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Dental Care Access for Low-Income and Immigrant Cancer Patients in New York City

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Abstract This exploratory study assesses the dental care needs and access of low-income, mostly immigrant cancer patients enrolled in New York City's Integrated Cancer Care Action Network (ICCAN). A nested cohort of patients from ICCAN responded to a dental needs assessment that surveyed current dental health as well as access to, and use of, dental services. 373 patients participated. Self-report of having a dentist to visit, current dental problems, income, and insurance most significantly predicted a dentist visit in the past year. Discussing treatment-related oral side effects with the oncologist greatly increased the likelihood of seeing a dentist, but few patients reported having had this conversation. There is a lack of oral care information flowing from oncologists to low income patients. We found a high number of reported dental problems: concerning because of potential treatment interference and risk for infection. Finally, ability to pay largely determined dental care access in our study participants.

Keywords Cancer · Immigrant · Oral health · Access to care · Low-income · Community health

Introduction

While American society is increasingly focused on providing better access to medical services, this same focus has not extended to dental care. Access is difficult for low-income patients, and especially low-income patients with chronic disease. Our study examines the oral healthcare access of low-income cancer patients in New York City: a population with added oral health vulnerability but reduced ability to receive this care.

The correlation between socioeconomic status and healthy teeth is striking. Poor children and adults receive significantly fewer dental services than the population as a whole [1], and people who live below the Federal Poverty Line (FPL) are less than half as likely to have visited a dentist in the past year as those who qualify as "high income" [2].

Lack of insurance is one factor that explains this disparity. 59 % of those with incomes below the FPL, and 51 % of those with incomes between 100 and 200 % of the FPL have no dental coverage [3]. While the Affordable Care Act requires dental insurance for children, it does not require adult dental coverage [4]. Medicaid does not automatically reimburse for adult dental care, and although some private dentists do accept Medicaid, it only covers limited dental services such as cleanings and X-rays [3].

While insurance is an important factor in determining the likelihood of visiting a dentist, lack of childcare, transportation, and limited employment also play a role [5]. In addition, dental health is associated with education level. According to the New York State Dental Health Plan, the percentage of people who have lost all their teeth is 7.4 % among those with greater than 12 years of education versus 37.2 % among those with <12 years of education [6].

Chronic medical problems in older adults, many of which make regular dental care even more important, tend to "crowd out" oral healthcare, even when the treatment is covered by insurance [7]. Medicare beneficiaries with worse health, and especially those with chronic illness, are less likely to see the dentist [8]. This may be because they treat

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other medical problems as a higher priority or because addressing those needs leaves too little time or energy [7] or financial resources to seek dental care. Also, Medicare does not necessarily cover routine dental services like fillings, cleanings, X-rays, and dentures [9].

All of these factors are compounded in the immigrant population, which may face legal, cultural, and language barriers to accessing care [10]. Chinese patients in New York reported more confusion at the dentist, and Hispanic and Chinese patients were less satisfied with their dental care overall than white patients [11]. In addition, dentists are the least diverse group of medical professionals [11]. Only 13 % of dentists are nonwhite, compared with 22 % of physicians and 29 % of the population [12].

For all cancer patients, and especially for immigrants and low-income individuals with cancer, regular dental visits are especially important. Despite this, little research has been done specifically on oral health care access for cancer patients.

Both chemotherapy and radiation therapy have potentially serious dental side effects. Full body radiation can cause mucositis, xerostomia, and dental caries [13]. Radiotherapy to the head and neck area may damage salivary glands, reducing saliva's ability to cleanse the oral cavity [14]. Chemotherapy side effects may include oral infection, dry mouth, and reduced taste perception [15].

These side effects may have secondary consequences, including limiting adequate food intake. Because of radiation- or chemotherapy-related immune compromise, oral lesions are an entry point for what may become a lethal infection. Oral candidiasis, common in patients receiving systemic chemotherapy or radiotherapy, may spread to the rest of the body as an opportunistic infection [16].

