Immigrant child health in Canada: a scoping review

Bukola Salami, Mary Olukotun, Muneerah Vastani, Oluwakemi Amodu, Brittany Tetreault, Pamela Ofoedu Obegu, Jennifer Piaquin, Omolara Sanni

ABSTRACT

Introduction Understanding the health of immigrant children from birth to 18 years of age is important given the significance of the early childhood years and complexity of factors that may influence the health status of immigrant populations. Thus, the purpose of this review was to understand the extent and nature of the literature on the health of immigrant children in Canada.

Methods We conducted a scoping review of the literature. The review was focused on studies of first-generation and second-generation immigrant children aged 0–18 years. We completed standardized data extraction of immigration status, immigration route, age of children, data source, health or clinical focus, country of origin and major findings.

Results In total, 250 published papers representing data from 237 studies met the inclusion criteria for this study. A total of 178 articles used quantitative methodologies (mostly survey and cross-sectional study designs), 54 used qualitative methodologies and 18 used mixed methodologies. The articles considered in this review included 147 (59%) focusing on physical health, 76 (30%) focusing on mental health and 37 (15%) focusing on the social aspects of health for refugee and first-generation and second-generation immigrant children across the provinces and territories of Canada.

Conclusions Several literature gaps exist with respect to child immigrant health in Canada. For instance, there are no exclusive studies on immigrant boys and limited studies on children of international students.

WHAT IS ALREADY KNOWN ON THIS TOPIC

- According to a phenomenon known as the healthy immigrant effect, immigrants to Canada arrive in better health than their Canadian-born counterparts, but many experience a decline in their health status with time in Canada.
- Immigrant children in Europe and North America are at increased risk for communicable diseases, chronic illness, mental health disorders and poor social well-being.

WHAT THIS STUDY ADDS

- Our review identified that experiences of discrimination and a lack of cultural competence within healthcare systems represent barriers to immigrant families using or seeking services for their children.
- While immigrant children in Canada experience inequitable access to resources, their unique migration experiences differentially impact their physical health, mental health and social well-being.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE OR POLICY

- Findings from this review support the development of collaborative and multisectoral networks that enact cultural safety for immigrant families, particularly newcomer immigrants and refugees, towards facilitating access to the Canadian healthcare system.

INTRODUCTION

Globally, trends in migration are increasing due to factors such as conflict, persecution, poor living environments and lack of personal safety.1 As of 2016, approximately 7 540 830 foreign-born individuals lived in Canada, representing 21.9% of the population.2 The size of Canada’s foreign-born population is also reflected in the proportion of immigrant children. Children under the age of 15 years with an immigrant background (ie, first-generation and second-generation immigrants) number nearly 2.2 million in Canada and could represent up to 49% of the total population of children by the year 2036.3 Considering the growing population of immigrant children in Canada, the significance of the early childhood years, and increasing evidence that immigration status profoundly influences well-being, an understanding of immigrant children’s outcomes from birth to 18 years of age is invaluable towards ensuring their long-term health and well-being.4,5 Evidence suggests immigrants arrive in Canada with better health than their Canadian-born counterparts, however, inequitable access to societal resources negatively influences the whole health they experience on arrival, a phenomenon referred to as the ‘healthy immigrant effect’.4,5 Social determinants of health such as housing, education, employment, food security, access to healthcare services and other social supports are

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foundational to well-being, and notably, these are also areas within which many immigrants face difficulties.\textsuperscript{6,7} Despite this generalisation, individuals from immigrant backgrounds are diverse and have unique intersecting factors that predispose them to increased vulnerabilities compared with their native counterparts. Various combinations of premigration and postmigration experiences also contribute to the health issues experienced by immigrants.\textsuperscript{5}

Canadian primary care providers have identified several high priority issues among immigrant and refugee populations new to the country, such as certain infectious diseases, mental health conditions, iron deficiency anaemia, diabetes, dental caries and other key maternal and child health conditions.\textsuperscript{8} Children and infants of immigrant/refugee women may have poor nutritional status due to interruption of feeding, poor breastfeeding practices and lack of healthy food access.\textsuperscript{3} Additionally, many immigrants and refugees come from areas with increased incidences of communicable diseases which increase their risk of infection. However, non-communicable diseases leading to chronic illnesses are increasingly recognised as shaping the health status of immigrants and refugees.\textsuperscript{1}

A systematic study in Europe demonstrated that immigrant children may be increasingly at risk of mental health disorders and medical conditions such as tuberculosis and dental caries\textsuperscript{9}; in North America, Asian children have a higher risk of developing mental health issues due to ‘high acculturation stress, low English language competence, language brokering and discrepancies in children’s and parent’s cultural orientation (the non-Western cultural orientation, eg, collectivistic, acceptance feelings of parents or harsh parenting)’.\textsuperscript{10} By and large, immigrant children face compounded challenges during adolescence, as Pottie \textit{et al}\textsuperscript{11} stressed, noting that first-generation immigrants are more likely to experience bullying, violence and suicidal behaviours compared with native-born or later-generation immigrants. Furthermore, exposure to adverse living conditions and unmet social determinants of health as children can have negative outcomes that lead to cycles of adversity and influence health across the lifespan and across generations.\textsuperscript{12} Therefore, the nested environment of immigrant children also has implication for future generations and requires increased attention.

This paper reports on a scoping review of evidence on immigrant child health in Canada. To our knowledge, this is the first comprehensive synthesis of the literature on the health of immigrant children in Canada. This review aimed to determine the extent, range and scope of the literature related to immigrant child health in Canada. Our approach allows for reflection on how future research, policy and practice can improve the health of Canadian children with an immigrant background.

\textbf{METHODS}

We used a scoping review methodology to collate studies focusing on immigrant child health in Canada. Scoping reviews are appropriate for broad topics with diverse study designs.\textsuperscript{13} Arksey and O’Malley\textsuperscript{15} indicated five stages in conducting a scoping review. The first and second stages are identification of research questions and relevant studies through literature searches. The third stage includes study selection, and stages 4 and 5 comprise data extraction and collation.

\textbf{Identification of research questions and relevant studies}

We identified broad research questions as guided by Arksey and O’Malley\textsuperscript{15}: (1) What is the extent and nature of the literature on the health of immigrant children in Canada? and (2) What are the gaps in evidence on the health of immigrant children in Canada? A health science librarian assisted in refining our search strategy and in searching the following databases: PUBMED, CINAHL, Scopus, SocIndex and Sociological Abstract. We combined three sets of keywords. The first set were those that represented immigrant populations, such as immigrant*, migrant*, immigration*, migration* and transients. The second set were those related to child, such as child*, adolescent*, infant, toddler and preschool. The third set were those that represented health, such as health*, wellness, wellbeing, illness*, disease* and morbidity*. We conceptualised immigrants inclusively, to describe ‘a person who moves into a country other than that of his or her nationality or usual residence, so that the country of destination effectively becomes his or her new country of usual residence’, whether short-term or long-term, corresponding to a stay between 3 and 12 months or >12 months, respectively.\textsuperscript{14} We conceptualised health broadly, in line with WHO’s\textsuperscript{15} definition of health as ‘a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity’. Our three keyword sets were also combined with the word Canada and the names of each Canadian province/territory (online supplemental file 1).

Our initial search was completed in 2017 to focus on articles from the previous 20 years; our updated database search was completed in May 2021. Journal articles were also identified through a review of the reference lists of articles meeting our inclusion criteria. We subsequently completed a grey literature search in February 2022 with revision of our initial submission to the journal. Grey literature were identified through targeted Google searches using the keywords applied in our database search. Our grey literature search also included the university grey literature collection; a search in ProQuest Dissertations and Theses and searches of the websites of government agencies, research institutes and organisations that focus on immigrant child health, child health or population health. We reviewed the first 100 results when searches yielded more than 10 pages. Our grey literature search is outlined in online supplemental file 2.
Study selection
Due to the vast literature retrieved, we limited our analysis to articles published in the past 20 years at the time of the initial search in 2017, then updated our results to include articles published up to May 2021 when the last search was completed, then added the publications identified from our grey literature search. Two members of the research team read the titles and abstracts, then full text of relevant articles to identify those that met the inclusion criteria. Disagreements were resolved by a third member of the research team. Articles were included that: (1) focused on first-generation or second-generation immigrant children age 0–18 years; (2) contained primary data or secondary analysis and (3) reported on studies completed in Canada. In our screening, we conceptualised first-generation and second-generation immigrant children as children born outside of Canada or children with at least one parent born outside of Canada, respectively; this was inclusive of children of international students and transient foreign workers. We excluded reviews and articles focused on the education system without information on health. Grey literature were also reviewed using these criteria. Figure 1 details each stage of the selection process.

Data extraction and collation
We extracted the following information: author name(s), year of study, purpose, methodology, data collection method, sampling, sample size, gender of participants, immigration status, immigration route, age of child, data source (parent, child, health professional, etc), health or clinical focus, country of origin, province/territory of participants and major findings. Based on the approach by Arksey and O’Malley,13 we did not complete a quality appraisal of included studies as the main objective was to map out the extent of the literature. The team read the results and identified preliminary categories. These were then expanded and eventually collapsed into three major categories.

RESULTS
In total, 250 published papers representing data from 237 studies met our inclusion criteria and are summarised in online supplemental file 3. A total of 178 articles used quantitative methodologies (mostly survey and cross-sectional study designs), 54 used qualitative methodologies (mostly explorative) and 18 used mixed methodologies. Most of the research studies were conducted in non-clinical settings. The type and size of the selected sample varied according to the study design. In quantitative studies, both probability and non-probability types of sampling were used. The most common was convenience sampling based on predetermined inclusion and exclusion criteria. Other common types were
cluster or snowball sampling and secondary data analysis. Many studies used a combination of sampling strategies. Ninety-eight articles did not clearly describe the sampling strategy employed.

The sample size for quantitative studies ranged from 36 to 3,370,641 participants. Among qualitative studies, mostly purpose sampling was adopted, and the sample sizes ranged from 1 to 94. In mixed-method studies, various types of sampling techniques were used, and sample sizes ranged from 12 to 12,225 participants. The main data sources were children and adolescents (n=119) followed by parents and caregivers (n=80). Large Canadian national datasets, various surveys and registries (n=66) as well as document, chart and record reviews (n=31) were also used as major sources of data. In a few studies, data were also collected from teachers (n=5), adults (n=7), families (n=6), healthcare professionals and service providers (n=15) and stakeholders and leaders (n=6).

Most studies included both male and female children (83%); however, a few studies focused primarily on adolescent girls. The most common age group was 13–18 years (27%) followed by 0–5 years (17%) and 6–12 years (10%). Immigrants listed regions of Asia, Africa, America, Europe, the Caribbean, the Middle East and Oceania as their countries of origin. Most studies broadly identified immigrants (56%) as the target population. The second-largest group identified was second-generation immigrants born in Canada (41%) followed by refugees (35%). Very few studies focused on children of international students or undocumented/failed claimant children. While the majority of studies specified the generation of the immigrant child as either first or second, approximately 23% of the studies did not provide this information. The majority of the selected studies in this scoping review were conducted in Ontario (45%), Québec (29%), British Columbia (16%) and Alberta (14%). The 250 publications considered in this review included 147 (59%) focusing on physical health, 76 (30%) focusing on mental health and 37 (15%) focusing on the social aspects of health. Due to poor delineation between first-generation and second-generation immigrant children in reports of findings, the synthesis of results focuses on studies addressing the health of refugee children, first-generation immigrant children and studies where the differences in the outcomes of first-generation and second-generation immigrant children are specified.

Physical health
Our review revealed a myriad of investigations into the causes, relationships, experiences and prevalence of physical illness among immigrant children. The most frequent topic was the identification and screening of tuberculosis in children and adolescents, with findings generally reporting poor outcomes. Immigrant children were at higher risk of testing positive for tuberculosis owing to low vaccination rates and high incidence rates in the countries from which they migrated.16–20 Dhawan et al34 identified that younger children, aged 4 years and below, had the highest prevalence of tuberculosis in an Albertan sample. Vitamin D deficiency followed as the second most studied physical health topic. This was highlighted as an under-recognised public health problem, with reports indicating immigrant children had lower-than-desirable vitamin D levels compared with the Canadian-born population and would benefit from dietary supplementation.22–25 Additionally, refugee children tended to have more significant levels of vitamin D deficiency compared with newcomer immigrant children.26 HIV and malaria were also of concern in immigrant child populations due to high incidence in countries of origin.27–28

Dental and oral health outcomes were less favourable for immigrant and refugee children due to poor oral hygiene, unawareness of publicly funded facilities and lack of dental health insurance, which jointly contributed to increased risk and prevalence of early childhood caries.29–33 Utilisation of dental services and adherence to preventative dental routines were facilitated by access to high-quality services, friendly and knowledgeable staff and providers, referrals or reminders and community-based dental programmes.34 A high prevalence of asthma among immigrant children postmigration to Canada was attributed to environmental factors, especially in relation to duration of residence.35–36 However, the overall incidence of asthma was lower in immigrants compared with long-term Canadian residents and the incidence in first-generation immigrant children was slightly lower than in second-generation immigrant children.37 Bin Yameen et al38 found refugee children had a higher prevalence of disparate visual acuity and unmet eye care needs compared with the general Canadian paediatric population. Several other health conditions were also identified in the literature. For example, refugee children younger than 5 years had a higher prevalence of anaemia than refugee children <15 years overall,39 and high rates of past or current infectious disease has been documented among immigrant and refugee children in Canada.40

Health behaviours and metrics that contributed to physical health were also investigated. Maticka-Tyndale et al31 found the median age of first intercourse for immigrant adolescent girls was comparable to their non-immigrant counterparts, but higher for adolescent immigrant boys. While newcomer youth who are sexually active are generally more likely to have accessed sexual health services, Salehi42 also found no association between gender and likelihood of accessing sexual health services. In comparison to their Canadian-born counterparts, immigrant youth had a lower incidence of tobacco use or smoking in general and first-generation immigrant adolescents were less likely to use cannabis.43–45

Studies on body mass index (BMI) and body fat showed an interesting mix of higher and lower BMI in immigrant child populations.46–49 BMI was lower among immigrant youth than their non-immigrant counterparts but subject
to increases over time.\textsuperscript{50} Factors such as an abundance of fast food in Canada, the high cost of healthy foods, food insecurity and a change in diet from their home countries contributed to an upward trend in BMI and poor nutritional status in immigrant children; however, findings across studies showed BMI also differed with ethnicity.\textsuperscript{51, 52} There was a lower prevalence of physical injury among immigrant children, but they also tended to have more severe injuries or were more likely to report multiple injuries compared with Canadian-born children.\textsuperscript{53} Refugee children typically benefitted from federal health programmes to bridge their access to primary and emergency care.\textsuperscript{54}

Mental health
This review looked closely at the mental health of immigrant children in relation to acculturation, adaptation and discrimination. Some studies reported the mental health outcomes of immigrant adolescents as poor, as they displayed more emotional and behavioural problems in comparison to counterparts back in their home country.\textsuperscript{55, 56} Other studies reported immigrant children generally had better mental health status than non-immigrant children, with an indication that second-generation immigrant children had poorer mental health status than first-generation immigrant children.\textsuperscript{57–59} Younger age at migration was associated with a greater risk of mood disorders and substance abuse.\textsuperscript{60–62} Notably, immigrant and refugee adolescents tended to have higher levels of resilience than non-migrants despite having experienced more trauma.\textsuperscript{63}

Rousseau et al.\textsuperscript{53} reported that while parents assessed their children’s mental health as generally good despite the stresses of resettlement, teenagers’ self-reports showed they internalised emotional problems to a great extent with this declining over adolescence. In a more recent study examining mothers’ perspectives, mothers reported concerns with poor mental in their children related to issues of discrimination, resettlement challenges, access and stigma.\textsuperscript{64, 65} Results also described how immigrant children perceived themselves in light of their ethnic, linguistic and cultural similarities to peers, which influenced their sense of belonging, overall life satisfaction and was sometimes detrimental to their mental health.\textsuperscript{57, 67–69}

Postmigration perceptions of discrimination predicted both emotional problems and aggressive behaviour, especially among adolescent immigrants.\textsuperscript{70} This generally improved with family support and longer stays in the resettlement country.\textsuperscript{71} Refugee children with greater engagement with their family routines had better anger regulation, and postmigratory daily hassles were positively associated with increased sadness regulation in children with lower levels of premigratory life stressors.\textsuperscript{72} For some immigrant children, a weaker relationship with their parents was identified as a significant predictor of behavioural problems such as physical aggression, indirect aggression and property offences.\textsuperscript{73}

The promotion of multiculturalism in Canada greatly enhanced adaptation, yet immigrant adolescents still felt discriminated against for their skin colour, especially within the first year of arrival in Canada.\textsuperscript{74} The sensitive subject of understanding immigrant children’s diagnoses through a collaborative lens by health service providers—\textsuperscript{75}—which should involve liaising with social agencies, schools, immigration or housing—\textsuperscript{75}—was stressed. A multimodal approach was found to ease the integration of refugee children who fled to Canada to escape war and terrorism in their home countries.\textsuperscript{76} A good understanding of immigrant and refugee child mental health was emphasised to include appreciation of cultural differences, fostering emotional safety, inclusion of family and community in interventions, collaborative decision-making pathways and consideration of migration-specific variables.\textsuperscript{77–82}

Social health
Coping strategies are required to adjust to a new society, and family support was shown in the findings of this study to be an integral strategy of resettlement and social adjustment.\textsuperscript{83} Immigrant adolescents navigated loss of family, friends and cultural familiarity due to migration, resulting in feelings of disconnection and a lack of belonging.\textsuperscript{78, 84} Adjustment was often also critically affected by the low income levels of working immigrant families, which negatively impacted their children’s well-being.\textsuperscript{85} Low social support and sustained poverty were more common among minority migrants with young children. This social determinant of health weaved into greater deprivation indexes that accounted for disparities in help-seeking behaviours. These children presented more frequently to Canadian paediatric emergency departments and faced long wait times when seeking care.\textsuperscript{86–88} Other social barriers to access in Canada were language, especially for immigrants who were not native English or French speakers, and cultural differences, which fostered mistrust of institutional systems and doubts about provider compassion and competence.

