Beyond finance: Overcoming barriers to oral health care access for immigrant children

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ABSTRACT

Background: This study evaluated the effectiveness of community referrals in improving dental care access for immigrant children through complimentary treatments. It also explored financial and non-financial factors influencing parental adherence to their children's dental referrals. **Methods:** Data from 610 parent-child pairs, including demographics and oral health behaviors of children aged 1–12 years, were analyzed. Dental examinations were conducted at a community site, and 151 children needing treatment were referred to a university dental clinic. Univariate analyses and backward stepwise logistic regression identified factors associated with attending at least one dental appointment. **Results:** Among the 151 referred children (average age: 6 years), 60% were girls, and 37% were born in Canada. Only 42% had visited a dentist in the past year and 39% had dental coverage. Oral health behaviors varied with 40% brushed once or less daily and 46% consumed at least one sugary snack per day. About 66% of mothers had college education or higher. Despite complimentary care, attendance at referred appointments was 38%, with higher attendance among girls ($p = 0.025$). **Discussion:** Despite eliminating financial barriers, attendance remained low, emphasizing the role of non-financial factors, including the unique social and cultural challenges encountered by immigrant. Higher attendance among girls suggests gendered parental perceptions of dental care. Addressing these requires culturally tailored outreach and improved provider-family communication. **Conclusions:** Financial support alone is insufficient to improve dental care access for immigrant children. A multidimensional approach addressing both financial and non-financial barriers is essential to enhance dental care utilization.

Keywords: barriers to dental care; children's oral health; dental care utilization; immigrants

CDHA Research Agenda category: access to care and unmet needs

INTRODUCTION

Dental caries is among the most prevalent chronic diseases experienced by children worldwide.[1, 2] However, it is largely preventable through adherence to oral hygiene, low-sugar diet, and regular dental visits.[3, 4] Research from the Longitudinal Survey of Immigrants to Canada (LSIC) indicates that during the first four years after arrival, immigrants often face significant barriers in employment, education, housing, and health care. [5] These challenges, compounded by geographic, economic, linguistic, and cultural barriers, as well as difficulties in securing employment and housing, low socioeconomic status, and lack of medical and dental insurance, significantly hinder their ability to access necessary health services, ultimately affecting both their general and oral health.[5-10]

Canada has experienced a steady influx of immigrants in recent decades. According to the 2021 census, Canada welcomed over 8.3 million new immigrants and permanent residents, comprising a quarter of the entire Canadian population. This marked the highest number since Confederation.[11] In addition, according to Statistics Canada, the number of foreign-born children or children with at least one foreign-born parent under 15 years old in 2021 was approximately 1.9 million. This corresponds to 31.5% of the total number of Canadian children, compared to 26.7% in 2011.[11]. The number of children with immigrant background is expected to increase to 39.3% and 49.1% of the total population of children living in Canada aged 15 and younger in 2036 [12]. Therefore, it is becoming increasingly imperative to address the health including oral health faced by this growing population.[6, 13]

As a result, children of immigrants experience worse dental outcomes than their Canadian-born counterparts.[14] It is also well-documented that dental utilization patterns of immigrants differ from Canadian-born individuals in that immigrants have a tendency to attend dental appointments on a symptom-driven basis, rather than preventive.[15, 16] In the long run, immigrants' lower utilization of preventive dental care for their children may lead to unaddressed progression of dental decay, causing disturbed sleep and impaired eating habits, and ultimately, failure to thrive.[17, 18] Our previous study conducted with African immigrants in Edmonton showed a high prevalence of children's dental caries due to limited dental care utilization and parents' unawareness of their children's dental status.[19]

Furthermore, a lack of regular preventive dental visits may lead to greater incurred costs associated with subsequent dental treatments, possibly requiring sedation or general anesthesia, which pose a larger financial burden on the family and healthcare system in large.[20] A study conducted on children in a community clinic found that dental surgery treatments for early childhood caries were significantly more likely to be done for those from low-income households.[21]

The low utilization of dental care is influenced by a variety factors, creating a multidimensional challenge for dental care providers. Andersen healthcare utilization model highlights three key concepts that may explain this phenomenon. The first concept includes predisposing factors such as demographics, social structure, health beliefs, and psychosocial elements. [22] The second group, enabling factors, involves socioeconomic status (SES), while the third group focuses on need-related factors such as children's dental care utilization and the frequency of dental visits.[22, 23] Lack of dental insurance and low-income have typically been flagged as predominant barriers to dental care utilization in Canada.[6, 15] Therefore, initiatives aimed at reducing or eliminating the barrier of cost are expected to improve access to dental care among vulnerable groups. A study on the utilization of preventive dental services in Quebec revealed a significant disparity, with immigrants using preventive dental care less frequently than non-immigrants.[24] Although the study underscores the impact of financial barriers on dental attendance patterns, it also suggests that the difference in dental utilization between the two populations is not solely attributed to a lack of dental insurance.

