Eye-care Utilization Among a Canadian Diabetic Refugee Population: A Retrospective Cohort Pilot Study

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Research

Keywords: refugee health, diabetes mellitus, diabetic retinopathy, vision screening

Posted Date: April 29th, 2021

DOI: https://doi.org/10.21203/rs.3.rs-440569/v1

Abstract

Background: Diabetic retinopathy (DR) is a leading and preventable cause of blindness. DR screening lies at the intersection of many documented challenges in access to care for refugees. Additionally, vision screening is determined to be an important health need and a critical locus for underutilization of health services among refugees resettling in Canada. To date, there is a limited body of evidence on the ocular health of refugees in Canada and no known studies on diabetic vision screening among refugees. Our objective was to identify patterns of eye-care utilization among refugee and non-refugee patients with type 2 diabetes mellitus (T2DM) in Newfoundland and Labrador (NL).

Methods: We conducted a retrospective comparative cohort study at the Memorial University Family Medicine clinic, which includes the province's largest dedicated refugee clinic. All patients with a new T2DM diagnosis between 2015-2020 were included. Data were described using basic statistics and unpaired t-tests. This study received full approval from the Newfoundland and Labrador Health Research Ethics Board.

Results: 73 (18 refugee, 55 non-refugee) patients were included. Refugees had a significantly higher rate of referral to an eye-care provider (ECP) ($p=0.0475$) and were more likely to attend their ECP appointment than non-refugees ($p=0.016$). The time from diagnosis to referral was significantly longer for refugees than non-refugees ($p=0.0498$). A trend towards a longer time from referral to appointment attendance for refugees than non-refugees was noted ($p=0.9069$).

Conclusions: Our study is the first to report eye-care utilization among an Atlantic Canadian refugee population, and among the first to report access to diabetic vision care among refugees worldwide. Although refugee patients in our study cohort had higher rates of referral to ECPs and utilization of eye-care services, they also experienced a longer time to access care. Specialist care is known to be more challenging to access for vulnerable populations. Our findings suggest that there may be a role for ECPs to collaborate with primary care providers to improve access to vision screening services. Limitations include the small sample size as well as selection and detection bias inherent to a retrospective chart review.

Background

Eighty million individuals globally have been forcibly displaced due to conflict, persecution, and human rights violations.[1] Refugees comprise 26.3 million of all displaced persons, of whom over 1 million have resettled in Canada—an emerging global leader for refugee resettlement.[1–2] Current literature on the health status of refugees reveals disparities in equitable access to care due to the cultural, linguistic, and socioeconomic barriers that are often faced during migration and resettlement.[3–7] Challenges navigating healthcare infrastructure are compounded by these social determinants of health. This may manifest as underutilization of specialist services—for example, vision screening, which is determined to be an

important health need and a critical locus for underutilization of health services among refugees resettling in Canada.[7–10]

Diabetic retinopathy (DR) is a leading and preventable cause of blindness that is associated with higher relative morbidity and mortality.[11–12] Guidelines recommend screening for DR with an eye-care provider (ECP)—optometrist or ophthalmologist—at the time of T2DM diagnosis with subsequent annual screening if DR is present or biennial screening if DR is not present, unless indicated otherwise.[12] DR screening lies at the intersection of many documented challenges in access to care for refugees as it is a chronic non-communicable disease[5], requires specialist services[2,5], and is most effective when patients are asymptomatic and thus not actively seeking care.[12]

To date, there is a limited body of evidence on the ocular health of refugees in Canada and no known studies on diabetic vision screening among refugees. We conducted a retrospective comparative cohort study to identify patterns of eye-care utilization among refugee and non-refugee patients with T2DM in Newfoundland and Labrador (NL)—an Atlantic Canadian province with lower rates of eye-care utilization[13] and higher rates of T2DM[14] than any other province or territory.