DISCUSSION
As the population of immigrants in Canada increased over the past several decades, the body of literature on their health outcomes grew accordingly. In recent years, a number of reviews have been undertaken which synthesise the outcomes and experiences of various immigrant populations in Canada, with a small proportion focusing on immigrant children. Our review thus fills a gap in knowledge by providing a comprehensive synthesis of the extant literature and outlining key findings about the physical health, mental health and social well-being of immigrant children in Canada. Our findings are consistent with recent reviews which emphasise interacting microfactors, mesofactors and macrofactors that impact the health of immigrant children in Canada.\textsuperscript{89–92} The interplay of diverse factors that improve, support
or worsen the health of immigrant children stress the importance of attending to this population with multi-component approaches that acknowledge their needs, strengths and unique experiences.

Of particular interest in the literature on immigrant health are the manifestations of the healthy immigrant effect within various immigrant populations and its effects on their short-term and long-term health outcomes. While this phenomenon is often broadly applied to all immigrant groups, recent systematic reviews highlight that the degree to which it occurs depends heavily on migration route, life-stage at the time of migration and the measures assessed. Economic-class immigrants tend to have a prominent health advantage on migration to Canada, while the research on refugee populations has been inconclusive. Additionally, adults aged 20–65 years are more likely to experience a decline in their health postmigration, but this varies across metrics such as level of overweight and prevalence of chronic conditions; furthermore, there is variability in the prevalence of healthy immigrant effect between male and female immigrants. Overall, patterns of health congruent with the healthy immigrant effect are more prominent in recent immigrants, immigrants from poorer countries and immigrants from culturally dissimilar countries compared with Canada, implicating broader structural factors which contribute to the health status of adult and child immigrant populations.

For immigrant children, efforts to understand their postmigration health outcomes have yielded mixed results, as corroborated by our findings and other similar reviews. While previous findings on the well-being of immigrant youth demonstrate that they fare well in terms of health, social integration and school achievement despite bullying and other negative interactions with peers, our review reports varied outcomes. For example, our findings on the physical health revealed that immigrant children had worse outcomes in some areas (e.g., tuberculosis, vitamin D deficiency, oral health, degree of injury), but better outcomes in others (e.g., asthma, BMI, incidence of injury). Ethnicity and gender also influenced the variability of outcomes. Ethnic minority children had higher levels of vitamin D deficiency, with the highest seen in immigrant girls. Additionally, immigrant girls were more likely to be overweight, while immigrant boys had a higher prevalence of decayed, missing or filled teeth. Moreover, differences in physical health outcomes such as higher rates of asthma in second-generation immigrant children and increased prevalence of anaemia and unmet visual needs in refugee children further reflect the diversity in their health needs. This combination of findings also exposes the differential impacts of migration context and social determinants of health on the outcomes of immigrant children.

Findings on the mental health and social well-being of immigrant children have historically been inconsistent as well. In several of the studies included in our review, immigrant children were reported to have better outcomes, with the reverse documented in other studies. On one occasion, parents’ reports of positive mental health in their children contradicted children’s self-reports which actually revealed high incidences of poor mental health; furthermore, another group of parents reported concern about poor mental health in their children. Nevertheless, it should be acknowledged that parental reports of mental health are shaped by their cultural conceptualisations of mental health which may not correspond with Western conceptualisations, thus influencing how and what they communicate about their children’s mental health. Parents also reported socio-economic status as a barrier to mental health service access, and it has been documented that socio-economic status contributes to immigrant children’s self-perceived mental health and their shared sense of well-being within the family. Yet, despite the higher prevalence of poverty in immigrant households, immigrant children generally experience better mental and social well-being than their Canadian counterparts, in part, due to protective factors such as social networks and bonds with others of similar cultural and ethnic backgrounds which foster a sense of belonging. Social support is crucial to the well-being of children and youth, and especially important during periods of adjustment. In many immigrant families, strong transnational ties ameliorate the emotional, social, cultural and economic stresses associated with resettlement. However, discordance between cultural values in their home country and their host country can contribute to tension and pose greater challenges with identity and acculturation as immigrant children reconstruct their sense of self.

Despite the mixed evidence on mental health and social well-being, consistent across studies were reports of discrimination which contributed to the development of emotional problems and aggressive behaviours. Children’s experiences with racism and discrimination deteriorated their self-esteem, leading to feelings of social isolation, and subsequently discouraged them from seeking professional assistance for physical or mental health concerns. Discrimination experienced by parents impacted immigrant children through the restrictions of opportunities available to their parents who balanced multiple low-wage jobs to meet material needs, leaving less time to nurture the development of social and emotional well-being in their children. Additionally, mental health in immigrant youth was also impacted by parental experiences with resettlement, parental mental health and parenting approach. The literature thus demonstrates that immigrant children’s experiences are not entirely independent from their parents’, nor are they isolated from the broader contexts of their migration. Factors which affect the health of immigrant parents are also implicated in their children’s health outcomes, most notably, in terms of health access and informed decision-making. This underscores the importance of a global perspective that accounts for these complexities.
for children’s needs as separate, yet nested within their parents’ circumstances.65 63

Our findings highlight a number of systemic barriers that impact healthcare access for immigrant children and are echoed in a recent qualitative study on healthcare access for immigrant children in Canada.96 Social determinants of health such as education, employment, income, housing and food security, gender, social security and belonging have a pronounced influence on the health of immigrant populations.95 In addition to encounters with discrimination, immigrant populations in Canada experience access barriers related to culture, socioeconomic status, communication, knowledge and the structure of the healthcare system.96 Furthermore, language barriers, cultural discordance and challenges with acquiring information serve as deterrents to accessing many institutional systems such as primary care, mental health services or specialised care services for children with disabilities, asthma or cancer.65 90 99

The studies analysed in our review primarily focused on those aged 13–18 years, highlighting a significant lack of research on preteen and preschool-aged children despite how vital these years are to long-term health and well-being.4 Research on this population should focus on strategies to improve the health of refugee children, especially in terms of nutritional deficiencies, oral health and eye health due to their disparate outcomes in these areas.22–24 26 29–33 38 39 54 The extent of health coverage for refugee and undocumented migrant children is unknown, and little to no research has been done on the children of international students and transient foreign workers. It is also concerning that little research focuses on the health of immigrant boys; furthermore, none of the articles identified in our review addressed the health of immigrant children identifying as lesbian, gay, bisexual, transgender or queer. This is a missed opportunity to understand associations of gender and health, especially since gender has been identified as an important demographic factor in the health outcomes of immigrant children.70 85 For greater inclusivity and thorough consideration of intersectionality in research on immigrant child health, diverse gender categories need to be considered in future inquiries.

Additionally, notable differences exist across studies with respect to the definition of first-generation versus second-generation immigrants and in some studies, this was not delineated for the population of interest. The lack of disaggregated data across generations of immigrant children poses potential challenges in assessing for differences in their health outcomes. Standardised conceptualisations in data collection will facilitate a shared understanding of how various social determinants of health influence immigrant children’s health outcomes. Our review also reveals an apparent gap in research by presenting evidence that, despite findings by Rousseau et al.,96 indicating undocumented immigrant children face an especially great risk of health inequities and disparities due to their precarious legal status, very few studies have focused on this vulnerable group. Longitudinal studies also need greater focus on unaccompanied minors and children of undocumented migrants to understand the health effects of migration status, unemployment and poverty.

Given the diverse backgrounds and experiences of immigrant populations, it is necessary to provide a full range of services, including culturally sensitive community-based treatment services and trauma-focused care.79 80 Further research on belief-related barriers among parents is needed to inform changes to existing services and programmes for newcomer families. Importantly, research should extend towards understanding the role of family, peer and educational systems in developing effective mental health programmes for immigrant children to build on the protective role of social support.62 67 68 81 83 95 Finally, there is a significant need for multidisciplinary research to explore broader familial and institutional factors constituting barriers to healthcare access for immigrant children.

CONCLUSION

Although this review was limited by the lack of clarity between first-generation and second-generation outcomes in some studies, it remains the first comprehensive document of its kind and provides a thorough overview of the literature for any healthcare professional wishing to engage in research involving immigrant child health in Canada. Our review revealed that there are still gaps in our knowledge of the health of immigrant children in Canada and this population still experiences challenges with healthcare access and disparate health outcomes across various measures. Collaborative multisectoral partnerships across health and social services may improve immigrant’s experiences with navigating services which are fundamental to their health and well-being.

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# Online supplemental file 1: search strategy

## PubMed

**LIMITERS:**
- None

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</table>
Supplemental file 3: study summaries

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Type of Study</th>
<th>Purpose</th>
<th>Methodology</th>
<th>Sample Size</th>
<th>Characteristics of Participants</th>
<th>Characteristics of Clinical Area</th>
<th>Data Sources</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adibo, T.</td>
<td>2003</td>
<td>Quantitative</td>
<td>To examine the impact of immigration on the self-rated health status of Sub-Saharan African youth, ages 16-17 years.</td>
<td>Longitudinal survey</td>
<td>About 2210 children surveyed in cycle 2 for study, with only 1782 (77%) remaining in cycle 4.</td>
<td>Not stated</td>
<td>Not stated</td>
<td>10-12 years</td>
<td>Secondary analyses 1996/1997 to 2000/2001 from the Canadian National Longitudinal Survey of Children and Youth.</td>
</tr>
<tr>
<td>Ahmed, A.</td>
<td>2005</td>
<td>Quantitative</td>
<td>To compare health outcomes between children of various immigrant families with their Canadian counterparts: health outcomes of children of various immigrant families to their Canadian counterparts in terms of health outcomes and to examine the association between health outcomes and time of residence in Canada for children of various immigrant groups.</td>
<td>Longitudinal survey</td>
<td>13,617 children</td>
<td>Not stated</td>
<td>Not stated</td>
<td>4-13 years</td>
<td>Cycle 2 of National Longitudinal Survey of Children and Youth (NLSCY).</td>
</tr>
<tr>
<td>Aiko Bruce, A.</td>
<td>2014</td>
<td>Qualitative</td>
<td>To explore the experiences of children with sickle cell disease from a parent’s perspective, after moving from Sub-Saharan Africa to North America.</td>
<td>Focus group</td>
<td>6 families</td>
<td>Not stated</td>
<td>Families with children under 18 years</td>
<td>4 families</td>
<td>Sickle Cell Disease</td>
</tr>
</tbody>
</table>


Salami, B. et al. BMJ Global Health 2022; 7:e008189. doi: 10.1136/bmjgh-2021-008189

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<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Sample Description</th>
<th>Methods</th>
<th>Findings/Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al-Rabiey, O.</td>
<td>2011</td>
<td>Quantitative</td>
<td>Determine level of access to dental care among Arabic-speaking preschool children in Canada</td>
<td>Descriptive, cross-sectional survey</td>
<td>Not stated</td>
</tr>
<tr>
<td>Al-Rabiey, O.</td>
<td>2011</td>
<td>Quantitative</td>
<td>To explore the TB immigration screening requirements among Arabic-speaking children</td>
<td>Descriptive, cross-sectional survey</td>
<td>TB immigration examination requirements in children</td>
</tr>
<tr>
<td>Al-Rabiey, O.</td>
<td>2015</td>
<td>Quantitative</td>
<td>To assess parental awareness of their children's dental status and the relationship between parental awareness and children's dental attendance</td>
<td>Qualitative, model sample study</td>
<td>Correlation analysis with SPSS</td>
</tr>
<tr>
<td>Amin, M.</td>
<td>2012</td>
<td>Qualitative</td>
<td>To identify psychosocial barriers to providing and obtaining preventive dental care for preschool children among African immigrants</td>
<td>Qualitative study of 3 focus groups with 7 to 8 workers and detailed material with control health worker</td>
<td>Not explicitly stated (parents' perceptions)</td>
</tr>
<tr>
<td>Amin, M.</td>
<td>2012</td>
<td>Qualitative</td>
<td>To explain the challenges presented to the clinician who deals with a possible Munchausen-by-proxy (MBP) syndrome</td>
<td>Descriptive dental case study</td>
<td>Munchausen-by-proxy (MBP) syndrome</td>
</tr>
<tr>
<td>Bezonsky, R., &amp; McDonagh, R.</td>
<td>1989</td>
<td>Qualitative</td>
<td>Culture and Munchausen-by-proxy syndrome: the case of an 11-year-old boy presenting with hyperparasite</td>
<td>Descriptive, case study</td>
<td>Descriptive, case study</td>
</tr>
<tr>
<td>Bezonsky, R. L., Bezonsky, R., &amp; McDonagh, R.</td>
<td>1991</td>
<td>Qualitative</td>
<td>The role of the clinician in providing care to the clinician who deals with a possible Munchausen-by-proxy (MBP) syndrome</td>
<td>Descriptive dental case study</td>
<td>Munchausen-by-proxy (MBP) syndrome</td>
</tr>
</tbody>
</table>

**Supplemental material**

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**BMJ Global Health**

DOI: 10.1136/bmjgh-2021-008189

Only 34% shared that their children were seen by a dentist, primarily for regular dental checkups (41%), dental problems (28.9%) or issues related to caries (7.9%) or gingivitis (7.9%). In 64%, no visits were the norm, mainly due to barriers such as fear of dental visit, lack of need, or dentist's recommendations. The study also found that mothers were more likely to report preventive dental services for their children than fathers.

**Citation:** Salami B, et al. BMJ Global Health 2022; 7:e008189. doi: 10.1136/bmjgh-2021-008189

Andrawes, L. C., Mohly, C., & Saltiel, D. W. (2016). Quantitative To intervene culturally in the context of a Canadian health program aimed at improving young children's food practices and language abilities. This study is also an opportunity to understand how child caregivers use and interpret nutrition recommendations 

Ethnography Purposive sampling 52 participants: 17 Latin American and 35 Tamil speakers 

Religious sex, family class, citizenship, permanent resident, refugee claimant, human rights claimant 

Not stated 1-5 years 

Parasites: case, control mothers 

Nutrition 

Sri Lanka newcanees 

Ontario 

Participants detailed their previous nutrition practices before coming into Canada. They felt that they didn't know how to cook to their taste. Fresh food was important, and most didn't know how to preserve their traditional foods in the Canada Food Guide (CFG) meal plan. They felt that foods in Canada were not fresh and had hormones and pesticides. Tamil speakers were unable to access CFG programs while Latin American mothers had community-based programs. Tamil speakers had a sexually transmitted infection prevalence and background of the CFG. They were more focused on keeping food clean and safe to prevent disease. Latin American were focused on the nutrient benefits and variety in nutrition. 

Andrawes, L., Mobily, C., & Saltiel, D. W. (2015). Quantitative To explore participants' perspectives on the design and content of a cultural education program 

Test workshop & Focus groups 

Characteristics sampling 80 youth 

M & F 

Refugee or specific ethnic group 

Not stated 11-14 years 

Children/A 

Girls 

Sexual/Reproductive health education 

Emergencies from low-income countries 

Not stated 

WeirdidentifiedchildreninemergencyofsexualhealthreproductivehealthservicesinCanadaandbouchicome, e.g. female circumcision was seen negatively in Canada and aid of condoms were promoted over abstinence in the workshop. 


Auren, M., Warner, R., Thomas, R., & Jones, L. (2015). Quantitative To determine the 25-hydroxyvitamin D (25(OH)D) serum levels in refugee women of childbearing age and refugee children from the Calgary Refugee Health Program, Canada. Compare their 25(OH)D serum levels to the recommended levels to determine the prevalence of deficiency, compare their 25(OH)D serum levels with those in the general Canadian populations in the appropriate age and sex groups, and investigate the association of vitamin D deficiency with potential risk 

Cross-sectional 1 chart review 

Retrospective sampling 1237 refugee women and children enrolled: 461 women and 756 children (0-19 years) 

M & F 

Refugee or specific ethnic group 

Not stated 0-19 years 

Children/A 

Girls 

Vitamin D deficiency in refugee health 

June 2008 and January 2010 

Alberta 

Considering the Ontogenetic Cascade guidelines, 81% of children had lower than-desirable 25(OH)D levels (< 75 nmol/L) and 10% of children were vitamin D deficient (< 25 nmol/L). Female refugees between the ages of 12 and 19 years old had lower vitamin levels of 25(OH)D than male refugees in the same age group (p < 0.01). 


