Received: 15 May 2026 | **Revised:** 16 May 2026 | **Accepted:** 1 Jun 2026 | **Published:** 30 Jun 2026

DOI: 10.29409/zeze0408

OPEN ACCESS

P ISSN: 2078 - 6123
E ISSN: 2313 - 5379

Iraqi Journal of Cancer and Medical Genetics

Cancer Research

Short Communication

Cardiovascular disease and risk factors in Iraqi cancer patients: a cross-sectional study

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Abstract

Background: Cardiovascular diseases and cancer are major causes of mortality worldwide. Comorbidities among cancer patients significantly influence prognosis and quality of life. These comorbidities, including cardiovascular disease, may result from underlying pathology similar to that of noncancer patients, chemotherapy, or direct tumor extension. Our study aims to estimate the burden of cardiovascular diseases among cancer patients in our community.

Methods: This was an observational cross-sectional study conducted at Basra Oncology Center and Basra Hematology Center. In this study, adult patients with different types of cancer, including solid and hematological malignancies, were included. The investigators extracted data from the medical records of the patients, including demographic data, past medical history, cancer type and stage, type of treatment (chemotherapy or radiotherapy), and history of cardiovascular diseases (ischemic heart disease, heart failure, valvular heart disease, pericardial disease, deep vein thrombosis, pulmonary embolism, cerebrovascular accidents, hypertension, hyperlipidemia, and diabetes mellitus).

Results: We randomly enrolled 250 adult patients, including 173 females (average age 53.4 years, range 2087-). Breast cancer was the most common type, followed by gastrointestinal, genitourinary, lung, hematological, and brain tumors. Among the 250 patients, 51 (20.4%) had cardiovascular diseases, with ischemic heart disease being the most frequent, followed by venous thromboembolism, deep vein thrombosis, arrhythmia, heart failure, and valvular diseases. Additionally, 207 patients (82.8%) had cardiovascular risk factors, with hypertension being the most prevalent risk factor.

Conclusion: The burden of cardiovascular disease and risk factors significantly present across all types of cancer. Early diagnosis and management of cardiovascular disease in cancer patients are needed to improve prognosis.

Keywords
cardiovascular diseases, cancer, myocardial infarction, angina, hypertension, diabetes mellitus, frequency, incidence

How to Cite:
Firas R. AL-Obaidi, Loma AL-Mansouri, Baraa AL-Asadi, Shuruq AL-Dahash, Nabaa AL-Khafaji, Fitouh AL-Mahzam, Tabark AL-Asadi, & Anfal AL-Azzawi. (2026). Cardiovascular disease and risk factors in Iraqi cancer patients: a cross-sectional study. Iraqi Journal of Cancer and Medical Genetics, 19(1). https://doi.org/10.29409/zeze0408

Introduction

The major causes of death globally are cardiovascular disease (17.9 million/year) and cancer (8.8 million/year). (1) The survival of cancer patients has improved in recent years with advances in treatment. However, prolonged survival is associated with comorbidities that significantly affect prognosis and quality of life for both those with active cancer and survivors. (2) The major comorbidity is cardiovascular disease, which may arise from pathological mechanisms similar to those in noncancer patients or may result directly from cancer treatments, such as chemotherapy-induced cardiotoxicity. (3) Less commonly, cardiovascular complications arise from direct tumor extension, whereas primary cardiovascular tumors are rare.

The incidence of cardiovascular disease varies according to cancer type, with lung cancer and hematological malignancies having the highest prevalence and breast cancer having the lowest. (4)

The most common cardiovascular comorbidities in cancer patients include hypertension, heart failure, coronary artery disease, deep venous thrombosis, and pulmonary embolism (5,6). Cancer patients are at high risk for venous thromboembolic events, with at least a twofold increase in risk soon after diagnosis (7). Left ventricular dysfunction is a serious cardiac complication and is seen more often in men with hematological malignancies and in women with breast cancer. The main types of cancer treatments that cause left ventricular dysfunction are chemotherapy, such as anthracycline, targeted therapies, such as trastuzumab, and radiotherapy. (8,9) The long-term survival of cancer patients is significantly reduced in the presence of cardiovascular comorbidities. (10)

The aim of this study was to evaluate the burden of cardiovascular diseases among cancer patients in Basra city.

Methods

This was an observational cross-sectional study conducted at Basra Oncology Center and Basra Hematology Center. In this study, adult patients with different types of cancer, including solid and hematological malignancies, were included. The investigators extracted data from direct interviews of the patients and their medical records, including demographic data, past medical history, cancer type and stage, type of treatment (chemotherapy or radiotherapy), and history of cardiovascular diseases (ischemic heart disease, heart failure, valvular heart diseases, pericardial diseases, deep vein thrombosis, pulmonary embolism, cerebrovascular accidents, hypertension, hyperlipidemia, and diabetes mellitus). The diagnosis of cardiovascular disease or risk factors was based on previous diagnoses reported by cardiologists or physicians and documented in patients' medical reports and previous investigations.

