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Patient history of cancer in primary care: a closer look among cancer survivors with chronic conditions in federally qualified health centers

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Abstract

Purpose The prevalence of cancer among patients accessing primary care in federally qualified health centers (FQHCs) is poorly characterized. A patient's history of cancer in addition to common chronic conditions makes providing comprehensive primary care more complex, especially for patients accessing care at FQHCs who often face additional social and economic barriers to care.

Methods Trained auditors conducted a comprehensive electronic medical record audit using a standardized abstraction form to identify cancer history in patients aged ≥ 40 years with two common chronic conditions (diabetes and/or hypertension) and who had at least one visit to an FQHC between January 1 and December 31, 2019. Descriptive statistics were performed.

Results Among 712 adult patients with diabetes and/or hypertension, 46 (6.46%) had a documented history of cancer. For the majority of cancer patients (67.4%), cancer information was documented in the "Problem List" section of their medical record.

Conclusion Our study revealed a higher prevalence of cancer in FQHC primary care records than previously reported. Future research should examine whether readily accessible cancer history information in primary care records could enhance comprehensive care delivery for all chronic conditions, including cancer.

Keywords Cancer survivorship, Primary care, Cancer history, Federally qualified health center

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Introduction

Every day, primary care clinicians are likely to see a cancer survivor in their office given one in two men and one in three women in the United States are diagnosed with cancer during their lifetime [1]. Yet the prevalence of cancer for patients seen in primary care clinics is poorly characterized and underestimated because of inconsistent documentation in electronic medical records (EMRs) [2, 3]. The number of cancer survivors in the United States will rise to approximately 22 million by 2032, primarily due to increased cancer screening, enhanced screening methods and advances in cancer treatment [4, 5]. Approximately two-thirds of cancer survivors also have at least one additional chronic condition, while nearly half are living with multiple chronic conditions [6]. With longer survival and the likely increase in comorbidities associated with aging, the role of primary care health systems in optimizing chronic disease care, providing cancer survivorship care (i.e., screening for subsequent cancers and cardiac disease), and supporting reduction of modifiable risks (i.e., smoking, alcohol use, obesity) becomes crucial [7, 8].

Challenges to delivering comprehensive care for cancer and chronic conditions are exacerbated for under- and uninsured patients, who also experience additional social determinants that adversely impact their health [9]. In the United States, federally qualified health centers (FQHCs) play a critical role in providing comprehensive primary care to vulnerable communities [10]. To plan and deliver adequate care for these cancer survivors, FQHCs must know, at a minimum, the cancer prevalence among their patient panels. Unfortunately, after completion of initial cancer treatment, the transition of cancer survivors from oncology practices back to primary care is often disrupted and highly fragmented [11]. During this transition, cancer history and treatment information is challenging to access, even within the same healthcare system [12]. Given that diabetes and hypertension are the most prevalent chronic conditions among cancer survivors (15 and 40% respectively) [6], the goal of this study is to ascertain the prevalence of cancer among FQHC patients with diabetes and/or hypertension [13].

Methods

Study population

Our study was conducted in a Dallas, Texas-based FQHC system of two clinics that provides access to affordable and comprehensive medical, dental, and behavioral health services, regardless of the ability to pay, and serves populations in designated medically underserved areas. The combined patient population of both clinics includes an estimated 7,000 patients at or below the poverty level, approximately half are uninsured, or on government insurance, specifically Medicare or Medicaid. Given the clinical significance of diabetes and hypertension among cancer and underserved patients, we restricted our sampling frame to include individuals who had documented diagnoses of these conditions using ICD-10-CM codes that adhere to the reporting requirements of the Uniform Data Systems (UDS). Those who visited the FQHC at least once between January 1, 2019, and December 31, 2019, were included in the study. A FQHC staff member experienced in querying their EMR generated a sampling frame of patients who met the eligibility criteria.

