12.5%), colorectal cancer (4.8%), Non-Hodgkin Lymphoma (4.7%), sarcoma (4.7%), ovarian cancer (3.8%), and both stomach and liver cancers (2.6%), with cervix uteri cancer being the least common at 1.9%. Conversely, among men, esophageal cancer had the highest incidence at 21.8%, followed by stomach cancer (12.2%), Non-Hodgkin Lymphoma (9.4%), sarcoma (8.9%), gastroesophageal junction cancer (8.9%), colorectal cancer (8.6%), Hodgkin lymphoma (4.7%), testicular cancer (4.2%), liver cancer (3.2%), lung cancer (2.7%), and Nonmelanoma skin squamous cell carcinoma (2.2%) (7). This study aims to examine the prevalence of various cancer types diagnosed within the oncology department of Jamhuriat Hospital.

2. Methods and Materials:

In Table 1, the data indicates that the majority of patients were female, comprising 62.2% of the total, while males represented 37.8%.

Table 1: Percentage and number of diagnoses of cancer patients according to gender

Gender	Numbers	Percentage %
Female	1867	62.2%
Male	1134	37.8%
Total	3001	100%

Table 2 presents the age categories of patients divided into five groups. The largest group was comprised of individuals aged 39 to 57 years, accounting for 46% of the total. This was followed by those aged 20 to 38 years (24.1%), 58 to 76 years (22.4%), 1 to 19 years (6.7%), and 77 to 95 years (0.8%).

Age categories	Numbers	Percentages
1-19	201	6.7%
20-38	723	24.1%
39-57	1381	46.0%
58-76	672	22.4%
77-95	24	0.8%
Total	3001	100%

Table 2: Cancer patients age categories.

Numbers	Ethnic	Percentage %
Pashtun	1272	42.4%
Tajik	1050	35%
Hazara	309	10.3%
Uzbek	214	7.1%
Others	156	5.2%
Total	3001	100%

Table 3: Percentage and number of cancer patients according to ethnicity; based on ethnicity, the majority of patients were Pashtuns, making up 42.4% of the total. This was followed by Tajiks at 35%, Hazaras at 10.3%, Uzbeks at 7.1%, and individuals from other ethnic groups at 5.2%.

This is a descriptive cross-sectional study that utilized patient medical records from the oncology ward of Jamhuriat Hospital between March 2022 and September 2023. Jamhuriat Hospital, located in Kabul-Afghanistan, functions as both a public and referral hospital, which has a major diagnostic oncology department. A significant number of patients are referred from across Afghanistan to receive cancer treatment and other medical services here. The patient files included demographic information, types of diagnosed cancers, current illnesses, physical examinations, and other relevant details. We analyzed variables such as age, gender, ethnicity, place of residence, and final diagnosis from these records. During the specified period, a total of 33,100 patients visited the hospital, of which 3,001 were diagnosed with cancer and subsequently admitted, recorded, and registered. To enhance the study's outcomes, we included all diagnosed cancer patients. Data were entered and coded using CSPRO and MS Excel, with age categorized into five groups, and the variables were analyzed descriptively using SPSS version 27.

3. Results

Prevalence for cancers of 3001 diagnosed patients from 33100 individuals who visited the hospital from March 2022 to September 2023 is 9.06%

$$\text{Prevalence: } 3001/33100 * 100 = 9.06\%.$$

Following is the descriptive analysis of 3001 patients who were diagnosed with cancers:

The data in Table 4 outlines the types of cancers diagnosed in patients of both genders, with esophageal cancer being the most common, accounting for 22.5%. This was followed by breast cancer at 12.9%, stomach cancer at 9.6%, and colorectal cancer at 7.6%. Other significant cancers included those of the gastroesophageal junction (7.3%), uterus and cervix (4.1%), liver (4.1%), head and neck (3.8%), sarcoma (3.3%), pelvic cancers (2.7%), ovarian cancer (2.5%), testicular cancer (2.3%), non-Hodgkin lymphoma (1.9%), gallbladder cancer (1.9%), Hodgkin lymphoma (1.8%), skin melanoma (1.8%), kidney cancer (1.6%), lung cancer (1.5%), and urinary bladder cancer (1.1%).