These oral side effects may be prevented or mitigated through pre-treatment "risk adapted" care and post-treatment follow-up [17]. Leukemia patients who received intensive dental care prior to treatment developed less severe and less painful oral complications [18]. Oral health protocols for head and neck cancer patients encourage periodontal charting, problem identification, and elimination of all sources of trauma and infection before treatment begins [19]. However, there are little data available on how often oncologists recommend this type of risk-adapted care or on the utilization of these services among an at-risk population.

This is an exploratory study that assesses the dental needs, knowledge, and barriers to care of low-income, mostly immigrant cancer patients enrolled in the Integrated Cancer Care Action Network in New York City.

Methods

This study is a nested cohort of patients enrolled in the Integrated Cancer Care Action Network (ICCAN) between June 2011 and July 2012. The dental survey was added to the ICCAN intake, which is administered in the patients' preferred language for health care. Patients who completed the dental survey were those who did not have to leave before the full ICCAN survey was completed because of time constraints, and who were not too sick to complete the entire assessment.

Trained, bilingual access workers facilitate the ICCAN program, which was developed in response to the unmet social needs of cancer patients in New York City's public hospitals. The ICCAN service is provided at no charge to patients. After completing the intake form, which includes demographic data, missed appointment reports, and a needs assessment, access workers provide ongoing assistance in the areas of identified need. This assistance may include advising patients on available financial aid and cancer support organizations, providing language assistance for patients with low literacy or limited English proficiency, addressing food insecurity, making referrals to social services and counseling, and guiding patients to housing and legal support [10].

The dental needs assessment used in this study was developed and added to the ICCAN intake form after anecdotal evidence indicated that many ICCAN patients wanted help with finding dental treatment or did not have insurance that covered dental services. Because the ICCAN intake is extensive, the dental needs assessment is brief to avoid patient fatigue. It has seven questions and takes about four minutes to complete.

- Do you have a dentist you can visit if you need to? If not, why not?
- When was the last time you visited a dentist?
- Did your oncologist talk with you about potential dental side effects of treatment?
- Have you experienced dental problems related to your treatment?
- Do you have any dental needs now? If so, please list.
- Would you like assistance with finding dental treatment?

The assessment also included an open-ended question about current dental problems. The responses to this question were coded based on category of problem: pain; loose or missing teeth; broken dentures; tooth decay; need for root canal, etc.

If a patient expressed interest in finding affordable care, the outreach worker provided him or her with a list of low-cost dental clinics.

The data were analyzed using SPSS to calculate both Chi square and likelihood ratios, as well as classification and regression trees [20]. The classification trees are run using the r(part) function in the R programming language. The r(part) technique identifies the variables that

are most useful in predicting a certain outcome. In this study, the trees were used to analyze which factors interacted with each other to predict dental care access. All reported *p*-values were calculated using Pearson's Chi square test.

Results

During the study period, three hundred and seventy-three patients were selected to complete the dental needs assessment out of a total of six hundred and sixty-two who were enrolled in ICCAN during the same period.

Participants were between the ages of 18 and 86, and were from a total of 44 countries. Nearly half or 43.4 % identified as Hispanic or Latino, 37.8 % identified as African American, and 5.6 % identified as White. ICCAN access facilitators conducted 44 % of surveys in a language other than English.

Several variables significantly predicted receipt of dental care in the 12 months prior to completing the survey: a time period chosen because dentists recommend that adults have a dental checkup at least once per year. The most significant predictor was whether or not the patient reported having a dentist to visit if needed ($p < 0.001$). We used a regression tree to determine how other variables interacted with self-report of having a dentist (see Fig. 1). The total number of patients in this analysis was 356 due to missing or incomplete data for the other 17 patients. Of the

patients who said they *did not* have a dentist to visit if needed (n = 145), only 17 % (n = 25) had seen a dentist in the past year. Of the patients who said they *did* have a dentist to visit if needed (n = 211), 67 % (n = 141) had seen a dentist.