Medical record audit

A comprehensive medical record audit template was created by a research team comprised of primary care clinicians, an epidemiologist, and medical students. Record auditors then received comprehensive training in systematic EMR navigation and applied this knowledge to the Athena EMR system used by the FQHC. Auditors used a standardized medical record abstraction template that incorporated a protocol for navigating the EMR, including looking at all tabs within the EMR (problem list, past medical history, labs, results) and utilizing the "find" function. Cancer history was identified by reviewing progress notes along with the chart's "problems," "history," "results," and "find" tabs to explore cancer-related complications, surgical history, cancer screening results, labs, and clinical documentation. Additionally, we searched the medical record for keywords such as "oncology," "pathology," "colonoscopy," and "mammogram" to identify potential cancer cases. A primary care physician (RE) then reviewed potential cancer cases to confirm actual documentation indicating cancer history. We also abstracted information on age, body mass index [BMI], sex, race, ethnicity, insurance status, comorbidity type, morbid obesity, and number and type of chronic conditions. All data were abstracted and manually recorded into data reporting sheets that accompanied the project codebook. Auditors worked in teams of two for data quality assurance.

Statistical analysis

Descriptive statistics were used to describe the study sample and prevalence of cancer history was calculated. Demographic characteristics were compared for patients with and without cancer. We also used frequency measures (%) to describe where cancer was documented in the patient's medical record. Analyses were performed using R Statistical Software (v4.2.1; R Core Team 2021).

Results

As shown in Table 1, a total of 712 patients (mean age [SD] = 60.3 [9.87] years) met study eligibility criteria, see Fig. 1. Approximately half were insured by Medicaid (22.3%) or Medicare (32.7%) as primary health insurance.

Table 1 Descriptive summary of diabetic and/or hypertensive patients accessing care at study FQHC system between January 1, 2019, and December 31, 2019 (*N* = 712)

	***N* (%)**
Age, years (mean [SD])	60.3 ± 9.87
[1]BMI (mean [SD])	34.1 ± 9.23
Sex	
Female	459 (64.5)
Male	253 (35.5)
Race and ethnicity	
Black, non-Hispanic	465 (65.3)
Hispanic	161 (22.6)
White, non-Hispanic	78 (10.8)
Other, non-Hispanic	9 (1.3)
Primary insurance	
Medicare	233 (32.7)
Medicaid	159 (22.3)
Other Insurance	230 (32.3)
Private	90 (12.6)
Chronic conditions	
Depression	158 (22.4)
Kidney Disease	121 (17.1)
Chronic Obstructive Pulmonary Disease (COPD)	85 (12.1)
Coronary Heart Disease	82 (11.6)
Asthma	75 (10.7)
[2]Number of chronic conditions	
1	81 (11.4)
2	273 (38.3)
3	223 (31.3)
4 or more	136 (19.1)

[1]13 observations for BMI were deleted due to missing height and/or weight measurements (*N* = 699). All 13 patients did not have a documented history of cancer

[2] Number of comorbidities includes the total number of target comorbidities diagnosed in the chart, excluding other chronic conditions

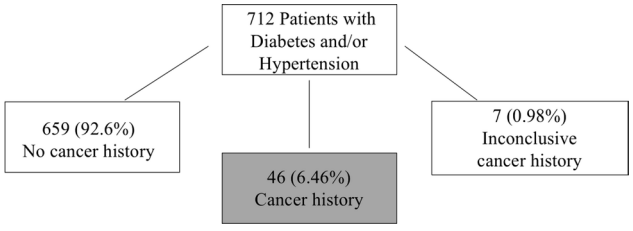

Fig. 1 Documented history of cancer among FQHC patients seen at least once between January 1, 2019, and December 31, 2019, aged ≥ 40 years with a documented history of diabetes and/or hypertension

Most patients were female (64.5%), non-Hispanic Black (65.5%), and half (50.4%) had other chronic conditions in addition to diabetes or hypertension. Depression (22.4%) was the most prevalent chronic condition observed of those with diabetes and/or hypertension.