Cancer types	Numbers	Percentage %
Esophagus	675	22.5%
Breast	387	12.9%
Stomach	288	9.6%
Colorectal	228	7.6%
Gastro-oesophageal junction	219	7.3%
Other types	171	5.7%
Uterus and cervix	123	4.1%
Liver	123	4.1%
Head and neck	114	3.8%
Sarcoma	99	3.3%
Pelvic	81	2.7%
Ovary	75	2.5%
Testes	69	2.3%
Non-Hodgkin lymphoma	57	1.9%
Gallbladder	57	1.9%
Hodgkin lymphoma	54	1.8%
Skin melanoma	54	1.8%
Kidney	48	1.6%
Lung	45	1.5%
Urinary bladder	34	1.1%
Total	3001	100

Table 4: Distribution of cancer types by percentage and number among patients of both genders.

Table 5 shows that the most common cancers among male patients were esophageal cancer, accounting for 26.5%, followed by stomach cancer at 12.1%, colorectal cancer at 9.4%, and gastroesophageal junction cancer at 8.5%. Additionally, testicular cancer was noted at 6%, liver cancer at 5.1%, head and neck cancers at 4.1%, and sarcoma at 4.1%. Other cancers included non-Hodgkin lymphoma (2.8%), pelvic cancers (2.7%), skin melanoma (2.7%), Hodgkin lymphoma (2.6%), lung cancer (2%), gallbladder cancer (1.6%), kidney cancer (1.2%), and urinary bladder cancer (1.1%).

Table 5: Distribution of cancer types by percentage and number among male patients.

Cancer type	Numbers	Percentage %
Esophagus	301	26.5%
Stomach	137	12.1%
Colorectal	107	9.4%
Gastroesophageal junction	96	8.5%
Other types	83	7.3%
Testicles	68	6%

Liver	58	5.1%
Head and neck	46	4.1%
Sarcoma	46	4.1%
Non-Hodgkin lymphoma	32	2.8%
Pelvic	31	2.7%
Skin melanoma	31	2.7%
Hodgkin lymphoma	30	2.6%
Lung	23	2%
Gallbladder	19	1.6%
Kidney	14	1.2%
Urinary bladder	13	1.1%
Total	1134	100%

The findings in Table 6 indicate that the most prevalent cancers among females were breast cancer at 20.7% and esophageal cancer at 20.1%. This was followed by stomach cancer at 8.1%, uterine and cervical cancers at 6.7%, gastroesophageal junction cancer at 6.6%, and colorectal cancer at 6.5%. Other significant cancers included ovarian cancer at 4%, head and neck cancers at 3.6%, liver cancer at 3.4%, sarcoma at 2.9%, pelvic cancers at 2.7%, gallbladder cancer at 2.1%, kidney cancer at 1.8%, non-Hodgkin lymphoma at 1.4%, Hodgkin lymphoma at 1.3%, skin melanoma at 1.2%, lung cancer at 1.1%, and urinary bladder cancer at 1.1%.

Cancer types	Numbers	Percentage %
Breast	386	20.7%
Esophagus	375	20.1%
Stomach	151	8.1%
Uterus and cervix	125	6.7%
Gastroesophageal junction	123	6.6%
Colorectal	121	6.5%
Other types	88	4.7%
Ovaries	75	4%
Head and neck	67	3.6%
Liver	63	3.4%
Sarcoma	54	2.9%
Pelvic	50	2.7%
Gallbladder	39	2.1%
Kidney	34	1.8%
Non-Hodgkin lymphoma	26	1.4%
Hodgkin lymphoma	24	1.3%
Skin melanoma	22	1.2%
Lung	21	1.1%
Urinary bladder	21	1.1%
Total	1867	100%

Table 6: Percentage and number of cancers among female patients.

Table 7 presents the residence distribution of patients across all provinces in the seven zones of Afghanistan. The majority of patients lived in the central zone, accounting for 38.8%, followed by the northeast at 16.3%, southeast at 11.8%, north at 10.6%, east at 9.3%, south at 8.6%, and west at 4.6%.