The study was approved by the ethical committee of the Basra Health Directorate, and informed consent was obtained from all participants. The IRB number is m 0039.

Statistical analysis:

No statistical analyses were performed in this study, as the primary objective was to present descriptive data. In addition, the validity of cancer subgroup comparisons was limited because several cancer subgroups with relatively small numbers of patients were included. The data are presented as numbers and percentages and were analyzed using SPSS 21.

Results

The study randomly enrolled 250 adult patients with different types of cancer, of whom 173 (69.2%) were female. The mean age was 53.4 years (range 20-87 years).

The types of cancer were breast cancer in 88 patients (35.2%), gastrointestinal cancer in 40 patients (16%), genitourinary tumors in 40 patients (16%), lung cancer in 29 patients (11.6%), hematological malignancies in 27 patients (10.8%), brain tumors in 9 patients (3.6%), sarcoma in 6 patients (2.4%), thyroid tumors in 4 patients (1.6%), metastatic tumors in 3 patients (1.2%), head and neck tumors in 3 patients (1.2%), and endocrine tumors in 1 patient (0.4%), as shown in Table 1 and Fig. 1.

Overall, 51 patients (20.4%) had cardiovascular diseases, including ischemic heart diseases in 23 patients (9.2%), venous thromboembolic diseases in 8 patients (3.2%) (pulmonary embolism in 3 (1.2%) and deep vein thrombosis in 5 (2%)), arrhythmias in 8 (3.2%), heart failure in 4 (1.6%), cerebrovascular accidents in 4 (1.6%), and valvular heart diseases in 4 (1.6%). Table-2

Cardiovascular risk factors were present in 207 patients (82.8%). The specific frequencies were hypertension in 95 patients (38%), diabetes in 78 (31.2%), and hyperlipidemia in 34 (13.6%), as shown in Figure 2.

Among the patients with breast cancer, 6 had cardiovascular disease (6.8%), 4 had arrhythmias (4.5%), 2 had heart failure (2.2%), 2 had CVA (2.2%), and 1 had valvular heart disease (1.1%). The cardiovascular risk factors were hypertension in 34 patients (38.6%), diabetes mellitus in 31 patients (35.2%), and hyperlipidemia in 11 patients (12.5%).

Table 1: Distribution of cancer types among the study population (n = 250)

Types of Cancer	N	%
Breast Cancer	88	35.2%
Gastro-intestinal Cancers	40	16.0%
Colorectal Cancer -	18	6.4%
Hepatobiliary Tumors -	5	2.0%
Gastro-esophageal and Intestinal Tumors -	8	3.2%
Pancreatic Cancer -	6	2.4%
Cholangiocarcinoma -	3	1.2%
Genitourinary Tumors	40	16.0%
Prostatic Cancer -	7	2.8%
Testicular Tumor -	1	0.4%
Uterine Cancer -	11	4.4%
Ovarian Cancer -	13	5.2%
Renal Cancer -	5	2.0%
Bladder Cancer -	3	1.2%
Lung Cancer	29	11.6%
Hematological Malignancies	27	10.8%
Lymphoma -	19	7.6%
Leukemia -	8	3.2%
Brain Tumors	9	3.6%
Sarcoma	6	2.4%
Thyroid Tumors	4	1.6%
Metastatic Tumors	3	1.2%
Head and Neck Tumors	3	1.2%
Endocrine Tumor	1	0.4%

Table 2: Distribution of cardiovascular diseases and cardiovascular risk factors among cancer patients

Cardiovascular Diseases	N	%
Ischemic Heart Diseases	23	9.2%
Venous Thromboembolic Diseases	8	3.2%
Pulmonary Embolism -	3	1.2%
DVT -	5	2.0%
Arrhythmias	8	3.2%
Heart Failure	4	1.6%
CVA	4	1.6%
Valvular Heart Diseases	4	1.6%
Total	51	20.4%

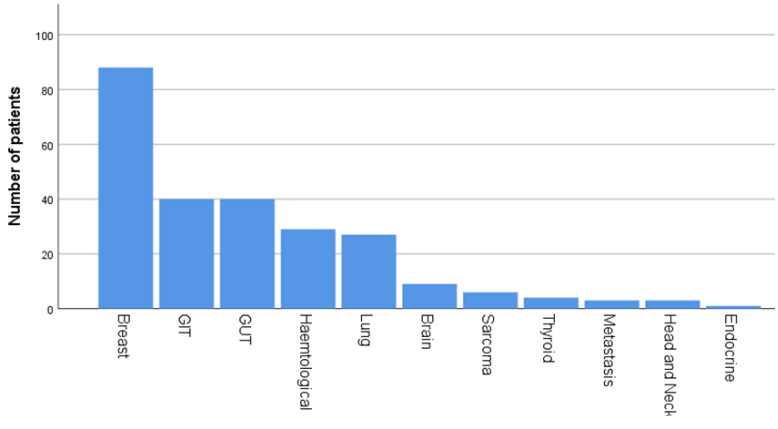

Figure 1: Distribution of cancer types among the study population (n = 250)