Of the 211 patients who reported having a dentist to visit, presence of treatment-related problems was the second most useful variable in predicting use of dental care. Of patients with a dentist to visit who reported a treatment-related mouth problem (n = 195), 70 % saw a dentist; of those with a dentist who reported no treatment-related mouth problem (n = 16), only 25 % saw a dentist.

Women were 1.7 times more likely than men to have seen the dentist in the preceding 12 months ($p = 0.011$), and patients who had a primary care provider (PCP) were 1.6 times more likely as those who did not have a PCP ($p = 0.053$).

Whether or not the oncologist discussed potential oral side effects of cancer treatment with the patient significantly predicted whether the patient had seen a dentist in the past year ($p = 0.041$). Patients were 1.7 times more likely to visit the dentist overall and 3.2 times less likely to report dental problems related to treatment if their oncologist spoke with them about dental side effects. Of the patients who did report a treatment-related problem, 80 % of those who discussed dental care with their oncologist had seen a dentist compared with only 27 % of those who had not spoken with the oncologist.
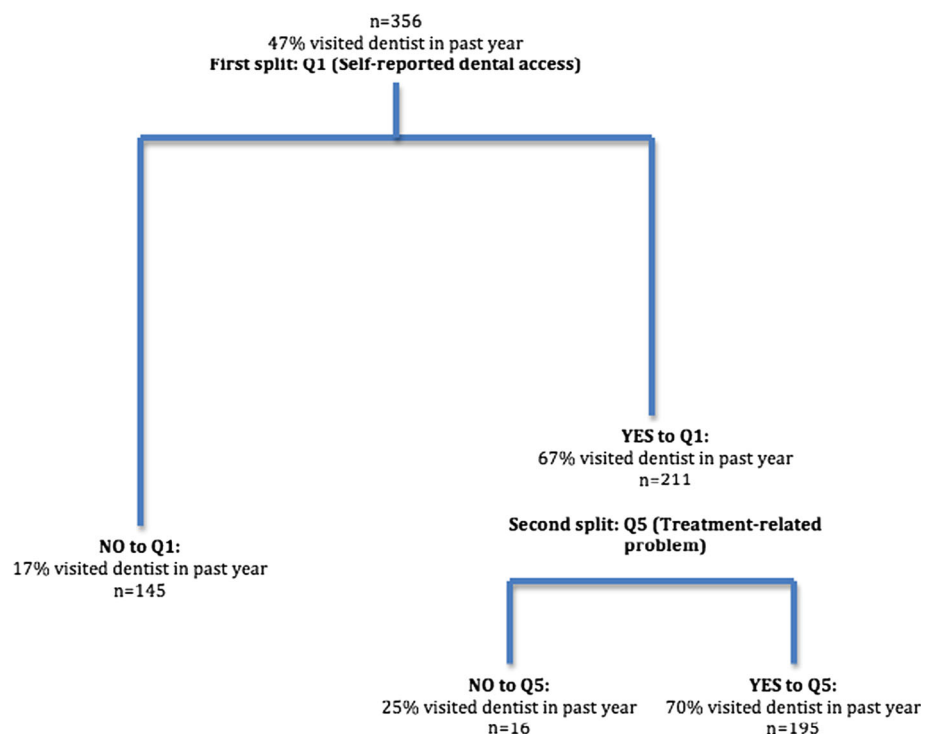
Fig. 1 r(part) Tree analysis