Zones	Provinces	Numbers	Percentage %
Central	Kabul • Parwan • Kapisa • Panjsher • Wardak • Logar • Bamyan , Daikundi	1164	38.8%
North	Samangan • Balkh • Saripul • Juzjan • Faryab	318	10.6%
East	Nangarhar • Laghman • Kunar • Nuristan	278	9.3%
West	Herat • Farah • Nimruz • Badghis • Ghor	137	4.6%
South	Zabil • Kandahar • Urozgan • Helmand	258	8.6%
Northeast	Badakhshan • Kunduz • Takhar • Baghlan	489	16.3%
South east	Ghazni • Paktia • Paktika, Khost	357	11.8%
Total	34	3001	100%

Table 7: Place of residence of the patients in seven zones all over Afghanistan.

4. Discussion

The current study was conducted in a major referral oncology center in Afghanistan and consists of 3001 patients and this maybe an estimation of

the whole country. Cancers types that diagnosis in both sexes were esophagus cancer 22.5% followed by breast cancer 12.9%, stomach cancer 9.6%, colorectal 7.6%, gastroesophageal junction 7.3%, uterus and cervix

4.1%, liver 4.1%, head and neck 3.8%, sarcoma 3.3%, pelvic 2.7%, ovary 2.5%, testes 2.3%, non-Hodgkin lymphoma 1.9%, gallbladder 1.9%, Hodgkin lymphoma 1.8%, Skin melanoma 1.8%, kidney 1.6%, lung 1.5%, urinary bladder 1.1%.

In males, the major cases were esophagus cancer 26.5%, stomach 12.1%, colorectal 9.4%, gastroesophageal junction 8.5%, testes 6%, liver 5.1. In females, major cases of cancers were breast cancer 20.7% and esophagus cancer 20.1% followed by stomach 8.1%, uterus, and cervix 6.7%, gastroesophageal junction 6.6%, colorectal 6.5%, ovaries 4%.

A similar study conducted 3 years before the present study in Kabul Jamhoryat Hospital found were as follow the most common cancer was breast cancer (28.0%), after that oesophageal cancer (16.2%), Non-Hodgkin Lymphoma (6.5%), colorectal and sarcoma (6. 3%).In the present study most prevalent cancer was esophagus.

The most reported cancers in men were esophagus (21.8%), stomach (12.2%), and non-Hodgkin lymphoma (9. 4%).In current study on male esophagus and stomach cancer is consistent with that study.

In women, the most common cancers were breast cancer (45.8%), followed by esophagus (12.5%), colorectal (4.8%), sarcoma (4.7%), Non-Hodgkin Lymphoma (4.7%), ovary (3.8%), both stomach and liver (2.6%) (7).In the present study breast and esophagus cancers are consistent and stomach was higher than in the previous study.

Additionally, a study finding on histopathological patterns in Kabul Fmic hospital among 2328 cases the breast cancer in females was 29.5%, and in men esophagus cancer 16.3% as the primary site origin for malignant tumors (8). This study is consistent with the present study with a higher rate of breast cancer in females and esophagus cancer in males.

Furthermore, another study in Pakistan showed that the most prevalent cancers were breast in females, lip and oral cavity, lung, non-Hodgkin lymphoma, and colorectum (4).In the present study breast cancer is consistent but other types of cancers are less common in Afghanistan than Pakistan.

Moreover, another study in Iran showed the most common cancers of Iranian men were skin, stomach, bladder, prostate, and colorectal cancers. For Iranian women, the most common cancers were breast, skin, colorectal, stomach, and esophagus cancers, respectively (3).In the present study, stomach cancer is consistent but other types of cancers in males in Afghanistan are less common than in Iran, in females breast cancer, stomach, and esophagus are consistent as in Iran but skin, and colorectal are less common in Afghanistan.