Methods

This study was conducted at the Memorial University Family Medicine clinic, which includes the province's largest dedicated refugee clinic. All patients with a new T2DM diagnosis between 2015–2020 were included. Patients who were lost to follow-up due to relocation, death, or otherwise unknown reasons were excluded. Outcomes of interest were gender, age, country of origin, date of T2DM diagnosis, date of ECP referral, and date of ECP appointment attendance. Demographic data were described using descriptive and basic statistics. Unpaired t-tests were utilized to assess differences in the time from T2DM diagnosis to referral to an ECP, time from referral to an ECP to appointment attendance, and rates of referral to an optometrist versus an ophthalmologist among our refugee and non-refugee cohorts. All statistical analyses were performed with GraphPad Prism Version 9.1.0 (GraphPad Software Inc., CA, US). This study received full approval from the Newfoundland and Labrador Health Research Ethics Board and was conducted in accordance with the Declaration of Helsinki.

Results

Between 2015–2020, 726 newly arrived refugees received care through this clinic. 73 (18 refugee, 55 non-refugee) patients were diagnosed with T2DM during this period. Countries of origin for refugee patients included Eritrea, Syria, Sudan, Iraq, Palestine, and Republic of the Congo. Rates of referral and appointment attendance for refugees were 88.9% and 61.1%, respectively. Rates of referral and appointment attendance for non-refugees were 47.3% and 34.5%, respectively. Time from diagnosis to referral was less than 12 months for 78.1% patients, time from referral to appointment was less than 12 months for 67.9% of patients, and time from diagnosis to referral was less than 12 months for 40.0% of patients. Among both refugee and non-refugee cohorts, there were no significant differences in rates of

referral by gender ($p = 0.6875$). However, there was a significant difference for rates of referral by age ($p = 0.0131$), with higher rates of referral among older patients.

Refugees were more likely to be referred to an optometrist rather than an ophthalmologist ($p = 0.0013$), and had a significantly higher rate of referral to an ECP than non-refugees—88.9% versus 47.3% ($p = 0.0475$). Refugees were also more likely to attend their ECP appointment than non-refugees—66.1% versus 34.5% ($p = 0.016$). The time from diagnosis to referral was significantly longer for refugees (309 days) than non-refugees (128 days) ($p = 0.0498$). A trend towards a longer time from referral to appointment attendance for refugees (598 days) than non-refugees (464 days) was noted but this was not statistically significant ($p = 0.9069$). On average, the time to access vision care was 907 days for refugees and 592 days for non-refugees.

Demographic data are described in Table 1. Patterns of eye-care utilization are described in Fig. 1.

Table 1
Characteristics of study group.

Attribute	Study group (n = 73)
Gender, n (%)	
Female	35 (47.9)
Male	38 (52.1)
Refugee status, n (%)	
Refugee	18 (24.7)
Non-refugee	55 (73.3)
Age, n (%)	
≤45	12 (16.4)
46–65	33 (45.2)
65+	28 (38.4)
Eye care provider referral, n (%)	
Optometrist	19 (38.0)
Ophthalmologist	31 (62.0)
Time from diagnosis to referral, n (%)	
12 months or less	32 (78.1)
Over 12 months	9 (22.0)
Time from referral to appointment, n (%)	
12 months or less	19 (67.9)
Over 12 months	9 (32.1)
Time from diagnosis to appointment, n (%)	
12 months or less	12 (40.0)
Over 12 months	18 (60.0)

Discussion

Our study is the first to report eye-care utilization among an Atlantic Canadian refugee population, and among the first to report access to diabetic vision care among refugees worldwide. We found that refugee patients had a significantly higher rate of referral to an ECP than non-refugees, and that refugees were

more likely to attend their ECP appointment than non-refugees. However, we also found that the time to access care was longer for refugees than non-refugees.