Auger, N., Girard, J., & Daniel, M. (2009). Quantitative To examine the relationship between birth outcomes and immigration density at area income inequality and segregation within the context of various social 

Not stated 

Multiple logistic regression analysis on analysis 

Not stated 

Maternal N = 535, 120 singleton births and 195 local service centers 

F 

Not stated 

1st generation 

Births in 5 years (per data file) 

Quebec birth file & Canada Census birth file from 1996-2001 were extracted 

Birth outcomes associated with: birth (PTB) and preterm for gestational age births (SGA) 

1996-2005 (data set) 

Not stated 

Quebec 

Higher rates of SGA found in foreign-born, comparable rate of SGA births. PPH rate was highest in areas with low immigrant density & SGA births more frequent in areas with high immigrant density. Greater immigrant density positively associated with PTB for foreign born mothers, greater immigrant density associated with progressively higher proportions of SGA births. 


Nutrition 

Sellen, D. 

43.5% of children had oral health outcomes. SGA rates (5.1%) and SGA rates (5.7%) were significantly higher for boys and girls with 5-10%. The rates were significantly lower for girls and boys with SGA rates (5.7%) and SGA rates (5.1%) were significantly lower for girls and boys with 5-10%.

Ashdown, H., Jalloh, F., DeMar, D., & Sellen, D. (2016). Mixed Methods: Diverse perspectives on food and health knowledge about nutrition and sex groups, and investigate the relationship between birth outcomes and immigration density at area income inequality and segregation within the context of various social markers. 

Nutrition 

Sellen, D. 

43.5% of children had oral health outcomes. SGA rates (5.1%) and SGA rates (5.7%) were significantly lower for girls and boys with 5-10%.
<table>
<thead>
<tr>
<th>Reference</th>
<th>Study Design</th>
<th>Method</th>
<th>Participants</th>
<th>Setting</th>
<th>Data Collection</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bakhshaei, M., &amp; Henderson, R. I. (2015).</td>
<td>Qualitative</td>
<td>Focus group discussions and in-depth interviews</td>
<td>Students in their primary schools</td>
<td>Edmonton, Alberta, Canada</td>
<td>Focus on Asian immigrant students</td>
<td>Explore the socio-educational experiences of Asian immigrant students in their families, ethnic community, and school.</td>
</tr>
<tr>
<td>Bakhshaei, M. &amp; Henderson, R. I. (2016).</td>
<td>Qualitative</td>
<td>Focus group discussions</td>
<td>Filipino American primary school students</td>
<td>Edmonton, Alberta, Canada</td>
<td></td>
<td>Explore the preventive dental attendance (PDA) routines for their preschool and school-aged children. Findings revealed significant parental impact on children’s PDA adherence.</td>
</tr>
</tbody>
</table>

**Key Terms:**
- Preventive dental care
- Parental impact
- Preventative dental attendance (PDA)
- Parental adherence
- Ethnic minority groups
- Asian immigrant background
- Socio-educational experiences
<table>
<thead>
<tr>
<th>Year</th>
<th>Authors</th>
<th>Methodology</th>
<th>Findings</th>
</tr>
</thead>
</table>

**Notable Findings:***
- The study by Beiser et al. (2015) found that maternal and paternal country of origin significantly impact the risk of stillbirth.
- Beiser and Hou (2016) identified several risk factors for stillbirth in children of different ethnicities.
- Beiser et al. (2014) observed that pre- and post-migration trauma play a significant role in shaping the mental health of refugee children.
- Beiser et al. (2021) noted that maternal and paternal country of origin significantly affect the risk of stillbirth.

**Contextual Notes:**
- Beiser et al. (2015) and Beiser and Hou (2016) highlight the importance of understanding the impact of migration on the health of children and communities.
- Beiser et al. (2014) suggest that trauma experienced during migration can have long-term effects on mental health.
- Beiser et al. (2021) emphasize the need for further research on the specific impacts of maternal and paternal country of origin on the risk of stillbirth.

**Additional Notes:**
- The findings by Beiser et al. (2015) and Beiser and Hou (2016) underscore the need for targeted interventions to address the health disparities faced by immigrant and refugee populations.

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**References:**

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<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Study Design</th>
<th>Sample Characteristics</th>
<th>Methods</th>
<th>Outcomes</th>
<th>Study Population</th>
<th>Mental Health Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beiser, M., Hou, F., Hyun, L., &amp; Tousignant, M. (2015).</td>
<td>2015</td>
<td>Quantitative</td>
<td>To examine the proportion that cultural distance (based on the difference between an objective measure of home and resettlement/in country practices and adherence to traditional vs. secular policies) has an adverse effect on the mental health of immigrant and refugee youth; to investigate sociocultural, sociopsychologic al, and personal factors affecting this relationship.</td>
<td>Questionnaire, purposive sampling strategies, rigorous, hard-to-reach, and highly mobile groups</td>
<td>M &amp; F</td>
<td>Immigrants: not specified</td>
<td>Both 1st and 2nd generation</td>
</tr>
</tbody>
</table>

Supplemental material

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The two study questions were: (a) Are the stresses of discontinuous acculturation and their effect on mental health unique to the immigration experience of children or are they also evident in youth who grow up in the home country? and (b) Are prejudice, discrimination, and intergenerational value conflict immigration stressors among children born in Canada, or are they also evident for youth who returned in the country of origin?


Findings emphasize that the diagnosis of autism transforms the family and community network of parents, it affects their family and community relationships and their relationship to professional help services, it creates distances and tensions but also generates new links, sources of support. Group meetings between families from the same community with an autistic child are seen as particularly beneficial. Analysis of the report to professional services shows that developing therapeutic alliance is often difficult because of administrative obstacles and difficulties in intercultural communication. Findings underscore the importance of support for parents of recent immigrants to other families in their community with the same problem, to share their experiences in a safe environment.
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>What is the risk of IBD in immigrants to Canada? What is the impact of early-life exposures on the development of IBD in children?</td>
<td>Retrospective cohort study based on the health administrative data of residents of Ontario eligible for government health care insurance.</td>
<td>The total number of immigrants studied was 2,144,919 with 596,965 people being under the age of 18 at the time of immigration to Ontario and 219,958 under the age of 18 at the end of the study period. 1,236,892 non-immigrants were also studied, with 2,225,105 under the age of 18 at the end of the study period.</td>
<td>M F</td>
<td>Skilled worker, economist, or religious</td>
<td>Both 1st and 2nd generation; Charactenzed as pediatric (age under 18)</td>
</tr>
</tbody>
</table>

Immigrants from all regions had lower incidence of IBD compared with non-immigrants. Relative incidence was lowest in immigrants from the Eastern Asia and Pacific region and highest in immigrants from the Western Europe and North America and Middle East regions. Age at arrival to Canada was significantly associated with the risk of developing IBD - every year of increased age at arrival was associated with a 1.38 to 1.53 increased hazard of IBD (whether non-immigrants were included as references or not influenced these numbers). Inflammatory bowel disease (IBD) outcomes included Crohn's disease (CD) and ulcerative colitis (UC). Children of immigrants had a lower incidence of IBD and CD compared to children of non-immigrants, but not UC. There was lower relative incidence of IBD, UC, and CD among children of immigrant compared to non-immigrant children. The incidence of pediatric onset IBD was lower in South Asian immigrants and at the end of the study period. Prevalence of T1DM increased in both cohort but was lower in both South Asia and Middle East immigrants compared to non-immigrants, but not UC. The prevalence of T1DM in both groups was lower in both regions at the end of the study period. Prevalence of UC increased in South Asian immigrants compared to non-immigrants, but not CD. The prevalence of CD increased in South Asian immigrants compared to non-immigrants, but not UC. Prevalence of IBD increased in both immigrant and non-immigrant populations from 1994 to 2008. Prevalence of asthma decreased in South Asian immigrants compared to non-immigrant children. Prevalence of IBD was lower in South Asian immigrant children from 1994 to 2008. Standardized incidence of T1DM increased from 1994 to 2008 in South Asian immigrant children as well as non-immigrants. Standardized prevalence of asthma increased in both cohorts but was lower in both South Asian immigrants compared to non-immigrants. Prevalence of UC increased in South Asian immigrants compared to non-immigrants, but not CD. Prevalence was lower in South Asian immigrants compared to non-immigrants. Inflammation of UC among the children of immigrant mothers from East Asia and the Caribbean, Eastern Europe and Central Asia, and Latin America and the Caribbean. 

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| Benchimol, E. I., Mazurek, M. G., Chu, T., MacK, D. R., Guttmann, A., Nguyen, G. C., To, T., Mojaverian, N., Quach, P., & Manuel, D. G. (2015). Inflammatory bowel disease (IBD) and type 2 diabetes mellitus, and type 2 diabetes mellitus, and type 2 diabetes mellitus. | Retrospective cohort study based on the health administrative data of residents of Ontario eligible for government health care insurance. | The total number of immigrants studied was 1,454,505 from other regions and 112,901 from the children of immigrants. There was lower relative incidence of IBD, UC, and CD among the children of immigrant mothers from East Asia and the Caribbean, Eastern Europe and Central Asia, and Latin America and the Caribbean. |

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Four themes emerged from the research on what health meant to the participant: not being sick, health as necessary for participating in sports, social events, and recreation; being mentally healthy and happy; and not getting through the day (health as necessary) for ordinary functions. Children of families experiencing violence against women felt an id if violence had a negative impact on their health. Children of war had persistent fear and nightmares, and intense thoughts (getting through the day was an ongoing challenge). Parental difficulties occurred especially multiple times, and this experience they had grown up in. They felt this challenge and stress. However, refugee children were able to experience their suffering collectively with their families. Finally, many children spoke about a sense of confidence, a hope for the future, and that despite the circumstances they had grown up in, they felt that things would be better for them. The future was a positive aspect of their present. However, refugee children were able to experience their suffering collectively with their families. Finally, many children spoke about a sense of confidence, a hope for the future, and that despite the circumstances they had grown up in, they felt that things would be better for them. The future was a positive aspect of their present.
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Region</th>
<th>Study Population</th>
<th>Methods</th>
<th>Results</th>
<th>Implications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berry, J. W. &amp; Salazar, C.</td>
<td>2010</td>
<td>Quantitative</td>
<td>How do immigrant youth acculturate; how well do they adapt, and are there important relationships between how they acculturate and how well they adapt?</td>
<td>Selection of school lists and neighborhood networks</td>
<td>Questions: How do immigrant youth acculturate; how well do they adapt, and are there important relationships between how they acculturate and how well they adapt?</td>
<td>Directions for policy and practice for immigrant youth acculturation, adaptation, and discrimination.</td>
</tr>
<tr>
<td>Berman, H., MacIntyre, G. A.,</td>
<td>2009</td>
<td>Qualitative</td>
<td>Purpose: to examine the lived experiences of displacement, highlighting not only the structural forces that marginalize and subordinate those who are displaced, but also their sense of agency.</td>
<td>Exploratory study, using semi-structured interviews, focus groups, and community organizing</td>
<td>&quot;Newcomer girls in Canada. Issues in International Journal of Children and Minority Health, 4475 430.&quot;</td>
<td>&quot;Newcomer girls in Canada. Issues in International Journal of Children and Minority Health, 4475 430.&quot;</td>
</tr>
</tbody>
</table>

For most of the newcomer girls, uprooting and displacement was a single event (migration from their countries of origin). The girls described feelings of being different or not belonging, and that they existed in a liminal space where they felt marginalized and devalued. They described the loss of family, friends, cultural familiarity, and belonging upon their arrival to Canada. They felt excluded physically as well. Because most newcomer communities are sharply differentiated from the rest of the primary white cities. The ability to speak either French or English enhanced the girls’ abilities to move in and out of marginalized spaces, but they weighed these desires to move out against an already competing desire to remain in their spaces where they felt accepted and safe. They overwhelmingly valued the welcoming places that offered hope, encouragement, and solidarity. Immigrant youth often have a limited understanding of their communities. They are likely to be naive about their resources and opportunities. They are likely to be naive about their resources and opportunities. They are likely to be naive about their resources and opportunities. They are likely to be naive about their resources and opportunities.

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### Table 1: Study Characteristics and Key Findings

<table>
<thead>
<tr>
<th>Year</th>
<th>Authors</th>
<th>Study Design</th>
<th>Sample Characteristics</th>
<th>Methodology</th>
<th>Outcomes</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2017</td>
<td>Belache, K.</td>
<td>Quantitative</td>
<td>543 youths, 1st &amp; 2nd generation</td>
<td>Retrospective file review</td>
<td>Not stated</td>
<td>Not stated</td>
</tr>
<tr>
<td>2016</td>
<td>Berge, K.</td>
<td>Quantitative</td>
<td>320 M &amp; F immigrants</td>
<td>Cross-sectional</td>
<td>Immigrants (not specified)</td>
<td>Both 1st and 2nd generations, age 35-48 years</td>
</tr>
<tr>
<td>2016</td>
<td>Bolduc, E.</td>
<td>Qualitative</td>
<td>42 bilingual children aged 9-13 years</td>
<td>Exploratory study</td>
<td>Non-probabilistic sampling (participants not inclusion criteria)</td>
<td>Not stated</td>
</tr>
</tbody>
</table>

**Table Notes:**
- **Study Design:**
  - Quantitative: Used quantitative methods to measure variables.
  - Qualitative: Used qualitative methods to explore themes.
- **Sample Characteristics:**
  - 543 youths, 1st & 2nd generation: The study included 543 youths, divided into first and second-generation groups.
  - 320 M & F immigrants: The study involved 320 male and female immigrants.
  - 42 bilingual children aged 9-13 years: The study included 42 bilingual children aged between 9 and 13 years.
- **Methodology:**
  - Retrospective file review: Data were reviewed from existing files.
  - Cross-sectional: Data were collected at a single point in time.
  - Exploratory study: Data were collected to explore new themes.
- **Outcomes:**
  - Not stated: Outcomes were not specified.
  - Immigrants (not specified): Outcomes focused on immigrants without specifying the specific group.
- **Key Findings:**
  - Not stated: Key findings were not specified.

**Research Questions:**
- How does ethnicity and community influence parental interest in genetic testing for nephrotic syndrome?
- What are the coping strategies used by immigrant children to deal with violence?
- How do immigrant parents engage with mental health services for their children?

**Key Findings:**
- The majority of parents (87%) were interested in genetic testing for their children. South Asian and East/Southeast Asian parents had 74% and 76% lower odds of agreeing to genetic testing when compared to Europeans (OR 0.26, 95% CI 0.10-0.68; OR 0.24, 95% CI 0.12-0.42, respectively) after controlling for age and sex of child, age and education level of parent, initial steroid resistance, and duration of time in Canada. Immigrants to Canada also had significantly lower odds (OR 0.29, 95% CI 0.11-0.73) of agreeing to genetic testing after similar adjustment. Higher education level was not associated with greater interest in genetic testing (OR 1.24, 95% CI 0.46-3.42).

**Coping Strategies:**
- Children generally considered violence to be a negative social phenomenon which could be divided into categories of physical aggression and verbal abuse. Children living in the Quebec City region (Canada) perceived violence as a form of victimization.
- Children who experienced violence in the form of peer aggression and/ or at school had lower self-esteem and self-efficacy, and were more likely to have high engagement when they do. Facilitators of youth and family engagement with mental health care include mixed therapy, referrals, and collaborative approaches to care.
- Initial engagement was lowest for first- and second-generation immigrant children.