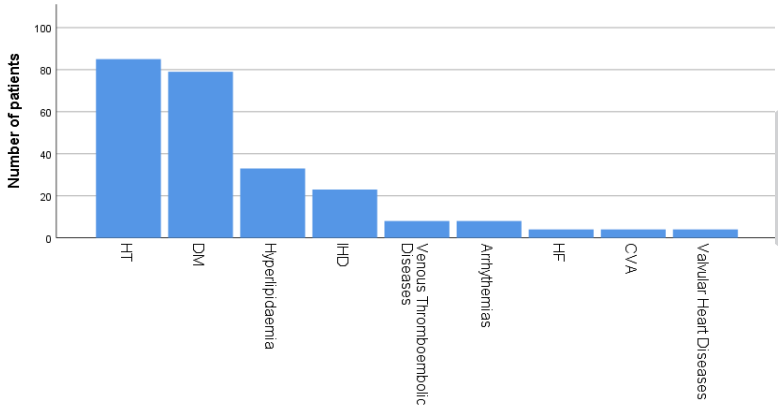

Figure 2: Distribution of cardiovascular diseases and cardiovascular risk factors among cancer patients

Discussion

The evaluation of cardiovascular disease and cardiovascular risk factors is important in active cancer patients and in survivors of malignancies. Our study involved different types of cancer, with breast cancer representing one-third of patients. Other major types of cancer were GIT cancers, genitourinary cancers, and hematological malignancies.

The frequency of cardiovascular disease was very high in our study (20.4%), and that of cardiovascular risk factors was 82.8%. Our results are higher than those reported in previous studies. In a Chinese study, the prevalence of cardiovascular disease was 5%, and that of risk factors was 13%. (11)

The reported cardiovascular disease in our study was mainly ischemic heart disease (9.2%). Other less common types of cardiac disease included thromboembolic disease and arrhythmias (3.2% for each) and heart failure, CVA, and cardiac valve disease (1.6% for each).

A large population-based study reported the prevalence of congestive heart failure (9.7%), cerebrovascular accidents (6%), and diabetes mellitus (16%) among selected types of cancer. (12) Another study reported that the prevalence of heart failure ranged from 1.4–2.1% among patients with different types of cancer. (13)

In our patient population, hypertension (38%) was the most common cardiovascular risk factor. The prevalence of hypertension was higher in a previous study, reaching 56.8%. (14%)

The prevalence of diabetes mellitus was high; 31.2% of patients had diabetes mellitus, and approximately one-third of them had breast cancer.

In patients with breast cancer, the prevalence of cardiovascular disease is high; approximately 25% of cases of ischemic heart disease, 50% of cases of heart failure, and CVA have been reported in patients with this disease. A large French study of more than 1.7 million patients and a 5-year follow-up reported coronary artery disease in 2.4% of patients with breast cancer. The incidence of heart failure was 2.7%, and that of ischemic stroke was 0.53%. (15).

The limitations of our study are the small sample size, cross-sectional study design, heterogeneity of cancer patients, missing data, and descriptive statistics with no correlation or association assessment. These limitations affect the generalizability of the results.

The cancer stage and details of cancer treatment were not reported because of missing data for a significant number of patients. The prevalence of cardiovascular disease may have been underestimated because asymptomatic or previously undiagnosed cardiovascular conditions were not systematically screened during the study. We recommend that future studies be conducted with prospective designs and larger sample sizes. Studies need to assess patients with different types of cancer separately and evaluate the

effects of cancer treatment on the cardiovascular system with long-term follow-up.

Conclusion:

The burden of cardiovascular disease and risk factors is significant across all types of cancer. Early diagnosis and management of cardiovascular disease in cancer patients are needed to improve prognosis.

Author Declarations

Funding Statement

This research received no external funding. The authors confirm that no financial support was obtained from any governmental agency, commercial entity, private organization, or not-for-profit institution for the conduct, analysis, preparation, or publication of this study.

Conflict of Interest Statement

The authors declare no conflicts of interest, including financial, personal, professional, academic, or institutional relationships that could have influenced the work reported in this manuscript.

Ethics Statement

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was obtained from the Ethics Committee of the Basra Health Directorate, Basra, Iraq (IRB No. 0039). Written informed consent was obtained from all participants prior to enrollment in the study.

Consent for Publication

All authors have reviewed and approved the final version of the manuscript and consent to its publication in the Iraqi Journal for Cancer and Medical Genetics.

Data Availability Statement

The data supporting the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available due to privacy and confidentiality considerations related to patient information.

Author Contributions

All authors contributed substantially to the work, reviewed the manuscript critically for important intellectual content, approved the final version, and agreed to be accountable for all aspects of the study.

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