The prevalence of cancer was 6.46% (*N* = 46) in this patient population. For the majority of cancer patients (67.4%), cancer information was documented in the "Problem List" section of their medical record, see Table 2. Cancer and non-cancer patient characteristics were similar, although cancer patients were on average older (mean age = 64.7, SD = 9.9) than non-cancer patients (mean age = 60.0, SD = 9.9). The most common cancers documented were colorectal cancer (19.6%), followed by breast cancer (17.4%). The remaining cancer cases (63.0%) comprised prostate, lung, ovarian, and blood cancers. Additionally, seven patients (1%) had records indicating evidence of possible cancer, but no documentation could be found to confirm the cancer diagnosis. For example, auditors were able to review a colonoscopy report with multiple polyps removed, but no pathology report was available in the patient's medical record to distinguish between benign or cancerous polyps.

Table 2 Location of documentation of history of cancer in the medical record among patients with diabetes and/or hypertension (*N* = 46)

Documented Location	***N***	**Percent (%)**
Problem List	31	67.39
[1]External Documents	7	15.22
Progress Notes	6	13.04
Health History	2	4.35

[1]External Documents: Clinical/medical records/laboratory documents, lab results, and records of care

Discussion

Our study found 6.46% of FQHC patients aged ≥ 40 years with diabetes and/or hypertension had a documented history of cancer, a higher prevalence than previously reported. While this is a relatively small study from two FQHC clinic sites, it is the first, to our knowledge, that has conducted rigorous medical record audits to calculate the prevalence of cancer in a FQHC patient panel.

Previous studies suggest that cancer prevalence may be underestimated in FQHC patient populations due to the lack of a standardized approach to documenting cancer in patients' EMRs. A descriptive study from a network of community health clinics (CHCs) across 19 states that ascertained data from discrete EMR fields found a 3% cancer prevalence [2]. A second study in the same network of CHCs linked three statewide cancer registries to EMR data and revealed nearly half of the cancer diagnoses in the cancer registries were not documented in the EMR [3]. Therefore, our methodology, which employs both discrete and free-text fields (e.g., laboratory results, imaging, and patient notes) to identify cancer information documented within the EMR, was needed to estimate the true prevalence in these safety-net provider systems.

As the life expectancy of cancer survivors continues to increase, it is imperative that primary care health systems are equipped to readily access patient information about cancer history and active cancer treatment to allow

clinicians the opportunity to make informed medical decisions and provide comprehensive and whole-person care [14]. However, providing high-quality survivorship care is not possible if cancer patients are lost in the transition from oncology to primary care due to incomplete documentation sharing between healthcare providers during and after cancer treatment [15]. Our study found that primary care clinicians documented cancer history most often in the EMR problem list, which can help researchers and clinicians know where to look in the medical record to determine cancer history and then to request complete information about cancer treatment history. National agencies, health systems, clinicians, and patient advocates recognize the importance of managing chronic conditions to administer whole-person care among cancer survivors [12, 16]. Therefore, improving the documentation of cancer history in primary care records is a critical first step for providing accurate information and facilitating appropriate care.

We acknowledge that the potential for more exhaustive investigation was limited by the absence of oncology treatment summary in all 46 of the cases we identified. If records included oncology treatment plans, searching by key treatment-related terms would elicit more cases. While we found a higher prevalence than previously reported, nonetheless, incomplete and inconsistent documentation of cancer in primary care records continues to be a challenge. Thus, the true cancer prevalence in FQHC patient panels is likely even higher.

The findings of our small, yet rigorously conducted study suggest that inconsistent documentation of cancer history in primary care records poses a critical but addressable barrier to optimize survivorship care. The majority of patients are seen in primary care for management of their chronic conditions [17] and because patients with cancer also have co-occurring chronic conditions, survivorship care delivery approaches that engage primary care hold significant promise in providing comprehensive and coordinated care [18, 19].

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Author contributions
R.E., Q.B, S.L, and B.B wrote the main manuscript text. Q.B. performed the analysis and prepared all tables and figures. V.G. M.M. and P.D. performed all data collection. All authors reviewed the manuscript.

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Data availability
The data that support the findings of this study are not openly available due to reasons of sensitivity.

Declarations

Ethics approval and consent to participate
The study procedures received approval from the institutional review board at University of Texas Southwestern Medical Center (# 2020 – 1164). Consent to Participate declaration *was* not applicable, this study had a waiver of consent.

Competing interests
The authors declare no competing interests.

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