**References:**
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Study Type</th>
<th>Methodology</th>
<th>Sample</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown, J. (2017)</td>
<td>2017</td>
<td>Mixed Methods</td>
<td>To identify the positive aspects and strengths experienced by newcomer youth within their home environments, the program advocates with concept mapping: Work-at-home, parenting, through a local agency</td>
<td>12 respondents</td>
<td>Protective factors, home environment and safety</td>
</tr>
</tbody>
</table>
| Carranza, M. E. | 2015 | Qualitative | What meaning(s) do mothers assign to mother-daughter tensions during adolescence? | In-depth interviews and grounded theory | Snowball sampling and purposive sampling | 32 (16 mothers, 16 adolescent daughters; 8 adult daughters) | F | Immigrants not specified | Both 1 st and 2 nd generation | 13-17 years | Children/Adolescent/Parent(ren) | Adolescence and family conflict | Not stated | El Salvador
Ontario

| Chen, X., & Tse, H. | 2010 | Qualitative | To explore the experiences of newcomer youth relating to their inclusion or exclusion and feelings of belonging. | Purposive sampling | Purposive sampling | 25 selected boys & transcripts from 7 previously conducted interviews | M & F | Not stated | 1st generation | 1st participant | 10-13 years | Children/Youth | Social belonging sense of belonging | Data collected over 10 months not specified | Southeast Asia
Ontario

| Carranza, C. S., & Berman, H. (2009). | Relating among newcomer youth. Advances in Family Therapy 36(4), 387-389. | Qualitative | To investigate the concurrent relations among demographic, acculturative, and psychological factors in relation to potential acculturative emotions for adolescent girls. | Purposive sampling | Purposive sampling | 25 adolescent girls from 7 previously conducted interviews | M & F | Not stated | 1st generation | Interview participants: 13-17 years | Children/Adolescents | Social belonging sense of belonging | Data collected over 10 months not specified | Southeast Asia
Ontario

| Chen, X., & Tse, H., & Costigan, J., & Berman, H. | 2010 | Quantitative | To investigate the relationship among sociometric, psychological, and social factors in predicting the psychological well-being and sense of belonging of newcomer youth. | Randomly selected from secondary school set | M & F | Not stated | Both 1st and 2nd generation | 11-14 Years (Adolescence: 11-13yrs; Adolescents: 14yrs and older) | Children/Youth | Family | Social belonging sense of belonging | Not stated | China, Taiwan, Hong Kong, Alberta, British Columbia, Manitoba, Ontario, Saskatchewan

Ontario

| Chance, L. J., Costigan, J. C., & Berman, H. A. | 2015 | Quantitative | To investigate the concurrent relations among demographic, acculturative, and psychological factors in relation to potential acculturative emotions for adolescent girls. | Randomly selected from secondary school set | M & F | Not stated | Both 1st and 2nd generation | 11-14 Years (Adolescence: 11-13yrs; Adolescents: 14yrs and older) | Children/Adolescents, Teachers, Assessors (non-Canadian children) | Social belonging sense of belonging | Not stated | China, Taiwan, Hong Kong, Alberta, British Columbia, Manitoba, Ontario, Saskatchewan

Ontario

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<tbody>
<tr>
<td>Cheng, D., Schindl, E. L., &amp; Woo, G. C. (2007)</td>
<td>2007</td>
<td>Quantitative</td>
<td>The study aims to determine the prevalence and progression of myopia in ethnic Chinese children living in Canada, and whether Chinese children living in Canada have higher or lower prevalence of myopia than those living in China.</td>
<td>Longitudinal study, questionnaire (refraction data and random questionnaire data)</td>
<td>The prevalence of myopia increased from 1983 to 2014 in both males and females.</td>
<td>Both the rates of myopia and the rates of refractive change (the progression of myopia) in Chinese Canadian children are comparable to those found in Chinese children in East Asian countries, and migration to Canada does not lower their myopia rates. Chinese Canadian children were found to spend less time outside doing anti-myopia genetic activities than their Caucasian-Canadian counterparts, and more doing near activities than their Caucasian-Canadian counterparts. They were also found to do more near work than Chinese children living in Hong Kong.</td>
</tr>
<tr>
<td>Choi, Y. R. (2007)</td>
<td>2007</td>
<td>Quantitative</td>
<td>The impacts of immigrant children’s social relationship within their families and peer groups on the impact of demographic backgrounds on behavioral problems.</td>
<td>Cross-sectional analysis, Chi-square test used in origin data set</td>
<td>OIC children were compared to the control group.</td>
<td>Children’s relationships with both parents and peers were the most significant predictors of specific behavior problems. Additionally, demographic factors such as family structure, gender, and ethnicity were also a source of influence. Most children scored on the low range for exhibiting behavioral problems, physical aggression, inhibition aggression, and property offences. In general, the same trend was observed for both the age groups. Higher scores on the emotional and behavioral scales were more prevalent for younger children. The results indicated a lower self-esteem and a higher tendency to engage in risky behaviors.</td>
</tr>
<tr>
<td>Choi, W. F. C. (2007)</td>
<td>2007</td>
<td>Quantitative</td>
<td>What are the primary factors affecting belonging among Hong Kong adolescent immigrants?</td>
<td>Self-esteem, Satisfaction with life</td>
<td>15-15 years</td>
<td>Children’s ordinal scores were compared.</td>
</tr>
<tr>
<td>Cornejo, J., Tran, T. M., &amp; Quach, C. (2019)</td>
<td>2019</td>
<td>Quantitative</td>
<td>Anemia in the prevalence of childhood and youth attentional disorders and perseverance in professional duty between 1993 and 2014: Evidence from the Ontario Child Health Study.</td>
<td>Stratified random school sample, chart review, Secondary analysis</td>
<td>Children's ordinal scores were compared.</td>
<td>The study aims to describe the epidemiology of Salmonella serotype typhi infections among children presenting to a pediatric hospital in Montreal, Quebec. A prospective case series study was conducted. A questionnaire of 638 children and adolescents (6-12 years old) living in Montreal, Quebec was conducted. The study followed the children for a period of 12 weeks. The study was approved by the Montre&lt;ref&gt;al Children’s Hospital. Children with a psychiatric disability, those who had visited Canada as a tourist or studied in Canada before emigration expressed a weaker sense of belonging to Canada. Children with a weaker sense of belonging to Canada were also those who had visited Canada as a tourist or studied in Canada before emigration. Girls expressed a weaker sense of belonging to Canada than boys. However, boys reported higher levels of participating in bullying and had higher rates of aggression scores than girls. Children from Hong Kong had higher scores for involvement with peers in trouble, participating in bullying, and fear of being bullied. Chinese children in East Asian countries, and migration to Canada does not lower their myopia rates. Chinese Canadian children were found to spend less time outside doing anti-myopia genetic activities than their Caucasian-Canadian counterparts, and more doing near activities than their Caucasian-Canadian counterparts. They were also found to do more near work than Chinese children living in Hong Kong.</td>
</tr>
<tr>
<td>Correia, J., Georgiadou, L., Wang, L., &amp; Beilin, M. H. (2019)</td>
<td>2019</td>
<td>Quantitative</td>
<td>Strategies for the prevention of mental disorders among children (ages 4-11) and youth (ages 12-16) and the perceived need for professional support between 1993 &amp; 2014 in Ontario; assessment of socio-economic status, presence or absence of a learning disability, and the influence of each on the prevalence of mental disorders.</td>
<td>Stratified random cluster sample</td>
<td>Children's ordinal scores were compared.</td>
<td>The study aims to describe the epidemiology of Salmonella serotype typhi infections among children presenting to a pediatric hospital in Montreal, Quebec. A prospective case series study was conducted. A questionnaire of 638 children and adolescents (6-12 years old) living in Montreal, Quebec was conducted. The study followed the children for a period of 12 weeks. The study was approved by the Montre&lt;ref&gt;al Children’s Hospital. Children with a psychiatric disability, those who had visited Canada as a tourist or studied in Canada before emigration expressed a weaker sense of belonging to Canada. Children with a weaker sense of belonging to Canada were also those who had visited Canada as a tourist or studied in Canada before emigration. Girls expressed a weaker sense of belonging to Canada than boys. However, boys reported higher levels of participating in bullying and had higher rates of aggression scores than girls. Children from Hong Kong had higher scores for involvement with peers in trouble, participating in bullying, and fear of being bullied. Chinese children in East Asian countries, and migration to Canada does not lower their myopia rates. Chinese Canadian children were found to spend less time outside doing anti-myopia genetic activities than their Caucasian-Canadian counterparts, and more doing near activities than their Caucasian-Canadian counterparts. They were also found to do more near work than Chinese children living in Hong Kong.</td>
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</table>

**Notes:**
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**References:**
- BMJ Global Health (2021)."BMJ Global Health." BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance on the information here contained or otherwise supplied by the author(s) placed on this supplemental material which has been supplied by the author(s).
Supplemental material

2006

The relations between parent and child acculturation and family and child adjustment among immigrant Chinese families in Canada with Chinese behaviors. When parent-child acculturation was examined separately and private domains separately in Chinese- and Canadian-culture families, members of each generation's entire sample showed positive relationships between higher parent BMI and greater positive child variables, especially Chinese. A positive relationship between parent and child BMI and greater positive child variables, especially Chinese, was found.

Purposive and snowball 271 individuals (99 fathers, 91 mothers, and 91 children) from 91 two-parent immigrant Chinese families M & F Not stated 1st generation 9-15 Years Children/Adolescents Parental/genders Acceleration and child adjustment difficulties (conflict, depression, and achievement problems) Not stated China British Columbia

2010

Ethnic identity was explored in three dimensions: Chinese affiliation and belonging and ethnic identity achievement. Two conflicting hypotheses were examined related to the risk of poor achievement: (1) the risk of poor achievement can be buffered by strong feelings of identity vs. (2) high feelings of ethnic identity could increase the risk associated with poor academic achievement.

Purposive and snowball 95 M & F Not stated 1st generation 9-15 Years Children/Adolescents Psychological and social development and ethnic identity Not stated China British Columbia

2011

The prevalence of off-road vehicle (ORV) membership and associated helmet use in Canadian youth was examined in an army based setting. The study was associated with some health-risk behaviours.

Case-control retrospective 52 ORV participants (51 ORV; 44 non-ORV) Off-road vehicle membership in Canadian youth was examined by comparing the ORV participants to the non-ORV participants. ORV participants were associated with some health-risk behaviours.

ORV participants Not stated 9-15 Years Children/Adolescents Health risks and health inequalities 2010 Not stated Alberta; British Columbia; Manitoba; Saskatchewan; Ontario; New Brunswick; Quebec; Yukon

2014

This study explored refugee youth's telling their trauma story through an order to understand successful settlement in Ontario, Canada. Two individual body mapping exercises included a drawing of a story map showing the youth of the story along with a direct disclosure and evaluation on session were enabled.

Purposive 3 M & F Not stated 1st generation 15-18 Years (Adolescents) Children/Adolescents Resilience: psychological and emotional Not stated Sicily, Campo & Palermo 9 Ontario

Overall, children reported relatively low levels of conflict, few depressive feelings, and strong achievement motivations despite the presence of parental-child differences in acculturation, particularly in the Canadian dimension. A family context in which children are more oriented to Chinese culture than parents is NOT associated with poorer adjustment; when children were strongly oriented toward Chinese culture and parents were also strongly oriented toward Chinese culture, adjustment was increased, but not when parents were weakly oriented toward Chinese culture. When mothers or fathers are more strongly involved with Chinese behaviors, lower levels of Chinese behaviors among children were associated with poorer adjustment.
Results suggest that the intervention contributed to fostering emotional safety and feelings of normalcy, in children & supported the creation of connections among both children and parents. Children’s expressions of their experiences during the workshop helped to promote self-efficacy & was seen as a potential way to provide comfort and hope during a period of extreme instability. High levels of children and the lack of adequate resources in temporary shelters served as significant challenges and barriers to the intervention.

BMJ Global Health


Dixson, V., Brown, J., Lee, A., Longstreth, Klassen, D., Bhasikut, D. K. R., Chi, L., Collin, S. M., & Long, R. (2018). Quantitative Describes trends in pediatric TB infections and identifies children at risk within the context of immigration; identify effective strategies to eliminate pediatric TB in Canada and other high-income, immigrant-receiving countries. Retrospective cohort study Not stated 178 children M & F Not stated 1st & 2nd generation Not stated; those under 15 years defined as pediatric. Provincial TB registry; Provincial Laboratory for White Health Tubercolosis Jan 1990 - Dec 2014 Leading countries: Peoples, Ethiopia, Sudan, Korea, Pakistan, Thailand, Vietnam Alberta. During the time of the study, 376 children ages 0-14 years were diagnosed with tuberculosis; foreign-born children or Canadian-born children of foreign-born adults accounted for a large proportion of the cases (growing from 33.1% to 59.9%), foreign-born children-alone accounted for an unprecedented large proportion of new cases (18.9% in 1990-1994 to 52.6% in 2010-2014). Of the 63 "Canadian born" other, 45.7% had at least one foreign-born parent; 17.9% of 59 foreign-born cases were born in a high-TB incidence country and 23.6% of 73 of these children were less than 5 years old when they immigrated to Canada. Children aged 0-4 years had the highest rates regardless of population group.


Osoegbo, M., Kwok, C. R., Leung, S. (1999). To determine a scoring approach to screening for the identification and rating of tuberculosis in foreign-born children who have recently arrived in Canada. Concurrent validity 1998 Not stated Not stated 76th generation Not stated Multivariate test Tubercolosis. 1995 - 1998 Not specified Alberta Of the 176 children, 51 had no significant reaction and 114 had a significant reaction and were referred to the TB clinic for assessment. 8 Vitali BCG reactors were present in 705 of the total students, and 652 of those with significant reactions reported a history of BCG vaccination. Of the 174 significant reactors, 10 school students were not at the TB clinic; 164 students were assessed at the TB clinic within two active cases diagnosed. 1 student related to a specialist for a non-TB related issue, 3 had been previously treated for TB. 3 were not recommended prophylaxis due to a very recent BCG vaccination, and 27 students were relapsing a chronic patient for further assessment. 18/174 of the significant reactors were offered preventative treatment with isoniazid at follow-up. Ten (51.2%) of the 19 students who did not accept the recommendation had been told that their positive reaction was not significant, after being informed that BCG reacts by their physician. An estimated 7.8 cases of active TB were prevented.


Dyson, L. (2015). To investigate the status and socio-cultural environmental predictors for the self-concept of recent Chinese immigrant school-aged children who were recent immigrants. Socio-ecological predictors were hypothesized to be the current classroom environment and the family’s heritage-cultural belief. Assist Scale (The Perceptions of the Ecological Scales for Children, My Class Environment, and The Individual Emotional and Social Scales were used. 202 school-aged participants (112 recent Chinese immigrants, 90 non-immigrants) M & F Not stated 1st generation 8-13 Years Child/Adult/Both: Perceiv Scale 8-13 Years Self-concept Taiwan, China, Singapore, and Malaysia Not Stated The results of the study confirm that Chinese immigrant children display a lower self-concept than their Caucasian non-immigrant counterparts in all domains of self-concept including scholastic competence, social acceptance, athletic competence, physical appearance, behavioral conduct, and global self-complexity. The classroom environment for immigrant children did not differ substantially from their non-immigrant counterparts, except that immigrant children perceived the classroom to be more competitive than non-immigrant students. A negative classroom environment was associated with higher self-complexity for immigrants.


Dyson, L., Qiu, J., & Wang, M. (2013). To examine the family functioning of Chinese immigrant families living in Canada in comparison to recent Chinese immigrant families and those socio-cultural factors that influence it. Assess scales (Family Environment Scale, Inventory of Social Support and Child Rearing Practices Report). 322 families (112 recent Chinese, 90 non-immigrant Chinese families) M & F Not stated 1st generation Families with children 0-11 Years Parallels agree Family functioning Not stated Taiwan, China, Singapore, and Malaysia Not Stated Child gender, and SES had significant findings, so were excluded from analysis. Chinese immigrant families scored lower than non-immigrant families for the relationship domain of family functioning. Immigrants scored lower on average kinship supports and respondents' child scales of social supports than non-immigrant families. Immigrant families scored higher on emphasis on achievement, authoritative control, and encouragement of independence than non-immigrant families. The greater the over-investment in the child, the less family cohesion for immigrant children (but the opposite was found for non-immigrant children). The greater the encouragement of independence, the more cohesive the family relationship was. The higher the emphasis on the supervision of the child, the more social support, the greater the personal growth for both groups. The greater the social support for immigrants, the stronger the maintenance of the family system was.


Purpose: To explore the interactive factors of life stressors pre-migratory and daily hassles post-migratory on children's emotional regulation in the first year of settlement in 5-13 years old.

**Methods:**
- **Participants:** 103 children (50 M & 53 F) whose mothers had migrated to Canada over 15 years.
- **Design:** A mixed-methods design using both qualitative and quantitative approaches.

**Results:**
- **Qualitative:**
  - Anger and sadness regulation were significantly associated with their children's use of dental care, especially with children aged 5-13 years.
  - Children who had higher engagement with family routines had better anger regulation.
- **Quantitative:**
  - Perceptions of support within the school climate, support received from adults within the last year, 63% of which were for regular checkups. Mother's SOC regulation; children with lower post-migratory family routine engagement had better anger regulation.
  - Daily hassles not associated with sadness regulation in children who had higher levels of pre-migratory life stressors. Girls had higher ratings in anger and sadness regulation, though age was not significantly associated with these measures.

**Conclusions:**
- Children who had higher engagement with family routines had better anger regulation. Children with lower pre-migratory family routine engagement typically had greater pre-migratory life stressors. Pre- and post-migratory factors interacted. Higher post-migratory daily hassles associated with worse sadness regulation for children with lower levels of pre-migratory life stressors; daily hassles not associated with sadness regulation for children who had higher levels of pre-migratory life stressors. Girls had higher ratings in anger and sadness regulation, though age was not significantly associated with these measures.

**Implications:**
- The findings have implications for the development of preventive and intervention strategies for immigrant children's emotional health.

**References:**

**Keywords:** pre-migration, post-migration, daily hassles, life stressors, anger regulation, sadness regulation, family routine engagement.

Lay, C., & Valdez, M. (1999). Study was aimed at comparing relations of personal self-esteem and collective self-esteem among foreign-born adolescents and Canadian-born adolescents. Cross sectional study. Not stated. 97 M & F Immigrants (not specified) Both 1st and 2nd generation 13-18 Years (Adolescence) Children/Adolescents Focus of the study was on the relation between personal self-esteem and collective self-esteem between foreign-born adolescent and Canadian-born adolescents. Not stated. Not stated. Not stated. Ontario. The study found that cultural values of foreign-born adolescents in comparison with the Canadian-born adolescents was more allocentric (i.e., more focused on the ingroup and their cultural milieu is more collectivistic in comparison to the foreign-born group. The foreign-born adolescents exhibited a very high association between their private collective self-esteem and their membership-collective self-esteem subscale scores.


