Does Living in a Neighbourhood With Others of the Same Ethnic Background Contribute to Health of Canada's Immigrant Children?

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ABSTRACT

OBJECTIVES: To understand how neighbourhood characteristics affect the health of immigrant children in Canadian cities. We question whether the health of children is influenced by immigrants living in enclaves of people with similar ethnic and socio-economic backgrounds.

METHODS: Two datasets were used: the New Canadian Children and Youth Study (NCCYS) and Statistics Canada census data. The NCCYS comprises children from Hong Kong, the Philippines and Mainland China living in Canada's largest cities. Logistic regression was used to examine the influence of neighbourhood ethnic concentrations and mean income on health.

RESULTS: Girls were more likely to be reported to have excellent health compared to boys, as were children living in neighbourhoods with lower mean parental education. Children from Hong Kong were less likely to have excellent health compared to the reference group. For the Mainland Chinese group only, there was an inverse relationship between reported health status and the concentration of people from the same ethnic background in the neighbourhood.

CONCLUSION: The health of children from different ethnic backgrounds is influenced by different social and economic factors. In practice and in research, "immigrants" and even broadly defined cultural groupings, such as "Asian immigrants", should be considered as heterogeneous.

KEY WORDS: Immigrant children; child health; neighbourhood; immigration

La traduction du résumé se trouve à la fin de l'article.

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Health is influenced by genetic, behavioural, and environmental factors.¹⁻³ Environmental or ecological factors are multi-faceted and important contributors to the population's health.⁴⁻¹¹ Kawachi and Berkman¹¹ note:

"The insight that where one lives makes a difference to one's health is not new. Such observations have been made since at least the eighteenth century....What is new is the cross-disciplinary dialogue on concepts, methods, and evidence about the influence of neighborhoods on health."

This paper focuses on the association between the health of Canada's immigrant children and the neighbourhoods in which they live. Compared to other western nations, Canada has the highest proportion of foreign-born population (20.6%).¹² Most immigrants have settled in the country's three largest metropolitan areas: Toronto, Montreal and Vancouver. Together those cities make up one third of Canada's nearly 35 million people, and between 2006 and 2011, 62.5% of recent immigrants chose to live in these centres.¹² Given the large proportion of Canada's children who are immigrant, more research on their well-being is warranted.¹³

Considerable evidence exists with respect to neighbourhood effects and specific health issues, such as cardiovascular diseases,¹⁴ cancers,¹⁵ infant mortality and low birth weight,^{e.g.,¹⁶} asthma,^{e.g.,¹⁷} and health behaviours (smoking, alcohol and other drug use, teenage pregnancy), among many others. The literature indicates a moderate association between neighbourhood influences and general health status.^{4,7,11} Pickett and Pearl⁷ concluded that the evi-

dence was "fairly consistent" although modest, despite differences in study designs and measures.

Past research regarding the association between the health of children and adolescents and their neighbourhoods has focused for the most part on the outcomes of growing up in disadvantaged or impoverished neighbourhoods, including substandard housing and

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high concentrations of minority or African American populations in the US.¹⁸ Thus, neighbourhood environments have been defined by income,¹⁹ and “neighbourhood effects” is equated with community poverty.

One of the few studies comparing the health of immigrant children with non-immigrant children found both individual and city characteristics associated with behavioural and emotional problems of children in Canada.¹³ Higher incidence of hyperactive behaviours was found among children living in cities with higher density, high average costs for housing or high rates of divorce. Immigrant and non-immigrant children appear to be influenced differently; for example, social environment was important for immigrant children while social equity was more influential to the health of non-immigrant children.¹³

Socio-economic (SES) indicators may affect immigrants and non-immigrants differently. For non-immigrant populations, SES indicators are co-dependent in that education, occupation and income are highly correlated. As we have discussed in previous research, this may not be the case for immigrants.²⁰ An example would be the case of a highly educated immigrant who is forced into a low-income job because of lack of recognition of foreign credentials, which in turn forces the family into living in a neighbourhood with low-priced housing. Conversely, another immigrant may bring ample financial resources from the home country and thus be able to purchase a home in a neighbourhood with a high average income, while their current occupational status aligns more closely with other neighbourhoods.

In previous studies, “immigrant concentration” for the most part has been used as one indicator of community disadvantage.^{14,21} The literature on racial residential segregation generally refers to neighbourhoods with high numbers of African Americans or Latinos in the United States. A complex relationship may exist between concentrations of racial minorities and income disparity. Pickett et al.²² found that living in a wealthier area reduced the risk of adverse pregnancy outcomes; however, the risk increased if the women were in a racial minority (e.g., African-American women). The positive effects of better SES were offset by the adverse effects of racism.²²

Mechanisms suggested to explain these associations are social cohesion, social capital and specifically the number or types of services available in neighbourhoods, which in turn may be reflective of the extent of community resources.^{23,24}

It is possible that protective factors, such as increased social support or reduced discrimination, influence the health of immigrants who live in enclaves with large numbers of people who originate from the same country and have language, religion and other cultural backgrounds in common.

This paper uses data from immigrant families from Hong Kong, Mainland China, and the Philippines to examine the neighbourhood effects on the health status of children of immigrants in Canada's three largest urban centres: Vancouver, Montreal and Toronto. Our research question is: does living in a neighbourhood with others of the same ethnic background contribute to health of immigrant children?

METHODS

Two datasets are integrated in our study: New Canadian Children and Youth Study (NCCYS) data and Statistics Canada 2001 data.

New Canadian Children and Youth Study (NCCYS)

The NCCYS is a national, longitudinal study of children whose families settled in urban centres of Canada.^{24,25} In the full study, immigrant families from 16 communities, living in six cities are included. Our analysis includes data from the three core groups – Mainland Chinese, Hong Kong Chinese, and Filipino – who were included in all urban centres. We use data from the three largest centres (Montreal, Toronto, and Vancouver) in this analysis because neighbourhood sample sizes were too small for analysis in the smaller urban centres of Winnipeg, Edmonton and Calgary.