Table 1 Participant Demographics

Characteristic	Number of participants (n)	Percent (%)
Gender		
Male	153	41
Female	220	59
Age		
18–29	4	1.1
30–39	25	6.7
40–49	75	20.1
50–59	105	28.2
60–69	101	27.1
70–79	50	13.4
80–89	10	2.7
Missing	3	0.8
Birth region		
Latin America	131	35.1
Caribbean	83	22.3
Mainland US	81	21.7
Puerto Rico	47	12.6
Other	29	7.8
Missing	2	0.5
Preferred language		
English	200	53.6
Spanish	146	39.1
Other	27	7.3
Years in US		
0–5 years	76	20.4
6–9 years	21	5.6
10–20 years	64	17.1
More than 20 years	125	33.5
Born in US	79	21.2
Missing	8	2.1
Health insurance		
Medicaid coverage for the treatment of emergency conditions	66	17.7
Medicaid HMO	125	33.5
Fee-for-service medicaid	34	9.1
Medicare	10	2.7
Medicaid and medicare	42	11.3
Private	20	5.4
Uninsured	72	19.3
Missing	4	1.1
Primary care provider		
Yes	263	70.5
No	110	29.5
Reported access to a dentist		
Yes	220	59.0
No	153	41.0
Cancer type		
Breast	153	41.0

Table 1 continued

Characteristic	Number of participants (n)	Percent (%)
Prostate	59	15.8
Gastrointestinal	56	15.0
Blood	28	7.5
Lung	25	6.7
Gynecological	14	3.8
Other	38	10.2

Neither race/ethnicity, country of origin, nor education level significantly correlated with having received dental care in the past year; these numbers can be found in Table 1. However, income and insurance status *did* predict whether the patient reported access to oral health care. Income directly correlated with insurance status ($p = 0.018$), and insured patients were more than twice as likely as uninsured patients to receive care ($p = 0.02$). Lack of insurance was the most commonly reported reason for not seeing a dentist.

In addition to financial barriers, poor oral health access may have to do with a lack of prioritization of, or knowledge about the need for, preventive care. Of 18 patients who gave "not needed" as a reason for not seeing the dentist, 39 % (n = 7) had not been to the dentist for 1–3 years, and 33 % (n = 6) had not been to the dentist in more than 5 years.

Of 45 patients who answered "Don't Know" to whether they had treatment-related problems, 87 % (n = 39) had not received dental care in the past year. Of 97 patients who identified a current dental problem, 20 patients reported that they needed a cleaning and check-up. Thirteen reported that they needed new dentures, 12 reported broken or loose teeth, 11 reported tooth decay, 6 reported pain, and 5 reported that they needed a root canal.

Discussion

As expected, the regression tree analysis showed that patients who *reported* having a dentist to see if needed were much more likely to have received dental care in the past year. The analysis also indicated that of patients who reported having a dentist, a treatment-related problem further increased the likelihood of receiving care. These data indicate that cancer patients who have oral care access are most likely to go to the dentist if they have an existing problem, rather than for preventive care.

Many patients answered "not needed" to why they do not see a dentist, yet most of these patients had not been to the dentist in several years. This is additional evidence that

study participants rarely see a dentist for preventive treatment; the "lack of need" is likely self-diagnosed and not necessarily indicative of an absence of oral health problems.

Several variables outside of the regression tree also predicted receipt of care, such as having a PCP and whether the patient was currently receiving chemotherapy. We do not have specific data about why these factors predicted receipt of care, but we can surmise that patients with a PCP may have been more likely to see the dentist because their PCP suggested that they see one, or because these patients are generally more likely to prioritize preventive care. In addition, chemotherapy may "crowd out" other healthcare visits; patients might have been too busy with their cancer treatment or too ill with chemotherapy side effects to seek dental care. Radiation may have had less impact on dental care access because it is a shorter-course treatment.

The correlation between insurance coverage, income, and dentist visits indicates that ability to pay is an important determinant of oral health care access in this sample of patients. Of 100 participants who provided a reason for not seeing the dentist, 73 % (n = 73) listed "too expensive" or "no insurance" as the primary obstacle. If patients were uninsured, they were 1.5 times more likely to report a current dental problem.