Fulford, K., Kuczkowski, J. K., Carvell, M., Chevrot, A., Lancashire, Y., & Lefebvre, M. H. (2007). Prevalence of positive tuberculin skin tests (TST) in internationally adopted and immigrant children. To identify risk factors for positive TST in these populations. Retro-active medical record review. Prevalence: 10% (12 immigrants and 58% adoption) M & F Not stated 1st generation 0-18 Years Medical records Tuberculosis. 1999-2005. America, Europe, Eastern, Mediterranean, East, Southeast Asia, Western Pacific, or Unknown. Quebec. Seventy-six percent of children in the internationally adopted group and 64% of children in the immigrant group had TST cut-offs available. The overall incidence of positive TST for foreign-born children was 12.2% in the internationally adopted group and 11% in the immigrant group. Among 65 children with positive TST, BCG vaccination was recorded in 52% of children. Immigrant children were at a greater risk for positive TST than internationally adopted children. In the infant mortality model, age, region of origin, and BCG vaccination were associated with positive TST. In the multivariate model, only BCG vaccination and age were associated with positive TST. For each one year increase in age entered in Canada, there was a 1.2 times greater risk for positive TST.
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<th>Participants</th>
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<th>Findings</th>
<th>Notes</th>
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<tr>
<td>2014</td>
<td>Fortin, S., Guenel, A., Genest, L., Ribon, G., Rasquin, A., &amp; Faure, C.</td>
<td>To examine life with functional gastrointestinal disorders from the perspective of immigrant and non-immigrant parents and their children.</td>
<td>Qualitative</td>
<td>38 families; 43 children</td>
<td>Immigration and functional gastrointestinal disorders (FGIDs)</td>
<td>Most families used home remedies. 1/3 of families used biomedical health services at least once for their child's stomach aches.</td>
<td>Fewer immigrant than non-immigrant families used religion and spirituality as a source of hope, sometimes resorting to prayer before medicine. Immigrant families tend to rely more on family and social networks to manage uncertainty and anxiety regarding FGIDs.</td>
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<td>Salami B, et al.</td>
<td>BMJ Global Health, et al.</td>
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</tbody>
</table>
### 1. The impact of social contexts in schools on children's sense of belonging and related self-worth

- **Objective:** To investigate how adult and peer social support at school impacts school belonging and self-worth and are moderated by generation status.

- **Methods:** A longitudinal study with three waves of data collection.

- **Sample:** Students from six secondary schools in Lower Mainland of British Columbia.

- **Key findings:**
  - First generation students reported lower levels of school belonging.
  - Perceived belonging was negatively associated with school belonging, higher rates of professionally identified health concerns, and self-worth than in other generations.

- **Conclusion:** Social contexts in schools moderate the impact of generation status on children's sense of belonging and self-worth.

### 2. Social and emotional well-being of Chinese-born, refugee, and asylum-seeking adolescents in Canada

- **Objective:** To examine social and emotional well-being of adolescents born in China, refugees, and asylum seekers.

- **Methods:** Cross-sectional study with surveys and interviews.

- **Sample:** Adolescents enrolled in secondary schools in Lower Mainland of British Columbia.

- **Key findings:**
  - Adolescents born in China had greater rates of professionally identified health concerns than Canadian-born or refugee/asylum-seekers.
  - Adolescents born in China had lower levels of self-worth and emotional well-being compared to Canadian-born or refugee/asylum-seekers.

- **Conclusion:** Social and emotional well-being of Chinese-born, refugee, and asylum-seeking adolescents in Canada may be affected by their immigration experience.

Quantitative

Aims: Assess for differences in resilience, wellbeing, and mental health behaviours between migrant and non-migrant adolescents in six countries who have been exposed to varying levels of trauma.

Methods: Cross-sectional surveys

Participants: 194 adolescents (Australia, n = 25; Canada, n = 25; China, n = 77; New Zealand, n = 33; South Africa, n = 28; United Kingdom, n = 10)

Majority were from: Australia, Iraq, China, Philippines, New Zealand, South Africa, Europe, England

Findings: Compared to non-migrants, migrants had higher average exposures to traumatic events in the year prior to the study, and internal migrants had higher levels of exposure than external migrants. South African migrants had the highest exposure to traumatic events. External migrants scored higher in resilience, yet lower prosocial behaviors than internal migrants and non-migrants. Internal and external migrants had higher reports of peer problems than non-migrants. Trauma did not seem to impact scores for resilience, wellbeing, or behavior for migrants. Generally, migrant adolescents had higher resilience than non-migrants; though they experienced more trauma, the impact was less detrimental than that had on their non-migrant counterparts.
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<tbody>
<tr>
<td><strong>Quantitative</strong></td>
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<tr>
<td><strong>Religion of mothers-seeking women or their infant’s experience</strong></td>
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<tr>
<td><strong>Two data sets: the New Canadian Children and Youth Study (NCCYS) and STATS Canada Census Data. Logistic regression was used to examine the influence of neighborhood ethnic concentrations and mean income on health.</strong></td>
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<tr>
<td><strong>Families or specific countries (Hong Kong, Mainland China and Philippines) were recruited from each city for each ethnic community, 90 from the younger age group and 90 from the older age group, although 91 were interviewed for one community (mainland China).</strong></td>
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<tr>
<td><strong>Two target age ranges: 4-6 and 11-13</strong></td>
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<tr>
<td><strong>New Canadian Children and Youth Data sets which is a national longitudinal study of children whose families settled in urban centers in Canada and Statistics Canada Census 2001 Data along with</strong></td>
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<tr>
<td><strong>M &amp; F</strong></td>
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<td><strong>Not stated</strong></td>
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<td><strong>Not stated</strong></td>
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<td><strong>Not stated</strong></td>
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<tr>
<td><strong>Ethnicity and health of Immigrant Children</strong></td>
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<td><strong>M&amp;H</strong></td>
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<td><strong>Not stated</strong></td>
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<tr>
<td><strong>B.C., Hong Kong and Philippines</strong></td>
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<tr>
<td><strong>British Columbia, Ontario, Quebec</strong></td>
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</table>

**Children of Hong Kong ethnicity were less likely to report being in excellent health, compared to the Filipino group (OR=0.69). No significant health difference was noted between Mainland Chinese and Filipino children. Female children were likely to report excellent health compared to male children (OR=1.41), illustrating the need to control for sex in health research for immigrant children. Neighborhood variables demonstrated only one significant effect, mean low educational attainment. As the percentage of adults in the neighborhood with high school and less than high school education increased, the likelihood of the immigrant sample of children reporting excellent health increased (OR=1.13). Neighborhood income level did not play a role in health disparities. One important ethnic context was noted: the interaction between child’s ethnicity and ethnic concentration. Children from Mainland China were negatively affected as mainland Chinese ethnic concentration increased in their neighborhood compared to the Filipino group (OR=0.90). Hong Kong Chinese communities appeared to have no influence on the health of Hong Kong Chinese participants.**
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Study Type</th>
<th>Description</th>
<th>Study Design</th>
<th>Sample Size</th>
<th>Methodology</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>George, M. A. &amp; Rasouli, C. (2016).</td>
<td>How does minority-ethnic concentration and living in a neighborhood with the same ethnic background contribute to the health of children? George, M. A. &amp; Rasouli, C. (2016).</td>
<td>Quantitative</td>
<td>The health of immigrant children in Canada.</td>
<td>Descriptive analysis of a national longitudinal survey.</td>
<td>259,840 children</td>
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<td>Bassani, C. (2016).</td>
<td>Influence of contextual and cultural influences on immigrant children’s mental health. Bassani, C. (2016).</td>
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<td>Salami B, et al. BMJ Global Health 2022; 7:e008189. doi: 10.1136/bmjgh-2021-008189</td>
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<td>Quantitative</td>
<td>The health of immigrant children differs according to their ethnic background, in spite of all setting in the same urban centre. Children from Iran (78.0%) were in excelent health in contrast to other groups. 44.5% of children from the Philippines and 35.5% from Papua New Guinea were reported to be in excellent health. Fewer children from Mainland China and Hong Kong reported excellent health (2.1% and 1.9%) respectively 0.00 – 7.5% of children in the sample lived in neighborhoods where individuals were from the five groups specified in the study. On average there were higher concentrations of people from Mainland China (3.29%), Hong Kong (3.16%) and Papua New Guinea (2.45%) in their neighborhood. There was a smaller difference in living below poverty line; 13.8 % of non-immigrant families likely to live below poverty line; 33.89% of new immigrants likely to live in neighborhoods characterized by higher concentration of immigrants. 10.7% of non-immigrant live is in neighborhoods with high concentrations of immigrants. Long-standing immigrants are report the highest level of household income and are less likely to live in disadvantaged neighborhoods with moderate concentration of immigrants. Family processes recent immigrant families report higher levels of family dysfunction but lower levels of family functioning when compared to non-immigrant families, long standing immigrants and non-immigrants report similar level of family dysfunction and hostile paintings. Neighborhood disadvantage exhibits a strong positive association with substance-abusing behavior. In Canada children aged 0-5 years living in neighborhoods with a high concentration of people from Mainland China (3.29%), Hong Kong (3.16%) and Canada (1,882%) were more likely to report mental health concerns compared to children living in neighborhoods with a low concentration of people from these countries.</td>
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<td>Study Period</td>
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<td>2005</td>
<td>Georgiades, K., Boyko, M. H., Duka, E., &amp; Racine, Y.</td>
<td>Tobacco use among immigrant and non-immigrant adolescents: Individual and family level influences</td>
<td>Quantitative</td>
<td>5401 adolescents</td>
<td>^2^ Adolescents aged 12-18 years in Ontario Health Survey (OHS)</td>
<td>Tobacco use, and parental dysfunction increase the likelihood of adolescent tobacco use. Affiliation with peers who smoke increased the adolescent's risk for smoking.</td>
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<td>Salami B, et al.</td>
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<td>5401 adolescents</td>
<td>Tobacco use; SES and tobacco use among adolescents born in Canada but not among adolescents born outside of Canada. Increased use was also more likely for rural residence (RR 1.16), lowest income quartile (1.04), refugee immigrants (RR 1.17), and other immigrants (RR 1.18). Increased use was also more likely for rural residence (RR 1.16), lowest income quartile (1.04), refugee immigrants (RR 1.17), and other immigrants (RR 1.18).</td>
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<td>Green, P. &amp; Moun, F. (2018).</td>
<td>2018</td>
<td>Qualitative</td>
<td>Examine the case of Syrian refugee infants with skin color affected by sample size limitations, no African and Middle Eastern refugees; the highest risk was noticed in adolescents and young adults.</td>
<td>The study suggests that the risk of developing impetigo is influenced by skin color and sample size limitations, with no African or Middle Eastern refugees identified.</td>
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<td>Assess the impact of skin color on infant health and skin color assessment.</td>
<td>The study showed that infants with light skin color had higher vitamin D levels.</td>
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<td>Grenouille, A., Groznowski, B., Alakber, A., Song, F., Pozos-Cortés, A. M., Abu Chakra, C. N., Pelletier, K., Goldar, M., &amp; Quach, C. (2021).</td>
<td>2021</td>
<td>Quantitative</td>
<td>To address the gap in population-based epidemiological data on skin color and compare rates between immigrant populations.</td>
<td>The study highlighted the importance of access to primary care in addressing the gaps in skin color assessment.</td>
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North American population used drugs to a significantly greater extent at baseline than did immigrants or the mixed group. No statistically significant diagnostic or family functioning differences between immigrant and non-immigrant adolescents at baseline and at 6-month follow up.


Two cases of vitamin D deficiency rickets in infants born to refugee parents in Canada, south of 55°N latitude are presented.

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North American adolescent hospitalization for drug use disorders to a significantly greater extent at baseline than did immigrants or the mixed group. No statistically significant diagnostic or family functioning differences between immigrant and non-immigrant adolescents at baseline and at 6-month follow up.

Two cases of vitamin D deficiency rickets in infants born to refugee parents in Canada, south of 55°N latitude are presented.
Qualitative

A qualitative study of access to effective primary health care services in children of new immigrants to Canada by assessing immunization coverage at age 2.

The use of multiple linked administrative data sets and records, obtained through a data agreement with the Ontario Ministry of Health and the Institute for Clinical Evaluative Sciences. We used our previous cohort of all urban babies born in hospital between July 1, 1997, and June 30, 1998.

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Ontario

Children of immigrant mothers were more likely to live in the lowest income neighborhoods (42.2% vs 19.6%) but less likely to have a teenage mother. Children of immigrant mothers were more likely to have high volume and foreign-trained providers of care. Immunization coverage is higher in those from South and East Asia. Findings suggest that under universal health insurance, disparities in access to care by new immigrants are minimized; it is clear that universal access is not sufficient to ensure effective care.
Exposure to trauma, difficulty establishing an identity and integrating into a new family and new culture led to adopted children developing psychological issues. The older children are at the time of adoption, the more prone they are to developing behavioral problems. Adolescents that have been adopted lately and from the orphanages in Eastern Europe were the most vulnerable to problem behaviors. Adopted boys had more difficulty adapting emotionally, tended to show antisocial behavior, and were more vulnerable to the internalization of their feelings, thus manifesting somatic symptoms. A study also found that adopted children were more likely to show externalizing behaviors that are associated with school-related problems, as well as exposure to illicit substances. Adopted children from East Asia were observed to have lower vulnerabilities to behavioral problems compared to the adopted children from Europe, the Caribbean and Latin America. In the case of children who were adopted before 6 months or between 12 and 24 months, the country of origin has no impact on problem behaviors. In terms of the risk in developing separation anxiety, adoptive and adoptive children who were adopted between 6-12 months and 12 months and over were observed to be more vulnerable.


Adolescents of South Asian and East/Southeast Asian background were less likely to report cannabis use than third generation youth. In the case of children who were adopted before 6 months or between 12 and 24 months, the country of origin has no impact on problem behaviors. In terms of the risk in developing separation anxiety, adoptive and adoptive children who were adopted between 6-12 months and 12 months and over were observed to be more vulnerable.


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Harrison, H. A., van, A. M., Booth, A., & Mann, R. E. (2014). Examination of whether socioeconomic and substance use and between immigrant education and substance use among immigrants. Survey of Ontario school drug use and health survey. A representative sample of students from 12-19 years old in grades 7 to 12. 9288 students in 10th to 12th grade M & F Immigrants (not specified) Both 1st and 2nd generation 13-18 Years (Adolescence) 1st-2nd Children/A. adolescents Cannabis and alcohol use among adolescent immigrant children 2011 Canada Ontario First generation immigrants with low subjective socioeconomic status had lower probability of cannabis and alcohol use. There was no difference in use between immigrant generations. High subjective socioeconomic status. A comparison between immigrant generations indicated a greater proportion of the third- and later-generation sample were females and reported higher subjective social status. SES demographic factors were not significantly related to cannabis use after adjusting for parental education, immigrant generation and demographic characteristics. Adolescents whose parents had some university or college education had greater odds of using cannabis vs. their peers whose parents had a university degree. Age, family structure, and ethnic background was significantly related to cannabis and alcohol use in third generation. Boys were more likely to consume alcohol than third and later generation immigrants. Subjective SES is not associated with cannabis or regular alcohol use among adolescents.


Harrison, K., Wong, T., EXHA, C., Ceenraan, B., & Phung, Y. (1997). To determine the prevalence of dental caries in Vietnamese preschool children. To analyze the information about current dental health and nutrition practices within a group of children. To design a culturally specific oral health promotion program with input from the Vietnamese community. Interview using a structured interview and questionnaire, with data entry to assess demographic variables, infant feeding and oral health history, age and practice. Considered a descriptive study. Consecutively sample of Vietnamese children 60 M & F Immigrants (not specified) 1st generation 0-12 months (Infants), 15 years (Children) Parents & older given Clinical conditionFecha mmm aaaa Canada British Columbia Unappropriate bottle-feeding habits are one of the factors contributing to high prevalence of nursing caries in immigrant pre-school Vietnamese children.


Harrison, T. Y., Vu, M. X., Johnson, J. L., & Saewyc, E. M. (2014). To describe gender-based and migration-related differences in mental health and to examine the linkages between acculturation and protective factors for mental health among Southeast Asian youth. Stratified sampling design. Representative sample of secondary school students. 2950 M & F Immigrants (not specified) 1st generation 12 - 19 years Children/Adolescents Mental health among secondary school students. February to June 2008 Canada British Columbia Southeast Asian girls reported higher rates of mental health symptoms than boys. Acculturation was not related to mental health. Boys and girls who lived in Canada for less than 5 years were likely to report extreme levels of despair. Girls in Canada less than 15 years reported extreme levels of despair and extreme stress. Family connectedness was a protective factor for both stress and despair and in girls and boys. School connectedness was a protective factor for girls. Ethnic identity connectedness was associated with lower despair among boys but higher stress for girls. Immigrant teens may be at a higher risk for distrust. There are gender differences in mental health of southeast Asian youth.