Furthermore, another study in India showed out of the 1003 cases, the leading cancer site was the breast, followed by colon and rectum, lymph node, and stomach. The leading cancer sites for men were the colon and rectum and for women were breast (9).In the present study colon and rectum in men are not as common as in India but breast cancer in females is consistently higher than here. Breast cancer was the most common cancer among females; both in Afghanistan and worldwide (10). Recent studies have reported that lifestyle is an important predisposing factor for cancers such as; Afghans drinking lots of hot tea, which is a known risk factor for oesophageal cancer (11). The present study was conducted in a public hospital among admitted patients in Kabul, and its findings may not accurately represent the situation across the entire country.

5. Conclusion

Overall, the present study revealed that cancer was more prevalent among women than men. The most prevalent cancers among Afghan males were esophageal, stomach, colorectal, gastroesophageal junction, testicular, and liver cancers. In Afghan females, the most frequently observed cancers were breast, esophagus, stomach, uterine and cervical cancers, gastroesophageal

junction, colorectal, ovaries, and liver cancers. Most patients fell within the middle-aged group. There is a need for greater awareness of cancer and its prevention among everyone.

Ethical consideration: This study is conducted anonymously and poses no risk of harm or identification to any patients. Permission has been obtained from the hospital director to extract data from hospital registers and records. It has been ethically approved by the research committees at Kabul University of Medical Sciences.

Conflict of interest: The authors declare no conflict of interest.

Authors' contributions: Conceptualization, manuscript writing, and correction of analysis are done by Abdulhafiz Rahmati, correction of the whole manuscript is performed by Ahmad Wali Ataye, and data collection and analysis are done by Wakill Ahmad Wadan. All authors participated in the analysis of data and reviewed and approved the manuscript

References

1. Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, Bray F. Global cancer statistics 2020: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. *CA: a cancer journal for clinicians*. 2021 May;71(3):209-49.
2. Ferlay J, Ervik M, Lam F, Colombet M, Mery L, Piñeros M, Znaor A, Soerjomataram I, Bray F. Global cancer observatory: cancer today. Lyon: International agency for research on cancer. 2020 Nov 25;20182020
3. Danaei M, Haghdoost A, Momeni M. An epidemiological review of common cancers in Iran; a review article. *Iranian Journal of Blood and Cancer*. 2019 Sep 30;11(3):77-84.
4. Sarwar MR, Saqib A. Cancer prevalence, incidence and mortality rates in Pakistan in 2012. *Cogent Medicine*. 2017 Jan 1;4(1):1288773.
5. Msyamboza KP, Dzamalala C, Mdokwe C, Kamiza S, Lemerani M, Dzowela T, Kathiyola D. Burden of cancer in Malawi; common types, incidence and trends: national population-based cancer registry. *BMC research notes*. 2012 Dec;5:1-8.
6. Shayan NA, Rahimi A, Özcebe H. Cancer prevalence, incidence, and mortality rates in Afghanistan in 2020: A review study. *Cancer Reports*. 2023 Sep;6(9):e1873.
7. Joya M, Stanikzai Z, Akbarzadeh I, Babalou S, Bradley DA, Jafari SM. Prevalence of cancers diagnosed in jamhuriyat hospital, Kabul, Afghanistan. *Heliyon*. 2020 Mar 1;6(3).
8. Malakzai HA, Haidary AM, Gulzar S, Haidari M, Ibrahimkhil AS, Saadaat R, Hakimi A, Sadat Hofiani SM, Rahmani S, Abdul-Ghafar J. Prevalence, distribution, and histopathological features of malignant tumors reported at tertiary level in Afghanistan: a 3-year study. *Cancer Management and Research*. 2022 Jan 1:2569-82.
9. Cherian T, Mahadevan P, Chandramathi S, Govindan J, Mathew IL. Increasing cancer incidence in a tertiary care hospital in a developing country, India. *Indian Journal of Cancer*. 2015 Jan 1;52(1):133-8.
10. Jemal A, Siegel R, Ward E, Hao Y, Xu J, Thun MJ. Cancer statistics, 2009. *CA: a cancer journal for clinicians*. 2009 Jul;59(4):225-49.
11. Chen, Y., Tong, Y., Yang, C. *et al.* Consumption of hot beverages and foods and the risk of esophageal cancer: a meta-analysis of observational studies. *BMC Cancer* **15**, 449 (2015). <https://doi.org/10.1186/s12885-015-1185-1>