Vision screening among newly arrived refugees

The process of liaising newly arrived refugee patients with ECPs in NL relies on three pillars of support: a dedicated refugee clinic, the Interim Federal Health Program (IFHP), and community settlement services.[15–18] The refugee clinic is typically the first point of contact with the healthcare system for newly arrived refugees and is designed to provide long-term continuity of care by connecting patients with a family physician early in the resettlement process. Among its many services, the refugee clinic provides preventive health screening for non-communicable diseases, such as T2DM, as well as referrals for optometric vision screening for all newly arrived refugees regardless of health status.[15] The IFHP partially insures optometric services for one year after arrival. Thus, the refugee clinic aims to refer all newcomers to an optometrist during this period, which facilitates higher rates of health services utilization as seen in our study.[16–17] Once IFHP coverage expires, optometric coverage is no longer publicly insured so patients without private insurance are referred to an ophthalmologist, whose services are publicly insured but typically incur longer wait times. Hence, refugees in our study were more likely to be evaluated by optometrists rather than ophthalmologists for initial diabetic vision screening and also had higher rates of referral to an ECP. Community settlement services liaise with the refugee clinic to provide health navigation support such as interpreters, appointment coordination, and transportation when possible.[15,18]

Future directions

Our finding of increased eye-care utilization is aligned with studies from Canadian refugee-focused clinics which show higher rates of health services utilization in the primary care setting.[3] However, these may not be representative of broader health infrastructure as principles of culturally competent and community-oriented care among vulnerable populations have yet to pervade many arenas of specialty service, including vision care. A testament to this hypothesis is borne within our finding that refugees experience a significantly longer time from diagnosis to referral and a trend towards a longer time from referral to appointment attendance. Often, there may be comorbidities that warrant more urgent attention, thus delaying preventive care such as vision screening.[1] Specialist services are also known to be more challenging to access due to systemic barriers and structural inefficiencies.[1,5,9,13] For example, missed appointments are a known byproduct of barriers in navigating the healthcare system and may be a contributory factor in delayed access to care.[19–20] An interview-based study of refugees in NL showed that experiences with primary care services were generally positive, but access to specialist services was more difficult and often complicated by language barriers, lack of transportation, lack of information regarding insurance coverage, and long wait-times.[2]

Robust settlement service delivery and interprofessional collaboration with ECPs are essential to bridging gaps in access to vision care. However, many settlement service delivery programs remain critically underfunded, with reports suggesting that insufficient funding may be associated with reduced

collaboration across services, thereby limiting the ability to support newly arrived refugees to the detriment of their economic, social, and health-related wellbeing.[2,17,21] Emerging health policy, clinic models, and screening recommendations should reflect these considerations. Further studies are needed to better characterize the effect of delayed access to preventive vision screening on vision-related morbidity among newly arrived refugee populations in Canada.

Limitations

Our study was limited by the small sample size, despite including all newly diagnosed T2DM patients at the largest dedicated refugee-health clinic across a five-year period. This limited our ability to control for variables such as gender and age, which are known to be associated with access to healthcare services. The small sample size may be an artifact of the nature of forced displacement, as refugees are typically resettled in small numbers across many jurisdictions. Other limitations include selection and detection bias inherent to a retrospective chart review.

Conclusions

Our study is the first to report eye-care utilization among an Atlantic Canadian refugee population, and among the first to report access to diabetic vision care worldwide. Although refugee patients in our study cohort had higher rates of referral to ECPs and utilization of eye-care services, they also experienced a longer time to access care. Evidence-informed advocacy entails identifying patterns in eye-care utilization and methods of improving service delivery to ensure accessibility. Future studies should better characterize dynamics of eye-care utilization among a larger refugee cohort as well as the relationship between gender, age, presence of comorbidities, and refugee status on access to screening services.

Declarations

Ethics approval:

This work was reviewed and received full approval by the Newfoundland and Labrador Health Research Ethics Board (2020.118).