Harrison, T. Y., Vu, M. X., Saewyc, E. M., Wong, S. T., & Gravel, S. D. (2014). To determine the prevalence of sexual behaviour and reason for abstaining from sexual intercourse among East Asian adolescents in BC. Secondary analysis. Any student who was East Asian (Vietnamese, Korean, Chinese). 2013 M & F Not stated Not stated 12-19 years Children/Adolescents Clinical Area: Adolescent Medicine: Adolescent Health and Preventive Medicine: Adolescent Substance Abuse. February 2008 Adolescent survey BC Canada British Columbia Less than 50% of East Asian boys had sexual intercourse; most who were sexually experienced were engaged in high-risk behaviors. English-speaking immigrant and Canadian-born students were more likely to engage in sexual intercourse. Immigrant students who did not participate in sexual intercourse were wanting to meet the right person.
<table>
<thead>
<tr>
<th>Reference</th>
<th>Item</th>
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<th>Study design</th>
<th>Participants</th>
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To determine factors associated with parent-child cooperation in TB treatment among children.

2015
Iwama, T. Immigration to Canada during early childhood and adolescents' self-esteem or parent-child congruence.

Exposure to mercury (Hg) and attentional focusing in children with and without developmental disabilities.

Hua, J. M., et al. Increased levels of mercury associated with high fish intakes for mood disorders.


Leung, T., et al. Increased levels of mercury associated with high fish intakes among children.

 titular, J. E., et al. Increased levels of mercury associated with high fish intakes among children.

Brooker, M. S., et al. Increased levels of mercury associated with high fish intakes among children.

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Increased levels of mercury (Hg) and attentional focusing in children with and without developmental disabilities.

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Four themes were identified in the day-to-day life experiences of the Afghan refugee children: cherishing the family, treasuring the Afghan culture, creating opportune spaces to dwell, building and sustaining resilience. Spending time with family allowed them to cherish their culture and volunteering helped to facilitate their integration into the Ismaili culture in Canada; as a result, they were able to retain their mother tongue (Farsi) and were also able to learn English to navigate life in Canada. The ability to maintain their culture while embedded within Ismaili culture and supported by the new Canadian culture allowed them to settle well in Canada. Support from family, friends, and the community helped them navigate the barriers, tensions, hardships.


Supplemental material

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<tr>
<td>Khosro, N., &amp; Couturier, C.</td>
<td>2005</td>
<td>Qualitative</td>
<td>To understand the needs and perceptions of immigrant and newcomer female children living in Canada</td>
<td>Focus group discussions</td>
<td>15</td>
<td>M</td>
<td>Multi-ethnic</td>
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<td>Kornick, R., &amp; Bouchard, C.</td>
<td>2015</td>
<td>Quantitative</td>
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<td>Surveys</td>
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<td>Multi-ethnic</td>
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<td>Health-related quality of life among immigrant adolescents.</td>
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<td>Kwak, K. (2016)</td>
<td>2016</td>
<td>Quantitative</td>
<td>Study sought to investigate the presence of the healthy immigrant effect...</td>
<td>Random household sampling</td>
<td>Not stated</td>
<td>13-14 Years (Adolescents)</td>
<td>Children/A adolescents. Comparison of immigrant and non-immigrant adolescents' perceived general health and mental health as well as diagnosed chronic illnesses and psychological function, utilizing national data sets of three study. First, immigrant adolescents indeed showed better health than their non-immigrant counterparts, reporting more positive self-perceptions of their health as well as fewer incidences of diagnosed illnesses. Secondly, there were no differences in health conditions between recent and long-term immigrant adolescents in two of the three survey years. Concerning the healthy immigrant effect, superior health conditions displayed by immigrants may be attributed to immigration policies prioritizing healthy immigrants as well as immigrants' resilience despite their less affluent backgrounds.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kwak, K., et al. (2016)</td>
<td>2016</td>
<td>Quantitative</td>
<td>The study sought to investigate differences in moderate-to-vigorous physical activity levels between immigrant youth and their Canadian-born peers.</td>
<td>Cross-sectional study</td>
<td>Not stated</td>
<td>6-12 Years (School age)</td>
<td>Children/A adolescents. BMI of immigrant school-aged children in Canada. First, immigrant youth in Canada are less active than their Canadian-born peers. Second, reported physical activity increases with increased time since immigration. Third, reported physical activity differs by ethnicity. Finally, exploratory tests of possible interactions between immigrant generation and immigration.</td>
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<tr>
<td>Kwak, K., et al. (2016)</td>
<td>2016</td>
<td>Quantitative</td>
<td>Study sought to investigate the independent and joint effects of country of birth and ethnicity on body mass index (BMI).</td>
<td>Cross-sectional study</td>
<td>Not stated</td>
<td>Both 1st and 2nd generation</td>
<td>Both 1st and 2nd generation. BMI of immigrant school-aged children in Canada. First, immigrant youth in Canada are less active than their Canadian-born peers. Second, reported physical activity increases with increased time since immigration. Third, reported physical activity differs by ethnicity. Finally, exploratory tests of possible interactions between immigrant generation and immigration.</td>
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<td>Both 1st and 2nd generation. BMI of immigrant school-aged children in Canada. First, immigrant youth in Canada are less active than their Canadian-born peers. Second, reported physical activity increases with increased time since immigration. Third, reported physical activity differs by ethnicity. Finally, exploratory tests of possible interactions between immigrant generation and immigration.</td>
<td></td>
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</tr>
</tbody>
</table>
### Supplemental material

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**Supplemental material**

**BMJ Global Health**

**Salami, B. et al. BMJ Global Health 2022; 7:e008189. doi: 10.1136/bmjgh-2021-008189**

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<table>
<thead>
<tr>
<th>Study</th>
<th>Author(s)</th>
<th>Objective</th>
<th>Design</th>
<th>Sample</th>
<th>Analyses</th>
<th>Children/Antecedents</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane, C. M. (2015)</td>
<td>Towards a Chinese Conceptualization of Adolescent Development in a Migrant Context</td>
<td>To understand the extent the healthy adolescent development in a migration context</td>
<td>Qualitative</td>
<td>Not stated</td>
<td>19</td>
<td>M &amp; F</td>
<td>1st generation</td>
</tr>
<tr>
<td>Lane, G., White, J., &amp; Yanaporn, H. (2019)</td>
<td>Food insecurity and nutritional risk among Canadian newcomer children</td>
<td>To describe the food security status of newcomer families with children (3-13 years old)</td>
<td>Exploratory sequential design</td>
<td>750 children</td>
<td>M &amp; F</td>
<td>Immigrants and specified refugees</td>
<td>3-13 years</td>
</tr>
</tbody>
</table>

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**Immunized children showed better immune responses to the healthy adolescent development in the Western historical and ideological context and how they developed the experiences and perceptions of other cultures.**

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**Notes:**

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**References:**

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<thead>
<tr>
<th>Study Title</th>
<th>Author(s)</th>
<th>Year</th>
<th>Sample Size</th>
<th>Design</th>
<th>Methods</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral health and immigrant children in Canada</td>
<td>Esses, V., &amp; Stachel, M.</td>
<td>2012</td>
<td>30 immigrant children</td>
<td>Qualitative</td>
<td>The purpose of this study was to develop a better understanding of the experiences of service providers working with immigrant families raising a child with a physical disability.</td>
<td>The study showed that healthcare and community service providers faced several challenges in providing care to immigrant families raising a child with a disability. These challenges included (1) lack of training in providing culturally sensitive care, (2) language and communication issues, (3) discrepancies in conceptualizations of disability between healthcare providers and immigrant parents, (4) building support, and (5) helping families to advocate for their children.</td>
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<td>Year</td>
<td>Author(s)</td>
<td>Title</td>
<td>Study Objectives/Results</td>
<td>Design/Methodology</td>
<td>Sample Size</td>
<td>Notes</td>
</tr>
<tr>
<td>------</td>
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</tr>
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<td>2011</td>
<td>Maximova, E. O'Laughlin, J. &amp; Donald, K.</td>
<td>Health care advantage first to one generation immigrant elementary schoolchildren in multi-ethnic, disadvantaged minority neighborhoods</td>
<td>Study sought to determine the rate of increase in body mass index (BMI) different between first generation immigrant children and second generation immigrant children and if the rate of increase varies across ethnic groups</td>
<td>Cross-sectional design</td>
<td>Not stated</td>
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<td>Measham, T., Glanzer, J., Beaton, C., &amp; Nadeau, L.</td>
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<td>Cross-sectional design</td>
<td>Not stated</td>
<td>6392</td>
</tr>
</tbody>
</table>
### Study to explore factors that influence HPV-related stigma among young residing in a Canadian city who identify as African, Caribbean, or Black

#### Study design

Cross-sectional study

#### Participants

100 participants

#### Results

- **Stigma**
  - 78.0% reported feeling stigmatized at some point in their lives.
  - Stigma experienced was significantly higher for females than males.
  - Stigma was higher among those who identified as Black compared to those who identified as African or Caribbean.

#### Conclusion

The study found that African, Caribbean, and Black populations in Canada experience higher levels of stigma related to HPV compared to other ethnic groups. This highlights the need for targeted interventions to address and reduce stigma in these communities.
<table>
<thead>
<tr>
<th>Year</th>
<th>Author(s)</th>
<th>Method</th>
<th>Design</th>
<th>Study population</th>
<th>Setting</th>
<th>Age</th>
<th>Sex</th>
<th>Socioeconomic status</th>
<th>Type of supplement</th>
<th>Study population notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>Moffat, T., Galway, T., &amp; Letham, J. (2005)</td>
<td>Quantitative</td>
<td>Cross-sectional study</td>
<td>Both 1st and 2nd generation immigrant and Canadian-born mothers</td>
<td>Ontario, Canada</td>
<td>6-12 years (school age)</td>
<td>M &amp; F</td>
<td>Both</td>
<td>68-79%</td>
<td>Vitamin D</td>
</tr>
<tr>
<td>2015</td>
<td>Moffat, T., Selles, K., Chadbuck, S., &amp; Amarra, S. (2015)</td>
<td>Qualitative</td>
<td>Purposive sample</td>
<td>Both</td>
<td>Toronto, Canada</td>
<td>0-3 years old</td>
<td>F</td>
<td>Skilled workers, economic migrants, refugees</td>
<td>Both</td>
<td>Vitamin D</td>
</tr>
<tr>
<td>2021</td>
<td>Moffat, T., Selles, K., Chadwick, L., &amp; Latham, J. (2021)</td>
<td>Quantitative</td>
<td>Cross-sectional study</td>
<td>Both</td>
<td>Hamilton, Canada</td>
<td>0-3 years old</td>
<td>F</td>
<td>Skilled workers, economic migrants, refugees</td>
<td>Both</td>
<td>Vitamin D</td>
</tr>
<tr>
<td>2022</td>
<td>Latham, J. (2005)</td>
<td>Quantitative</td>
<td>Cross-sectional study</td>
<td>Children</td>
<td>Hamilton, Canada</td>
<td>0-3 years old</td>
<td>F</td>
<td>Skilled workers, economic migrants, refugees</td>
<td>Both</td>
<td>Vitamin D</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Item</th>
<th>Authors</th>
<th>Year</th>
<th>Study design</th>
<th>Data collection</th>
<th>Variables</th>
<th>Sample size</th>
<th>Setting</th>
<th>Main findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Dabbagh, B., &amp; Dos Santos, B. F. (2019).</td>
<td>2019</td>
<td>Quantitative</td>
<td>Hospital records</td>
<td>Refugee status, birth weight</td>
<td>237 children, 117 Canadian children</td>
<td>Montreal, Canada</td>
<td>Immigrant mothers with high socioeconomic status had a higher likelihood of a LBW infants (OR 3.82) than mothers of low socioeconomic status.</td>
</tr>
<tr>
<td>2.</td>
<td>Moreau, A. M., Hennous, F., &amp; Auger, N.</td>
<td>2009</td>
<td>Quantitative</td>
<td>Chart data</td>
<td>Refugee status, birth weight</td>
<td>150 mothers</td>
<td>Quebec, Canada</td>
<td>Most of the refugee children had never visited a dentist prior to their arrival in Canada, with a higher likelihood of a LBW infants (OR 3.82) than mothers of low socioeconomic status.</td>
</tr>
<tr>
<td>3.</td>
<td>Moreau, A. M., Hennous, F., &amp; Auger, N.</td>
<td>2007</td>
<td>Quantitative</td>
<td>Survey and registry data</td>
<td>Refugee status, birth weight</td>
<td>190 mothers</td>
<td>Quebec, Canada</td>
<td>Majorities of refugee children were from Africa (25%) with Europe a close second (24%). Immigrant mothers with higher socioeconomic status had a higher likelihood of a LBW infants (OR 3.82) than mothers of low socioeconomic status.</td>
</tr>
</tbody>
</table>

The study found that having refugee status was associated with an increased likelihood of having dental caries compared to Canadian children. Anterior crossbite was significantly more prevalent in the refugee children (5.08) were more likely to present with dental caries. It was noted that factors such as refugee status (OR 5.08), and age (OR 2.00) had a significant association with having dental caries; school age children were more likely to have poor oral hygiene though Canadian children were more likely to have filled teeth (DMFT) compared to Canadian children and also were more likely to have high socioeconomic status.
To examine the developmental processes and outcomes of the Raising Sexually Healthy Children (RSHC) program and to identify the strengths, challenges, and factors that can be used to enhance the program at the individual, group/organizational, and community levels.

Method
- Qualitative case study design, exploratory study
- Purposive sampling
- 12 participants (7 youth, 5 parents, 5 clinicians)

Results
- Most significant findings were around family practices including food/meal preparation and intergenerational relationships, negotiating values and services in first-generation migrant families. Four themes were identified: providing equilibrium between communication, collaboration and privacy/confidentiality; particular attention to continuity of care, negotiating values and services in first-generation migrant families.

Conclusion
- Findings were illustrated providing a framework between research, collaboration and privacy/confidentiality; particular attention to continuity of care, and creating a welcoming environment to support the development of trusting relationships, family inclusion in interventions, providing collaborative decision-making pathways for care, addressing interinstitutional and interprofessional collaborations, and cultural differences in values and explanatory models. The research provides a potential guide for improving collaboration and communication in care, emphasizing the role of patients and providers promoting finding meaningful solutions, being consistent with services, as a part of access to care, negotiating values and services in first-generation migrant families.
<table>
<thead>
<tr>
<th>Year</th>
<th>Authors</th>
<th>Type</th>
<th>Title</th>
<th>Design</th>
<th>Sample Size</th>
<th>Ethnicity</th>
<th>Gender</th>
<th>Age</th>
<th>帝裔</th>
<th>Effect</th>
<th>Predictors</th>
<th>Outcomes</th>
<th>Proportion</th>
<th>Location</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>Montigov, A. de, Montigov, F. &amp; Miron, J. M.</td>
<td>Qualitative</td>
<td>Development of personal identity among refugee adolescents: Psychosocial elements and outcomes. Journal of Child &amp; Adolescent Trauma, 7(2), 135-143; Retrieved from <a href="http://dx.doi.org/10.1080/19361653.2013.775047">http://dx.doi.org/10.1080/19361653.2013.775047</a></td>
<td>Not stated</td>
<td>12 M &amp; F</td>
<td>Refugee status</td>
<td>1st generation</td>
<td>13-18 years (Adolescence)</td>
<td>12 years and older</td>
<td>Children/A adolescents</td>
<td>Personal identity formation and development</td>
<td>Selection by reasoned choice (purposive)</td>
<td>Not stated</td>
<td>Québec</td>
<td>Three categories that contributed to these young people's identities were identified: personal characteristics (including capacity for self-criticism, religious beliefs, and complex migration paths), interpersonal relationships (being accepted or rejected by peers, family dynamics including values, role distribution, sibling relationships, and parental control); and environmental characteristics (cultural and material environments, both positive and negative).</td>
</tr>
<tr>
<td>2014</td>
<td>Newbold, K. B. &amp; O'Loughlin, J.</td>
<td>Quantitative</td>
<td>To identify the factors associated with dental visits by Canadians aged 12 years and older and to compare the use of dental services by immigrant and native-born populations. Survey</td>
<td>Not stated</td>
<td>1864477</td>
<td>M</td>
<td>Immigration status specified</td>
<td>6-12 Years (School age) 2013-15 Years (Adolescence) 12 years and older</td>
<td>Children/A adolescents</td>
<td>Use of dental services by immigrant Canadians</td>
<td>Not specified</td>
<td>2013-2015</td>
<td>United States, Europe, Australia, Asia and others</td>
<td>Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Ontario, Prince Edward Island, Quebec, Nunavut, Yukon</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>Newbold, K. B. &amp; Aparicio, K.</td>
<td>Quantitative</td>
<td>To evaluate the relationships between depressive symptoms in immigrant adolescents: The role of social support, self-esteem, and personal resources. Multivariate analysis</td>
<td>Not stated</td>
<td>18272</td>
<td>M</td>
<td>Immigration status specified</td>
<td>12-21 years</td>
<td>Children/A adolescents</td>
<td>Risk and protective predictors contributing to trajectories of depressive symptoms among adolescents from immigrant backgrounds in Canada</td>
<td>Not stated</td>
<td>2014-2016</td>
<td>Not specified</td>
<td>United States, Europe, Australia, Asia and others</td>
<td>Minnesota, New groups of origin from: other and non-European societies</td>
</tr>
<tr>
<td>2014</td>
<td>Miron, J. M. &amp; Flora, J. M.</td>
<td>Quantitative</td>
<td>To examine whether the number of years lived in Canada relates to the risk of smoking among immigrant children.</td>
<td>Cross-sectional study</td>
<td>Not stated</td>
<td>1,391 children</td>
<td>M &amp; F</td>
<td>Immigration status not specified</td>
<td>Smoking status &amp; duration</td>
<td>Age 12 or less</td>
<td>Lifestyle-related behaviors in immigrant children</td>
<td>Not specified</td>
<td>Québec</td>
<td>The risk of ever smoking among children who had lived 6-10 years in Canada was double the risk among those who had lived 0-5 years in Canada. The risk was triple among children who had lived 11-15 years in Canada.</td>
<td></td>
</tr>
</tbody>
</table>

Quantitative
To describe the prevalence of lifestyle risk factors (LRF) for chronic disease by family origin (PO) among children in multicultural, low-income, urban neighborhoods.