In an effort to facilitate access to dental care among recent immigrants in Edmonton, a dental team conducted dental examinations for young children at community locations and referred those in need of treatment to the University dental clinic, where care was provided at no cost. Despite the removal of financial barriers, many referred patients did not seek dental care or attend their appointments. This suggests that other factors, beyond cost, play a significant role in access to dental care. Research by Bedos et al. highlights the strong influence of cultural barriers and other non-financial factors on dental utilization among immigrants. While existing literature primarily identifies financial barriers as the principal cause of limited dental utilization in a Canadian context [8, 9, 25], there is a lack of primary research

on the impact of non-financial factors when financial constraints are removed. Therefore, the aims of this study were to: 1) evaluate the attendance rate of young children at the University dental clinic following community referral, and 2) identify key factors influencing parents' compliance with these referrals for their children's dental visits.

METHODS

This study was a retrospective quantitative study. Ethical approval was obtained from the University of Alberta Research Ethics Board (Protocol No. 00072345). All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Alberta Research Ethics Board and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Data collected from 2015 to 2019 from 610 parent-child dyads, involving children aged 1-12 years, was utilized. All children had received dental examinations in various community locations convenient for most participants and where they received assistance after immigrating to Canada. These examinations were performed by the same two calibrated examiners using mobile dental equipment, including a portable dental chair, artificial light, and a sterilized mirror and explorer. Both inter-calibration and intra-calibration were completed prior to data collection. The examinations, followed by the completion of the questionnaire by the parents, were carried out over several weeks. The World Health Organization recommended DMFT/dmft index was used for determining dental caries levels. The DMFT/dmft index measures the total number of decayed, missing, and filled teeth, with a low DMFT/dmft score indicating a low caries level [26].

Of the 610 examined children, 151 who needed dental care were referred to the University Dental Clinic to receive treatment with no cost. These referrals were made based on three factors: 1) upon examination, the children were deemed to need dental care, 2) the difficulty of the cases were within the scope of the school clinic, and 3) children and parents agreed to the referral. The cohort referred to the University clinic was identified in the Axium, using the children's names from the referral forms. Axium

is a dental clinic management software used to manage patient records, appointments, treatment plans, and clinical documentations. We checked for their admission to the pediatric dentistry clinic and determined, by deduction, which children were not admitted. It is possible that some children sought private dental care, which could explain any missing records.

To assess the study outcomes, Axium was used to document key metrics related to dental care access and utilization among referred children. The main outcome variables were dental attendance at the University clinic, appointment booking, and registration rates in the Axium system. Attendance was measured by assessing whether each referred child attended at least one dental appointment following their referral. Appointment booking and registration rates in the Axium served as measures of compliance with referral appointments and provided insights into the engagement of immigrant families with the dental care services offered.

The existing data from the previous project used for this study included demographics (child's gender, date of birth, dental coverage; mother's education, family income levels, country of origin, and length of living in Canada, family structure (living with both parents or single parent)), parents' reported oral health behaviors for their children (last dental visit, toothbrushing frequency, and sugar intake frequency), and children's caries experience determined by DMFT/dmft [27, 28]. Comparisons were made between compliant and non-compliant families based on demographic variables, parental self-reported oral health behaviors, and children's DMFT/dmft to identify factors affecting the attendance rate.

Statistical analysis

Statistical analyses were conducted to examine the association between demographic variables and three main outcomes. Demographic characteristics and oral health behaviors were summarized using counts (n), percentage (%), mean with standard deviation (SD) and as appropriate. The outcome variables were categorized as attendance (Yes/No), appointment booking (Yes/No), and registration on Axium (Yes/No). Backward stepwise logistic regression was applied to retain only significant predictors of attendance and

odds ratios (OR) with 95% confidence intervals (CI) were reported. This model begins with a saturated model and in each step gradually eliminates variables to find a reduced model that best explains the data. All analyses were conducted using SPSS version 27.0 (IBM Corp., Armonk, NY, USA).