Consent to participate:

This work received approval for waiver of consent by the Newfoundland and Labrador Health Research Ethics Board as this retrospective chart review involves no or minimal risk to subjects and the research could not be conducted practicably without waiver.

Consent for publication:

This work does not share any identifiable patient data or images.

Availability of data and material:

The datasets generated and/or analysed during the current study are not publicly available to maintain privacy and confidentiality of study subjects but anonymized data are available from the corresponding author on reasonable request.

Competing interests:

The authors declare that they have no competing interests.

Funding:

This work was supported by the Summer Undergraduate Research Award, Memorial University of Newfoundland. The funding body was not involved in the study, collection, analysis, interpretation of data, or writing of the manuscript.

Authors' contributions:

ST: Conceptualization, Methodology, Validation, Investigation, Data curation, Writing, Visualization, Project administration. BH: Methodology, Formal Analysis, Data Curation, Writing. CAB: Conceptualization, Methodology, Supervision, Writing.

Acknowledgements:

Not applicable.

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Figures

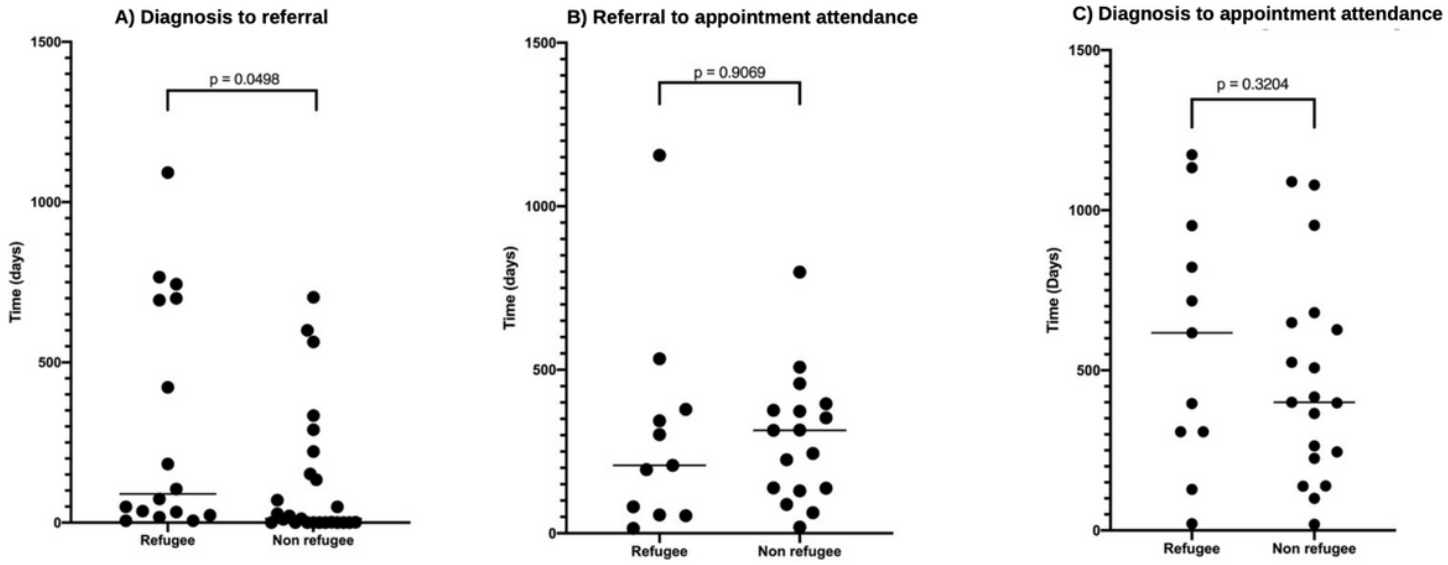

Figure 1

A) time from diagnosis to referral based on refugee status, B) time from referral to appointment attendance based on refugee status, C) time from diagnosis to appointment attendance based on refugee status.