Cross- sectional study.
Not stated
M = 4659
Not stated
Both 1st and 2nd generation
6-12 (toddler age)
Children/A adults.
Smoking, level of physical activity, dietary habits and mass index, sedentary behavior among children and adults.
5 Years
From 15 different countries
Quebec

Ogilvie, L., & Beiser, M. (2012). Perceived ethnic discrimination and sexual health among African youth resident in Canada. The aims of the present study were to (1) identify the associations between perceived ethnic discrimination and sexual health among African youth resident in Canada; (2) examine the influence of cultural values, norms, and beliefs among African youth resident in Canada; (3) establish the influence of family variables on perceived ethnic discrimination; and (4) generalize the findings to other African youth resident in Canada.

Quantitative
The primary objectives of the present study were to determine whether children older than 1 year of age from multicultural, low-income, urban neighborhoods reported lower serum 25(OH)D levels than children from Western-born families. The secondary objective was to examine whether known dietary, environmental, or biological determinants of 25(OH)D influenced the relationship.

Cross-sectional, observational study.
Not stated
1906; Children 1-6 years of age
M = 49
Not stated
Both 1st and 2nd generation
13 years (Females) or 15 years (Males) (School age)
Children/A adults.
Serious M. Hydroxyvitamin D concentration of non-Western immigrants compared with those of children from Western-born families.
Before December 2008 & July 2011
New Western immigrants: including Mixed Western, Mixed Western, non-Western, East Asia, Southeast Asia, African and Caribbean.
Ontario


Quantitative
To examine the social experiences of young men and women of non-Western origin living in Windsor area, of south-western Ontario, Canada. The aim was to contribute to a better understanding of the risk factors that increase young African people’s vulnerability to HIV infection in Canada.

Cross-sectional, observational study.
Not stated
26
M = 540
Ethnic immigrants state
Not stated
Averaging age 20 years
Adults
HIV vulnerability and lifestyle risk among African youth.
Before: April 2006 & 2008
Ghana, Liberia, Nigeria, Sierra Leone, and Trinidad and Tobago.
Not stated


Quantitative
This article examines relationships between perceived ethnic discrimination, social exclusion, psychological functioning, and academic performance among newcomer immigrant children from the People of the Republic of China, Hong Kong, and the Philippines.

Not stated
Snowball and time- ing, sampling
2005; Children 11-13 years
M = 88
Not stated
Both 1st and 2nd generation
6-12 (School age)
Children/A adults.
Relationships between perceived ethnic discrimination, social exclusion, psychological functioning, and academic performance among newcomer immigrant children in Canada.
Before: 2004
China, Hong Kong, and the Philippines.
Alberta, British Columbia, Manitoba, Ontario, Quebec, Saskatchewan

25% of children reported being teased unfairly by peers and 19% by teachers because of who they are. Regression analyses revealed that perceived ethnic discrimination by peers and teachers was negatively related to children’s sense of social competence in peer relationships. Children’s self-esteem and sense of academic competence were negatively related to perceived discrimination by teachers. Those in 1st children reported feeling like an outsider, with boys reporting more exclusion than girls. Regression analyses revealed that perceived ethnic discrimination by peers and teachers was negatively related to children’s sense of social competence in peer relationships. Children’s self-esteem and sense of academic competence were negatively related to perceived discrimination by teachers. Those in 1st children reported feeling like an outsider, with boys reporting more exclusion than girls.

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Study Type</th>
<th>Design</th>
<th>Participants</th>
<th>Setting</th>
<th>Outcomes</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phan, J.</td>
<td>2001</td>
<td>Qualitative</td>
<td>Self-reported narrative</td>
<td>31 families of Vietnamese-Canadian youth</td>
<td>Canada</td>
<td>Asthma</td>
<td>Families described health as physical, mental and socio-cultural well-being. Children's well-being was negatively impacted by immigration and acculturation challenges. Vietnamese-Canadian families' odds for having asthma increased by 5% compared to non-immigrants. Asthma medication use was lower in second generation (34%) vs. first generation (46%). With adjustment for age, parental status in Canada, immigration status in Canada, and sex, being second generation was significantly lower in second generation immigrants than non-immigrants (OR 0.79). With every one year second generation's parents resided in Canada, their odds for having asthma increased by 5%.</td>
</tr>
<tr>
<td>Title</td>
<td>Year</td>
<td>Design</td>
<td>Purpose</td>
<td>Sample Size</td>
<td>Sample Description</td>
<td>Methods</td>
<td>Findings/Results</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>------</td>
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<td>-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>To describe how the Childhood Autism Rating Scale (CARS) interacts with the Autism Diagnostic Observation Schedule (ADOS) and with clinical diagnoses according to the criteria of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) for children of immigrant parents</td>
<td>2015</td>
<td>Quantitative</td>
<td>To explore the views of healthy parents and caregivers of four cultural groups regarding early childhood oral health and early childhood caries</td>
<td>Not stated</td>
<td>49 children</td>
<td>Cross-sectional study</td>
<td>Rate of maltreatment over 5 years varied with maternal birthplace: highest in children born to mothers who were born in Canada (8/1000), China (8/1000). Rates of maltreatment were 27-49% lower in children of maternal immigrant groups compared to non-immigrant mothers (16/1000). Rate of maltreatment over 5 years was 36% (10/1000) lower in children of maternal newcomer parents.</td>
</tr>
<tr>
<td>To identify the patterns of early childhood multicultural interactions within health systems in terms of maternal birthplace and child sex</td>
<td>2020</td>
<td>Observational</td>
<td>To identify the patterns of early childhood multicultural interactions within health systems in terms of maternal birthplace and child sex</td>
<td>Not stated</td>
<td>1,240,940 children</td>
<td>Retrospective population-based cohort study</td>
<td>There was complete agreement between the ADOS and DSM-IV in the evaluated sample. CARS had high specificity (100%) and low sensitivity (45%), negative predictive value of 38% and a positive predictive value of 100% when compared to the DSM-IV as a standard. When CARS compared to ADOS as standard, 59% sensitivity, 100% negative predictive value, 100% specificity, and 100% positive predictive value. Parents were consulted by having a foreigner complete the assessments and reported that they felt at ease. Parents from Bangladesh, Sudan, &amp; Pakistan rejected the idea of &quot;problems&quot; or &quot;difficulty&quot; and preferred more indirect questions about the child's wellbeing.</td>
</tr>
</tbody>
</table>
To assess for under diagnosis in routine preventative care for infants between maternal countries of birth and according to mother tongue, mothers born in Moroccan, Indian, Pakistani, and Arabic mothers.

Not stated

370, 366 singletons

Not stated

2nd generation

Birth to 24 months

Late-acquired

Birth to 24 months

Not stated

linked databases of the Institute for Clinical Evaluative Sciences (ICES); Registered Persons Database; Discharge Abstract Database; Ontario Health Insurance Plan; Immigration and Refugees; Citizenship and Immigration Canada Permanent Resident Database

Canadian youth.

http://dx.doi.org/10.1843-853.
Supplemental material

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Rousseau, C. & Drapeau, A. (2001). "The objective of this paper is to present the changing patterns of mental health and social adjustment problems from early adolescence to mid-adolescence among Cambodians and Quebecois adolescents living in a Canadian urban setting. BMJ Global Health, 2022;BMJ Global Health, et al. Salami B


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<table>
<thead>
<tr>
<th>Year</th>
<th>Authors</th>
<th>Methodology</th>
<th>Design</th>
<th>Sample Size</th>
<th>Gender</th>
<th>Race/Ethnicity</th>
<th>Subgroups</th>
<th>Follow-up</th>
<th>Family Relationships</th>
<th>Mental Health Symptoms</th>
<th>Results/Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>Rousseau, C., Depoeu, A., &amp; Platts, R.</td>
<td>Quantitative</td>
<td>To examine how the effects of a number of risk and protective factors on the mental health of Cambodian refugee adolescents evolve as they grow older from adolescence.</td>
<td>Not stated</td>
<td>M &amp; F</td>
<td>Refugee</td>
<td>1st generation (Adolescents)</td>
<td>254</td>
<td>1st generation</td>
<td>Internalizing behavior</td>
<td>Cambodian adolescents had greater rates of internalizing symptoms; for this group, higher family conflict was associated with externalizing symptoms and, overall, family environment is associated with externalizing behaviors.</td>
</tr>
<tr>
<td>2005</td>
<td>Rousseau, C., Depoeu, A., &amp; Rohens, S.</td>
<td>Quantitative</td>
<td>To investigate the prevalence and subtypes of conduct disorder (CD) and behavioral problems among youth in two communities (Cambodian and Filipino) characterized by prolonged parental-child separations upon immigration.</td>
<td>Not stated</td>
<td>M &amp; F</td>
<td>Refugee</td>
<td>1st generation (Adolescents)</td>
<td>252</td>
<td>1st &amp; 2nd generations</td>
<td>Symptoms of anxiety and depression in their parents contribute to 26% of how parents rated their adolescent's mental health</td>
<td>Cambodian and Filipino group; a larger proportion of Cambodian adolescents' report immigrating separately from their families than those in the Filipino group. Overall, Filipino adolescents had greater rates of internalizing symptoms, for this group, higher family conflict was significantly associated with lower school achievement; greater family cohesion was associated with better school achievement; greater family cohesion and psychological symptoms were reported by parents for their sons than daughters. For Cambodian adolescents, family cohesion and symptoms of anxiety and depression in their parents contributed to 26% of how parents rated their adolescent's internalizing and externalizing symptoms.</td>
</tr>
<tr>
<td>2009</td>
<td>Rousseau, C., Hassan, G., Measham, T., Castro, M., &amp; McKenney, G.</td>
<td>Mixed methods</td>
<td>Aims to assess the relationship between family cohesion and perception of minority racism in Cambodian and Filipino adolescents; assess for the impact of separations from their parents on their mental health; assess for how family relationships and environmental perception may be associated with mental health.</td>
<td>Not specified</td>
<td>M &amp; F</td>
<td>Refugee</td>
<td>Not specified</td>
<td>Not stated</td>
<td>Not stated</td>
<td>Not stated</td>
<td>There were similar distributions of age and activity type in Canada between Caribbean and Filipino groups, a larger proportion of Filipino adolescents' report immigrating separately from their families, there were more first-generation immigrants in the Filipino group and more second generation immigrants in the Cambodian group. Overall, Filipino adolescents had greater rates of internalizing symptoms, for this group, higher family conflict was significantly associated with lower school achievement; greater family cohesion was associated with better school achievement; greater family cohesion and psychological symptoms were reported by parents for their sons than daughters. For Cambodian adolescents, family cohesion and symptoms of anxiety and depression in their parents contributed to 26% of how parents rated their adolescent's internalizing and externalizing symptoms.</td>
</tr>
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</table>

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To explore the differences in help-seeking behaviors and service delivery between different groups of uninsured children, the authors conducted a mixed-methods study. They interviewed a total of 200 participants, including 100 uninsured children, 50 from the second group of uninsured children, and 50 from the third group of uninsured children. The study also included focus group discussions with healthcare providers and community leaders. The results of the study showed that uninsured children were more likely to delay seeking help and were more likely to be referred to emergency departments for urgent care. The study also highlighted the importance of addressing the barriers to healthcare access for uninsured children, including language barriers, transportation issues, and the lack of understanding of the healthcare system.

To achieve a qualitative description of the help-seeking behaviors and service delivery patterns in the second group of uninsured children, the authors conducted 10 focus group discussions with healthcare providers and community leaders. The results of the study showed that the second group of uninsured children had a higher rate of presentation in the very urgent triage category, with 39.4% of the total sample (χ²[4] = 114.3; P<0.001). Because of the lack of access to healthcare, these children were more likely to seek care in emergency departments, which often had long wait times and were unable to provide the necessary care.

The results of the study suggest that family cohesion plays a key role in shaping adolescents’ perceptions of racism in the host country and in promoting a positive appraisal of their own community. Family cohesion and perceptions of the environment associated with the adolescent’s self-perception of positive and negative symptoms. More specifically, attitudes toward school are related to youth mental health. Both adolescents from both communities, whereas perception of racism is significantly associated with symptoms in the case of African children. Differences in help-seeking and service delivery among uninsured immigrant and refugee children residing in two provinces of Quebec, Canada, were the subject of the study. The findings indicated that uninsured African children with refugee status had high rates of presentation in the very urgent triage category and were more likely to be referred to emergency departments for urgent care.

The study also highlighted the importance of addressing the barriers to healthcare access for uninsured children, including language barriers, transportation issues, and the lack of understanding of the healthcare system. To achieve a qualitative description of the help-seeking behaviors and service delivery patterns in the second group of uninsured children, the authors conducted 10 focus group discussions with healthcare providers and community leaders. The results of the study showed that the second group of uninsured children had a higher rate of presentation in the very urgent triage category, with 39.4% of the total sample (χ²[4] = 114.3; P<0.001). Because of the lack of access to healthcare, these children were more likely to seek care in emergency departments, which often had long wait times and were unable to provide the necessary care.

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<table>
<thead>
<tr>
<th>Year</th>
<th>Authors</th>
<th>Design</th>
<th>Data collection</th>
<th>Sampling</th>
<th>Sample size</th>
<th>Measures</th>
<th>Method</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>Salehi, B., Mason, A., Salehi, J., Yoban, S., Amini, M., Oladeh-Bajetika, F., &amp; Lalha T.</td>
<td>Qualitative</td>
<td>To assess for the ways which immigrants from various immigrant generates access to health services for their children</td>
<td>Descriptive qualitative design</td>
<td>289038015_Predictors of Exposure to Sexual Health Education among Immigrant and Refugee Children in Canada, Schaffer, Research and Public Health, 17(1), 32020</td>
<td>Multiple</td>
<td>Snowball sampling</td>
<td>50 immigrant children (57 fathers and 57 mothers)</td>
</tr>
<tr>
<td>2010</td>
<td>Salehi, R. &amp; Flickner, S.</td>
<td>Quantitative</td>
<td>To investigate predictors of access to sexual health education among urban youth in Toronto with a particular focus on newcomer youth, newly immigrated youth and in-school youth who have lived in Canada for three years or less</td>
<td>Survey (Toronto-Trent survey)</td>
<td>1216</td>
<td>M &amp; P, immigrants &amp; refugees</td>
<td>18-19 years</td>
<td>Both 1st and 2nd generation</td>
</tr>
</tbody>
</table>

**Themes identified include:**
- System barriers: long wait times, inconvenient appointment hours, language and cultural barriers, poor English fluency and familiarity with the healthcare system.
- Difficulty in engaging with healthcare professionals or understanding health information; lack of translation services; ineffective translation services; difficulty navigating a foreign healthcare system.
- Relationship with healthcare professionals: lack of familiarity building, reluctance to prescribe requested medications. Financial barriers to access: not able to afford health services including mental health services.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Methodology</th>
<th>Objective</th>
<th>Sample</th>
<th>Findings</th>
<th>Reference</th>
</tr>
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</table>
Supplemental material

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doi: 10.1136/bmjgh-2021-008189

| Date       | Authors                        | Methodology | Title                                                                 | Sample            | Reporting variables | Measurement | Follow-up | Intervention | Child/Adult | Additional info |
|------------|--------------------------------|-------------|----------------------------------------------------------------------|-------------------|---------------------|-------------|-----------|--------------|-------------|----------------|------------------------------------------------------------------|
| 2012       | Shao, J. & Bosworth, N.       | Qualitative | Focuses on a particular segment of the youth population, recent immigrant youth in St. John’s, NL-and how this relates to cultural memories about physical activity and fitness. | Exploratory       | 15                  | M & F       | Not stated | 12-17 years   | Children/Adults | Stress, maternal stress, and distress and physical activity. |
| 1997       | Smith, K. & Johnston, C.      | Quantitative | A focus on the role of social support in the adaptation of immigrant children. The buffering role of social support. | Randomized trial   | 97                  | M & F       | Not specified | Both 1st and 24th grades | Forensic s. 4-16 years | Stress and children's adjustment. |
| 2020       | Smith, C., Clark, A., Wilk, P., Tucker, P., & Gilliland, J. A | Quantitative | To explore how the use of a recreation access pass impacts the physical activity level of grade 5 children. | Pre-post evaluation | All grade 5 students in London, England, UK and Canada | 665 children | M & F | Not specified | Grade 5 | Parasites and children Physical activity and health 2016-2018 | Not stated Ontario Levels of physical activity increased significantly at the 6-month follow-up. Significant increases were seen in girls' physical activity, immigrants, and children whose parents had less physical activity. The study also found that the increase in physical activity was associated with an increase in physical activity among children from single-parent households, those with less educated and unemployed parents, and those in higher levels of peer and parental support. |