RESULTS

Among the 610 children, 51.2 % were girls, and 57.3% were born in Canada. The mean (SD) age of mothers was 36 (6.8) years and 63% had college or higher education. About 38.8% of families had a middle-income ($2000-$4000) and their average (SD) length of living in Canada was 8 (18.6) years. Regarding their oral health, 57% had no dental coverage and 42% had dental visit within the last year. About 64.2% of them brushed their teeth twice or more a day, and 29.2 % consumed one or more sugary snack per day. The mean (SD) DMFT/dmft was 3.49 (4.0) with a maximum of 18.

Of the 610 screened children in the community, 151 referred children were included in our analysis. The mean (SD) age of referred children was 6 (2.4) years, 48% were girls, and 40% were born in Canada. The mean (SD) age of mothers was 37 (6.3) years and 66% had college or higher education. About 40% of families had a middle-income ($2000-$4000) and their average (SD) length of living in Canada was 5.2 (3.9) years. Of all referred children, 36% had dental coverage and 38% had dental visit within the last year. About 40% of them brushed their teeth once or less per day, and 46% consumed one or more sugary snack per day. The mean (SD) DMFT/dmft was 6.4 (4.0) (Table 1 & 2).

A series of backward stepwise logistic regressions were conducted to identify significant predictors of attendance, appointment booking, and registration on Axium. For appointment attendance, girls were significantly more likely to attend appointments (OR = 2.84, 95% CI: 1.29 – 6.21). Additionally, with each unit increase in maternal age, the likelihood of attendance increased by 7% (OR = 1.07, 95% CI: 1.00 – 1.14), and households with more children had higher odds of attendance (OR = 2.58, 95% CI: 1.06 – 6.30) (Table 3). Regarding appointment booking, girls were also more likely to schedule appointments compared to boys (OR = 2.47, 95% CI: 1.13 – 5.40) (Table 3). For registration on Axium,

child's gender was a key factor, with girls being 2.72 times more likely to be registered than boys (OR = 2.72, 95% CI: 1.23 – 6.03). Furthermore, children not living with both parents had lower odds of registration (OR = 0.33, 95% CI: 0.09 – 1.19), whereas those with dental coverage were more likely to be registered (OR = 2.10, 95% CI: 0.93 – 4.74) (Table 3).

DISCUSSION

Barriers that limit access to oral health care and the utilization of available services contribute to the poor oral health status of immigrants in Canada. Widely reported barriers in the literature include language and literacy levels, cultural norms, and socioeconomic conditions such as housing insecurity, low employment, and income.[29] Following migration to a new country, immigrants encounter numerous challenges such as language and cultural barriers, low socioeconomic status, and lack of medical and dental insurance coverage. These challenges can significantly affect their lives and may extend to their children as well. The low rate of dental care utilization among immigrants is a notable consequence of these barriers. This trend is particularly evident in countries like Canada, where the dental care system is predominantly private. [30, 31] Similar patterns have been observed in European nations such as Sweden and Germany. [32, 33] While financial barriers are often identified as the primary obstacle to dental care access, it is essential to recognize that the constraints on dental care utilization for immigrant children are intricate and multifaceted.[31] Therefore, the aims of this study were to evaluate the effectiveness of community screenings and referrals for young children to the University dental clinic, and to identify factors affecting parents' compliance with referrals for their children's dental visit when the cost is eliminated.

The recent implementation of the new Canadian Dental Care Plan (CDCP), aimed at improving access to oral healthcare and reducing financial barriers, calls for an exploration of the factors influencing dental care utilization among immigrant populations. This initiative aims to improve the affordability of dental services. However, it is crucial to differentiate between the accessibility of dental care and its utilization, especially in the context of our findings. Our research, well-aligned with existing literature, revealed that even with the elimination of financial barriers and the provision of no-cost referrals to the

dental clinic, only 38% of the referred patients attended their appointments. This underscores the impact of distinct barriers faced by immigrants, such as social and cultural factors, which need to be addressed alongside financial obstacles.[34]

The dental hesitancy phenomenon, identified among culturally and linguistically diverse (CALD) populations, highlights five key barriers to accessing timely dental care: cost, confidence, confusion, competing priorities, and complacency.[35] These 'C' factors reflect the complex challenges that CALD mothers face in ensuring dental care for their children. [35] Beyond financial limitations, other significant factors such as parental perceived need, attitudes toward dental treatments, language barriers, and the prioritization of other post-migration challenges further contribute to the low uptake of dental services among newcomers [36]. These compounded barriers intensify the inequalities in oral healthcare experienced by CALD communities.[35] Recognizing and addressing the complexity of the dental hesitancy phenomenon is crucial for developing effective strategies to improve oral health outcomes for immigrant populations.