Regardless of insurance status, an oncologist's recommendation is a key factor in both whether or not patients visited a dentist and in oral side effects. However, this study relied on self-report; we could not determine whether the oncologist *actually* spoke with the patient, but only if the patient heard and remembered this message. It is possible that those patients who were more likely to see a dentist were also more likely to have internalized the discussion with the oncologist about oral care. Either way, this is an important finding that calls for additional research on if, how, and how effectively oncologists are conveying oral health information to patients.

Because chemotherapy and radiation to any part of the body can result in damaging oral side effects, we are concerned about how few patients remembered talking with their oncologist about potential dental side effects of treatment. This was particularly striking in the small patient group with head and neck cancer, because these patients receive radiation targeted directly to the facial area. Of thirteen patients with head and neck cancer, twelve of whom were currently receiving radiation, only five reported that their oncologist discussed potential oral side effects of treatment.

The fact that more than a quarter of patients reported serious dental problems is also of special concern. These issues—among them pain, need of a root canal, and broken or loose teeth—are particularly worrisome in cancer patients because they can result in significant discomfort,

impede normal food and/or medicine consumption, and potentially diminish the effectiveness of cancer treatment. In addition, these dental issues can reduce psychosocial well-being.

Some patients elaborated upon their current dental problems and barriers to care. One patient reported that the insurance covering her cancer treatment does not cover oral care, and that although she needs to see a dentist, she cannot switch coverage until her cancer treatment is completed. Another said that dentists scare her more than chemo. A third reported that because her bottom bridge is loose, she "doesn't want to smile a full smile."

Finally, although we did not find a significant correlation between fluency in English and access to dental care in this particular cohort, other research has shown that language ability and cultural factors may affect likelihood of seeking care in immigrant populations like this one [21].

There were several limitations to this study. The survey was brief, and thus did not capture a complete picture of patients' oral health. In addition, several questions were ambiguous: for example, one question asked patients whether they had any treatment-related dental problems. A response of "Don't Know" might indicate that a patient has problems but does not know whether they are treatment-related or that the patient does not know whether he or she has problems at all.

Some patients who completed the ICCAN intake form did not answer the dental needs assessment. This may be because the dental survey was at the end of the ICCAN form and was sometimes left out because of time constraints or oversight by outreach workers.

Because patients knew that their interviewer was employed by a medical organization, there is the possibility of an acquiescence bias. Patients may have given what they perceived as the "right" answer rather than the true answer. This could result in patients avoiding report of current dental issues or artificially high numbers of patients who reported recent receipt of dental care.

In addition, ICCAN patients are recruited through non-standardized methods. Sometimes a nurse refers the patient to ICCAN, or an outreach worker approaches the patient in the waiting room of a hospital clinic. Because ICCAN patients are selected based on need, it is likely that the patients who answered the dental survey are among those with the most access barriers. Despite this, we recognize that the patients who answered the survey are already in the medical care system; our method omits those patients with cancer who are not yet receiving treatment or who do not have access to care.

Strengths include identification of two issues rarely discussed in dental research or oncology: the oral health status of cancer patients, and the fact that oncologists may not be discussing potential oral side effects of cancer

treatment with these patients. Though the sample is small, the study provides sufficient evidence that further research is crucial to learning more about this issue.

Conclusions

Our results are consistent with the growing literature on lack of dental care access. We expand on previous studies by identifying a specific group—low-income patients with cancer—for whom dental care is crucial and often difficult to obtain. Our study identified specific barriers to care that affect our pool of patients, such as transportation costs, fear, and focus on diagnostic rather than preventive care.

Our data point to a lack of both quantity and quality of oral care information flowing from oncologists to low-income patients. Particularly striking is that many study participants remembered having no conversation at all with their oncologist about oral health. However, our data showed that when oncologists *do* talk with patients about dental care, patients are much more likely to seek it out. In the future, we hope to investigate the effects of oral care counseling provided by oncologists. We also hope that our findings encourage oncologists to take advantage of their time with at-risk patients to address the importance of oral healthcare.

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