The study uncovered 14 health and fitness-related themes and a focus on 2 in particular: barriers to health and barriers to fitness. Barriers—high cost and unsupportive environments, fast food, and the high cost of healthy foods. High cost of participation in sports and physical activity. Unsupportive school environments and inadequate neighborhoods.
<table>
<thead>
<tr>
<th>Authors</th>
<th>Year</th>
<th>Design</th>
<th>Methods</th>
<th>Sample Description</th>
<th>Sample Size</th>
<th>Results</th>
<th>Country</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storace, L., Elgie, S., Dinkop, H., &amp; Kelly, T.</td>
<td>2010</td>
<td>Quantitative</td>
<td>To describe the achievements and educational experiences of immigrant students who entered Canada's education system after leaving global war-zone regions.</td>
<td>Not stated</td>
<td>Not stated</td>
<td>750 cases (265 war zone students, 272 non war zone students, 279 Canadian born students)</td>
<td>M &amp; P</td>
<td>Immigrants (not specified) &amp; refugees</td>
</tr>
<tr>
<td>Storlie, R.</td>
<td>2008</td>
<td>Mixed Methods</td>
<td>Tobacco control is a priority of the BC Ministry of Health as it is associated with premature death. The authors discuss the various dimensions of tobacco control and the need for culturally relevant approaches to health promotion and disease prevention.</td>
<td>Not stated</td>
<td>Not stated</td>
<td>314</td>
<td>M &amp; P</td>
<td>Immigrants (not specified) &amp; refugees</td>
</tr>
<tr>
<td>Tardif, C. Y. &amp; Geva, E.</td>
<td>2006</td>
<td>Qualitative</td>
<td>Adolescents feel the degree of acculturation disparity among immigration parents and adolescents and the various dimensions of parent adolescent conflict.</td>
<td>Not stated</td>
<td>Not stated</td>
<td>M &amp; F</td>
<td>Not stated</td>
<td>2nd generation</td>
</tr>
</tbody>
</table>

The table presents research findings on acculturation disparity and conflict among Chinese Canadian immigrant and non-immigrant youth. The studies highlight the importance of understanding the experiences of immigrants in Canada, particularly those who have entered the country after leaving war zones. The results show that acculturation disparity can reveal important differences in the quality of mother-adolescent relationships. Mothers in the high acculturation-disparity groups reported more conflicts with their sons, particularly when compared to other immigrant mothers and Canadian born students. Immigrant students were more successful in Canada's educational system, with war zone students doing comparably to other immigrant students and Canadian born students across multiple metrics of academic achievement, and even doing better in some instances (math, science, English). In general, immigrant students and war zone students had strong connections and were typically very engaged in school learning and school environment. Parents of immigrant children were more likely to have a university education than those of Canadian-born students.
There was a higher incidence of leukaemia in south Asia compared to other regions. Using the age and sex-stratified model, areas with greater percentage of immigrants and visible minorities had higher rate ratios of childhood leukaemia. There was no significant association identified between unemployment and incidence of childhood leukaemia. Rates of leukaemia were greater for children aged 0-4 years, fewer for ages 5-9, and lower for age 10-14.

The religious sample obtained a total of 535,589. 2% women were higher than the 13-14 year age group. Several barriers were identified, including: financial difficulties, insufficient information, discrimination/racism, language barriers, feeling of isolation, stigma, and not feeling heard by service providers. Several facilitators were identified: services being offered by schools, higher levels of personal education, and services being offered for free.
<table>
<thead>
<tr>
<th>Reference</th>
<th>Year</th>
<th>Design</th>
<th>Sample</th>
<th>Follow-up</th>
<th>Outcome Measures</th>
<th>Study Design</th>
<th>Data Source</th>
<th>Key Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urquia, M. L., Frank, J. W., Glazier, R. H., &amp; Matheson, F. I. (2010).</td>
<td>2010</td>
<td>Quantitative</td>
<td>All live singleton infants born April 1, 1996, to March 31, 2001 in Toronto</td>
<td>Dec 31, 2000</td>
<td>Birth outcomes, especially preterm birth (PTB) and birth weight</td>
<td>Population-based, cross-sectional study</td>
<td>Maternal and Obstetric Database, Registered Discharge Database, and Area Health Information System</td>
<td>There was a relationship between low neighborhood income and at-risk of preterm birth, low birth weight, and low birthweight at term, with low birth weight and adverse infant health outcomes for recent immigrants. There was no strong evidence indicating that the influence of low neighborhood income varied with the maternal region of birth or with preterm subgroups.</td>
</tr>
<tr>
<td>Year</td>
<td>Authors</td>
<td>Study Design</td>
<td>Objective</td>
<td>Sample Size</td>
<td>M &amp; F</td>
<td>Follow-up</td>
<td>Outcomes</td>
<td>Results</td>
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<tr>
<td>2011</td>
<td>Uraga, M. L., Frank, J. W., Mohiddin, R., &amp; Glazier, R. H.</td>
<td>Quantitative</td>
<td>To examine the male: female ratios at birth in relation to the mother’s country of birth, the sex and birth order of her children, and the town, number and timing of any abortions she had before live births.</td>
<td>85,253 births</td>
<td>M &amp; F</td>
<td>0–12 months</td>
<td>Male: female ratio</td>
<td>High male: female ratios among infants of mothers born in India who immigrated to Ontario were associated with having had induced abortions, especially in the second trimester of pregnancy, when fetal sex can be accurately determined by ultrasonography.</td>
</tr>
<tr>
<td>2015</td>
<td>Uraga, M. L., Mohiddin, R., Ba, F., O’Connor, P. J., McKenzie, K., Glazier, R. H., Henry, D. A., &amp; Ray, J. G.</td>
<td>Qualitative</td>
<td>To evaluate the male: female expected ratio at birth in relation to the mother’s country of birth, the sex and birth order of her children, and the town, number and timing of any abortions she had before live births.</td>
<td>n=83,233 births</td>
<td>M &amp; F</td>
<td>Permanently resident</td>
<td>Male: female ratio</td>
<td>Immigrants’ duration of residence in Ontario cities modifies the influence of both the maternal place of birth and place of residence at delivery on preterm birth. Maternal country of birth was influential for preterm birth up to 14 years of residence in Canada, but neighborhoods were not. The pattern was reversed after 14 years of residence, when the association between deprivation and preterm birth among immigrants included the level of inequalities observed among the Canadian-born population.</td>
</tr>
<tr>
<td>Year</td>
<td>Authors</td>
<td>Methodology</td>
<td>Results</td>
<td>Conclusion</td>
<td></td>
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<tr>
<td>2016</td>
<td>Vang, Z. M. (2016).</td>
<td>Quantitative</td>
<td>Multivariate analysis</td>
<td>Determinants of infant mortality in Canada: A study demonstrating that they are also able to pass on their survival advantage to their Canadian-born offspring.</td>
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<td>2011</td>
<td>Vanhal, K., Meulen, F., Brown, C., &amp; Richard-Guy, A. (2011).</td>
<td>Mixed Methods</td>
<td>Grounded theory approach</td>
<td>E-mail invitation to participating health and social service providers to complete an online questionnaire.</td>
<td>237 health practitioners, nurses, social workers, researchers.</td>
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<td>2017</td>
<td>Vapadapati, H., Nebel, C., &amp; Grabhal, B. (2017).</td>
<td>Quantitative</td>
<td>Cross-sectional study</td>
<td>Vitamin D status in children (0-12 years) and its association with health outcomes.</td>
<td>Vitamin D status in children (0-12 years) and its association with health outcomes.</td>
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<td>2017</td>
<td>Vapadapati, H., Nebel, C., &amp; Grabhal, B. (2017).</td>
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<td>Cross-sectional study</td>
<td>Vitamin D status in children (0-12 years) and its association with health outcomes.</td>
<td>Vitamin D status in children (0-12 years) and its association with health outcomes.</td>
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**Supplemental material**

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Salami, B. et al. BMJ Global Health 2022; 7:e008189. doi: 10.1136/bmjgh-2021-008189
<table>
<thead>
<tr>
<th>Year</th>
<th>Authors</th>
<th>Methodology</th>
<th>Sample Description</th>
<th>Data Collection</th>
<th>Main Findings</th>
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<td>2014</td>
<td>Wahoush, E. O.</td>
<td>Mixed methods</td>
<td>To examine the relationship between energy expenditure and health care access among healthy preschool children.</td>
<td>Purposive sampling</td>
<td>32 mothers of children aged 2-6 months, with 22 children.</td>
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The mismatch between need and service for Roma refugee children is a complex issue that requires the attention of the Roma community and service providers. Its resolution is central to Canada’s principle, not of assimilation, but of multiculturalism.
<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Year</th>
<th>Methodology</th>
<th>Title</th>
<th>Summary</th>
</tr>
</thead>
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<td>Walsh, D. O.</td>
<td>2009</td>
<td>Mixed Methods</td>
<td>To generate evidence about equity and access to health services for preschool children in refugee families. How do refugees and refugee claimant mothers perceive their preschool children accessing medical care? What factors influence mothers' choices and actions in seeking access to health services for their child?</td>
<td>Retrieve cross-sectional, semi-structured interviews with 3 focus groups. Puri- poseful sampling was used to promote the inclusion of the most vulnerable participants: refugees and refugee claimant mothers of a preschool child. 55 mothers F Both 1st and 2nd generation 3-5 years (Preschool) Parasitic or givers Equitable health care access and health-seeking as claimants. Aug 2004 - May 2005. Africa, Asia, Middle East, Europe, Pacific, South and Central America. When health insurance was adequate, the needs of most of the children were met during a medical visit. The healthcare needs of the children in this study were similar to those of children generally. However, the responses of their mothers were affected by immigration policy and health care policy. Despite these and other challenges the participants exhibited strong coping skills in looking after their children.</td>
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<tr>
<td>Walshbrook, E., Bradbury, B., Wilding, J., Crock, M., &amp; Ghanghro, A.</td>
<td>2012</td>
<td>Qualitative</td>
<td>To incorporate the role of early childhood workers in comparative analyses of immigrant integration.</td>
<td>Com- pare the outcomes of 2nd generation Roma to non-Roma children.</td>
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<td>Walsh, C. A., Sims, D., Krieg, B., &amp; Giurgiu, B.</td>
<td>2011</td>
<td>Qualitative</td>
<td>To understand the needs of Roma refugees children for service, and the barriers in accessing such services.</td>
<td>Exploratory study.</td>
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<td>Year</td>
<td>Author(s)</td>
<td>Title</td>
<td>Study Design</td>
<td>Objective(s)</td>
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<td>--------------</td>
<td>--------------</td>
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<td>2008</td>
<td>Wang, H. Y., Wang, C. W., Chen, Y. Z., Ferguson, A. C., Greene, J. M., Ma, Y., Zhong, N., Lau, C. K. W., Sears, M. R. (2008).</td>
<td>Prevalence of asthma among Chinese adolescents born in mainland China and in Canada.</td>
<td>Quantitative</td>
<td>Examining factors associated with the development of asthma among Chinese adolescents born in Hong Kong and Canada.</td>
</tr>
</tbody>
</table>

The study confirmed a lower prevalence of asthma symptoms among Chinese adolescents born in mainland China and a significantly higher prevalence among Chinese adolescents born in Hong Kong and Canada. The results suggest that early environmental exposures reduced the subsequent development of asthma, despite similar genetic background. However, the environment continues to be an important factor influencing the prevalence of asthma and delays even after the early years of sensitization. Among Chinese adolescents in Vancouver, they observed increasing prevalence of ever wheezing and ever having had asthma with longer duration of residence in Canada, although these trends did not achieve significance when stratified by refugee status. Among Chinese adolescents living in Hong Kong, asthma prevalence was lower compared to those living in Canada, possibly due to differences in the immigration process and access to health care. The study suggests that environmental factors and duration of exposure, in addition to genetic factors, influence the prevalence of asthma. |


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doi: 10.1136/bmjgh-2021-008189

### Variations Across Mothers in Canada:

#### 2012


To examine the relationship between immigrant generation and health-related quality of life. Cross-sectional survey of 2002 children. 

#### 2018


To examine the prevalence of tuberculosis in children and adolescents who were evaluated at the hospital for sick children tuberculosis screening program after referral from the tuberculosis medical surveillance program. A retrospective single-cohort study on children who were referred to the hospital for sick children tuberculosis screening program for screening.

#### 2016

**Yang, C.** (2016). The relationship between immigrant generation and social integration is not straightforward, but depends on a combination of factors, including transitions between generational status, racial status, and neighborhood characteristics. For some of these factors, there are some generational effects, but these correspond to differences in racial status.

### The Prevalence of Childhood Migration on Perinatal Health Outcomes and Childhood Health Behaviors:


**Yang, T. F. (2016).** To examine the prevalence of tuberculosis in children and adolescents who were evaluated at the hospital for sick children tuberculosis screening program after referral from the tuberculosis medical surveillance program. A retrospective single-cohort study on children who were referred to the hospital for sick children tuberculosis screening program for screening.

**Yang, T. J. (2019).** To examine the prevalence of tuberculosis in children and adolescents who were evaluated at the hospital for sick children tuberculosis screening program after referral from the tuberculosis medical surveillance program.


**Yang, S.** (2016). To explore the differences in the perinatal health of single-births and twins from mothers living in Canada in respect to multiple outcomes over a 15-year period. Retrospective cohort study on birth outcomes from 1994 to 2006.


### The Prevalence of Childhood Migration on Perinatal Health Outcomes and Childhood Health Behaviors:

To examine the prevalence of tuberculosis in children and adolescents who were evaluated at the hospital for sick children tuberculosis screening program after referral from the tuberculosis medical surveillance program. A retrospective single-cohort study on children who were referred to the hospital for sick children tuberculosis screening program for screening.


**Yang, S.** (2016). To explore the differences in the perinatal health of single-births and twins from mothers living in Canada in respect to multiple outcomes over a 15-year period. Retrospective cohort study on birth outcomes from 1994 to 2006.


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**Yang, S.** (2016). To explore the differences in the perinatal health of single-births and twins from mothers living in Canada in respect to multiple outcomes over a 15-year period. Retrospective cohort study on birth outcomes from 1994 to 2006.


### The Prevalence of Childhood Migration on Perinatal Health Outcomes and Childhood Health Behaviors:

To examine the prevalence of tuberculosis in children and adolescents who were evaluated at the hospital for sick children tuberculosis screening program after referral from the tuberculosis medical surveillance program. A retrospective single-cohort study on children who were referred to the hospital for sick children tuberculosis screening program for screening.


**Yang, S.** (2016). To explore the differences in the perinatal health of single-births and twins from mothers living in Canada in respect to multiple outcomes over a 15-year period. Retrospective cohort study on birth outcomes from 1994 to 2006.
Exploring hope using creative approaches with children, providing ways for children to share their hope with others, and discussing with adults how hope affects their work with others, and discussing with adults how hope affects their children may create connections that enhance hope.

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<table>
<thead>
<tr>
<th>Year</th>
<th>Authors</th>
<th>Design</th>
<th>Research questions</th>
<th>Sample</th>
<th>Intervention</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>Yuen, T., Landreth, G., &amp; Baggerly, J.</td>
<td>Quantitative</td>
<td>To determine the effectiveness of filial therapy as a method of prevention and intervention for immigrant Chinese families in Canada. To increase empathic attitude, acceptance level of children, reduce stress and problems, improve self-concept.</td>
<td>18 parents randomly selected for the experimental group of filial therapy and divided into two training groups with 9 parents in each group. The other 17 parents were placed in the control group and received no treatment.</td>
<td>Not stated</td>
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The results of this study supported the effectiveness of the Landreth (1991) 10-week filial therapy training model with immigrant Chinese parents in Canada. Immigrant Chinese parents with different cultural values face the challenge of helping their children adjust to the local society while maintaining their own cultural traditions. The findings demonstrate immigrant Chinese parents were able to incorporate new relationship skills in their interactions with their children during special play sessions. Parents in the experimental group reported significantly more accepting attitudes toward their children, a decrease in stress related to parenting, and a smaller number of children's behavioral problems than parents in the control group.


Survey

<table>
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<th>Sample</th>
<th>Intervention</th>
<th>Outcomes</th>
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<td>1. Whether there is a difference in birthweight in infants born to one or two immigrant parents.</td>
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<td>Birth weight (kilograms)</td>
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| 2. Whether the relationship between paternal country origin and birthweight is modified by neighborhood ethnic composition? | Not stated | 682,401 | Not stated | Not stated | Not stated | Not stated | Not stated | Not stated | Not stated | Not stated | Not stated | Not stated | Canada, Bangladesh, Sri Lanka, Pakistan, India, Philippines, Korea, China

Infants of one or two foreign-born parents had lower birth weights than infants of 2 Canadian-born parents. When all 9 immigrant countries were aggregated together, the adjusted birthweight difference was greatest for infants of 2 same-country foreign-born parents compared with those of 2 Canadian-born parents. Smaller weight differences were seen for mixed-origin couples, with infants born to foreign-born mothers and Canadian-born fathers having the most similar birthweights to those of Canadian-born parents.
## Supplemental file 2: grey literature search

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