Given that a significant number of immigrants to Canada originate from non-European regions, bringing diverse cultural backgrounds and languages other than English, there may be limitations in their dental care utilization.[34] Racial discrimination has also been reported as a barrier to dental care utilization in Canada.[34] Furthermore, a lack of awareness among parents about the importance of oral health, coupled with insufficient knowledge about the Canadian Dental Care Plan and the Canadian healthcare system, including dental care guidelines, constitutes additional obstacles.[27, 34, 37] While the new Canadian dental care plan is a positive step toward improving access to oral healthcare, it is crucial to recognize that the challenges faced by immigrant populations extend beyond financial considerations. Addressing these multifaceted challenges is essential for the development of targeted interventions that can enhance dental care utilization among immigrant populations in Canada.

In our study, we observed a noteworthy correlation between girls and attendance at dental referral appointments. This aligns with prior research investigating variables linked to dental utilization (9, 10). The observed pattern might be attributed to heightened parental focus on their daughters' aesthetics,

increased compliance with oral health-seeking behaviors [38], and potentially greater awareness among girls regarding the repercussions of dental issues.

High daily sugar intake also showed a significant association with registration in the University's patient list, but not dental attendance. According to the Theory of Planned Behavior (TPB), a well-known model in preventive health behaviors, intentions are considered key drivers of behavior. However, a study focusing on TPB among children of newcomers revealed that intention alone did not significantly predict the utilization of dental care.[27] Despite parents expressing an intention to take their children for dental visits, there was a notable absence of corresponding behavioral reports.[27] In this study, heightened sugar intake by children might amplify their parents' perception of the necessity for dental visits, translating intention into the act of scheduling appointments rather than the subsequent behavior of attending them. This discrepancy could be attributed to challenges post-migration that potentially place a lower priority on their children's oral health.

Based on the 2021 Census, immigrants tend to be highly educated compared to their national counterparts. A substantial number of Asian populations surpassed the national average of 32.9% in attaining a bachelor's degree or higher. More than 50% of the Korean, Chinese, South Asian, and West Asian communities, along with over 40% of the Arab, Japanese, and Filipino populations, achieved educational levels beyond a bachelor's degree. This could be attributed to the possibility that education is a component of the selection process immigrants undergo in Canada.

This study has some acknowledged limitations. First, the self-administered questionnaires introduced the possibility of biased responses, potentially leaning towards socially desirable answers. Second, certain perceived or experienced barriers such as language barrier and the time gap between the community screenings and clinic appointment calls were not specifically addressed in this study. Third, the axiUm system's dependence on accurate data entry could result in incomplete or inconsistent records. Additionally, the system's reporting capabilities may be limited by institutional configurations, potentially affecting data extraction and report generation. Despite these limitations, the study boasts notable strengths that significantly enhance its impact and reliability. The inclusion of data from 610 immigrant

parents with children aged 1-12 years contributes to a large and representative sample size, bolstering the study's statistical power and ensuring a more inclusive understanding of the population under investigation.

Overcoming challenges in access to oral health care requires a multifaceted approach that extends beyond financial assistance. It must also include culturally competent care, education, and outreach initiatives tailored to the unique needs of immigrant communities. By implementing such strategies, policymakers and healthcare providers can work towards reducing disparities in dental care utilization and improving overall oral health outcomes for these vulnerable populations. Further qualitative exploration through interviews with parents of referred children may illuminate additional factors influencing dental care decisions, ultimately aiding in the development of more culturally and linguistically competent interventions.

CONCLUSIONS

This study highlights that financial constraints alone do not explain the low rates of dental care utilization among immigrants. The findings emphasize the importance of considering additional factors, as evidenced by the high proportion of non-compliance with referrals despite the removal of financial barriers. The low attendance rates among referred children indicate that financial assistance alone is not enough to improve access, as non-financial barriers significantly influence compliance with dental referrals. A comprehensive approach that addresses both financial and non-financial challenges is essential to improving dental care utilization among immigrant children. Policymakers should take these specific challenges into account when developing strategies to enhance access to dental care.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to disclose.

PRACTICE RELEVANCE

1. Policymakers need to expand their scope beyond financial limitations and recognize the various barriers to dental care utilization within immigrant populations.
2. Interventions should prioritize cultural competency, tailoring strategies to address the diverse cultural backgrounds within immigrant populations.
3. Further qualitative exploration is essential to uncover factors influencing dental care decisions, enabling the development of more targeted and effective interventions.

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Table 1. Demographic characteristics of participants

	All Referrals	Registered		Attended	
		Yes	No	Yes	No
N of participants N (%)	151 (100)	74 (49)	77 (51)	57 (38)	94 (62)
Child's age, mean (SD)	6 (2.4)	6.2 (2.4)	5.6 (2.5)	6.0 (2.4)	5.8 (2.5)
Female N (%)	73 (48)	42 (57)	31 (40)	34 (60)	39 (41)
Male N (%)	78 (51)	32 (43)	45 (60)	23 (40)	55 (59)
Born in Canada N (%)	63 (40)	28 (38)	35 (46)	21 (37)	42 (45)
Living with both parents N (%)	130 (86.1)	68 (92)	62 (81)	52 (91)	78 (83)
Mother's age, mean (SD)	37 (6.3)	37 (5.8)	36 (6.9)	38 (5.4)	36 (6.8)
Mother's education N (%)					
High school	49 (32)	27 (36)	22 (29)	18 (32)	31 (33)
College and higher	100 (66.2)	46 (62)	54 (70)	38 (67)	62 (66)
N of children N (%)					
1 child	36 (24)	16 (22)	20 (26)	10 (18)	26 (28)
≥2 children	109 (72.1)	55 (74)	54 (70)	47 (82)	62 (66)
Monthly income N (%)					
<$2000	52 (34)	30 (41)	22 (29)	18 (32)	34 (36)
$2000-$4000	61 (40)	29 (39)	32 (42)	26 (46)	35 (37)
>$4000	24 (16)	13 (18)	11 (14)	13 (23)	11 (12)
With dental coverage N (%)	54 (36)	32 (43)	22 (29)	22 (39)	32 (34)
Years in Canada, mean (SD)	5.2 (3.9)	5.4 (4.0)	5.3 (3.8)	4.9 (3.8)	5.5 (4.9)

Table 2. Oral health behaviours of referred children

	All participants	Registered	Not registered	Attended	Not attended
Number of participants	151 (100)	74 (49)	77 (51)	57 (38)	94 (62)
Dental brushing N (%)					
≥2 times/day	91 (60)	35 (47)	52 (68)	31 (54)	60 (64)
≤1 time/day	60 (40)	39 (53)	25 (32)	26 (46)	34 (36)
Tooth brushing start year of age N (%)					
Before age one	27 (18)	14 (19)	13 (17)	12 (21)	15 (16)
After age one	124 (82.1)	60 (81)	64 (83)	45 (79)	79 (84)
Tooth cleaning start year of age N (%)					
Before age two	11 (7.3)	3 (4)	8 (10)	3 (5)	8 (9)
After age two	136 (90.1)	69 (93)	67 (87)	53 (93)	83 (88)
Last dental visit N (%)					
Within last year	58 (38)	30 (41)	28 (37)	24 (42)	34 (36)
Over one year	40 (26)	22 (30)	18 (23)	14 (25)	26 (28)
Never had a visit	104 (68.9)	21 (28)	31 (40)	18 (32)	34 (36)
Sugar intake N (%)					
Never or less than once a day	80 (53)	31 (42)	49 (63)	25 (44)	55 (59)
Once a day or more	69 (46)	42 (57)	27 (35)	31 (54)	38 (40)
DMFT/dmft (mean) (SD)	6.4 (4.0)	6.4 (4.1)	6.4 (4.0)	6.2 (4.0)	6.6 (4.1)
DT/dt (mean) (SD)	5.2 (4.2)	5.9 (4.0)	4.6 (4.4)	5.9 (3.9)	4.7 (4.3)

Table 3. Results of logistic regression analysis for the association between main outcomes and demographic variables (odds ratios (OR) with 95% confidence intervals (CI)).

Demographics	Attended appointment	Booked appointment	Registered on Axium
	OR (95% (CI))	OR (95% (CI))	OR (95% (CI))
Gender ǂ	2.84 (1.29, 6.21)	2.47 (1.13, 5.40)	2.72 (1.23, 6.03)
Number of children	2.58 (1.06, 6.30)	2.29 (0.95, 5.55)	2.05 (0.85, 4.99)
Child age	1.173 (0.99, 1.38)		1.17 (0.99, 1.38)
Mothers age	1.07 (1.00, 1.14)	1.06 (0.99, 1.13)	
Child living with ǂǂ		0.30 (0.83, 1.10)	0.31 (0.09, 1.19)
Having child dental coverage ǂǂǂ		2.13 (0.96, 4.77)	2.10 (0.93, 4.74)
Reference ǂ; females, ǂǂ; single parent, ǂǂǂ; yes			