Structured questionnaires were used to interview parents and children in their homes. Data collection included demographic factors, physical health and mental health, family factors (family size, nationality, length of time in Canada, parental health, parenting style, socio-economic background), migration experiences, social supports, work history, and child experiences (discrimination, relationship with parents, identity formation) and others. Parents (primary caregiver, usually the mother) were interviewed about their families and about their children, and the older children (ages 11–13 years) were interviewed about themselves and they answered one questionnaire on their own.

Sample

Families were recruited if they came from specific countries and spoke the dominant languages within those countries, had moved to Canada anytime within the past 10 years, and had at least one child in either of two developmentally formative age groups, 4–6 years or 11–13 years old. The specific countries were selected to be representative of the current ethnic makeup of Canada.

Quota sampling was employed to ensure an equal sample size from each immigrant group. In each city, for each ethnic community, 180 children were recruited, 90 in the younger age group and 90 in the older age group, although 91 were interviewed for one community (Mainland China). Reliable lists of immigrant and refugee children are not available; therefore, other sampling techniques were used. Four school boards in the Vancouver area sent letters describing the study to just those families with children in the age cohorts and from the ethnic backgrounds required for this study, asking the families to respond to the researchers. The remainder of the sample came from response to study promotion through ethnic media outlets and recruitment at ethnocultural events, community centres, parenting programs, language schools, churches or temples, malls and through snowball sampling, in which participants referred neighbours or friends who fit the eligibility criteria.

Some families in the NCCYS had more than one child included in the study. For the analysis in this paper, one child from each of these families was randomly selected to be included in the data, thereby maintaining the statistical assumption of independence of participants. The original sample size was 1,580. Deleting siblings reduced it to 1,405. The data were then weighted to the Census Subdivision level to control for sex- and ethnic-based sampling bias. The weighted sample represented 2,369 individuals.

Statistics Canada data

A neighbourhood-level dataset was created from the 2001 Statistics Canada census data, the closest Census to the NCCYS data collection, although the two datasets were not perfectly overlapping.

Census data were extracted from E-STAT²⁶ at the postal code prefix level. NCCYS respondents were mapped based on their postal code and then grouped based on the neighbourhood that they lived in. It was necessary to group some individuals with participants in adjoining neighbourhoods, due to the statistical requirements of multilevel modeling. Neighbourhoods that were grouped together were required not only to be physically adjoined but also to have a similar neighbourhood income and education level. In total, there were 49 neighbourhoods included in our study. In each of the two datasets, a neighbourhood identification variable was created so that datasets could be linked in the hierarchical level analysis.

Dependent variable

One dependent variable was assessed: health status of the child according to the parent. Self-rated health (or in this case, rating by the primary caregiver) has become increasingly popular as global measures of health, and has been found to be a dependable predictor of general health.²⁷ The NCCYS parent was asked: "In general, would you say your son's/daughter's health is: excellent, very good, good, fair or poor?" This question was dummy coded, allowing a comparison of those with excellent health to those who do not have excellent health.

Independent variables

Both individual/family and neighbourhood variables are assessed in this study. The focal test variables are: ethnicity, family income, and parental education level; and ethnic concentration as well as average neighbourhood income and education level. Sex and age were used as control variables.

Ethnicity was defined by the original country of emigration: Hong Kong, Mainland China or the Philippines, and within those countries of origin, the most frequently used languages of Cantonese, Mandarin and Tagalog, respectively. Household income and education were used as proxies for socio-economic status. Education level of the responding parent (high school education or less compared to more than high school education) was examined. Household income (low income compared to non-low income) was examined. We used household income adequacy to measure low income. This is a measure developed and routinely used by Statistics Canada.²⁸ It considers household income and the number of people in the household. According to this indicator, low income consists of: people in a 1-2 person household with a total income below \$15,000; people in a 3-4 person household with a total income below \$20,000; or people in a 5 or more person household with a total income below \$30,000. We compared households with the lowest income to those with higher incomes.

Sex of child (with male as reference group) and age of child (with 11-13 year old age group as reference group) were examined as control variables. Length of time in Canada was originally included in the analyses as a control variable, then removed from the analyses given its lack of statistical significance, lack of effect on health and the need to maintain a parsimonious model given the sample size constraints in using hierarchical linear modeling.

Three neighbourhood-level variables were examined: ethnic concentration, average education level and average income level. Ethnic concentration was measured by examining the percentage of residents in the neighbourhood who were born in Mainland

Table 1. Descriptive Statistics of Variables Examined

Individual Level (n=2369)				
	n	%		
Excellent health	624	26.3		
Not excellent health*	1745	73.7		
Ethnicity				
Hong Kong	652	27.5		
Mainland China	1149	48.5		
Philippines*	569	24.0		
Income				
Low income	847	35.7		
Above low income*	1452	63.3		
Missing	70	3.0		
Education				
High school or less	402	17.0		
More than high school*	1960	82.7		
Missing	7	0.3		
Sex				
Female	1141	48.2		
Male	1228	51.8		
Age				
Younger age group	1377	58.1		
Older age group*	993	51.9		
Neighbourhood Level (n=54)				
	Mean	SD	Minimum	Maximum
% Hong Kong	4.38	4.79	0.02%	16.43%
% Mainland China	4.97	4.24	0.28%	14.91%
Average income	\$69,837.01	\$16,323.81	\$41,897.63	\$111,335.34
% No HS education	13.22	3.15	6.41%	20.42%

* Reference group.

China, Hong Kong or the Philippines. Education level was measured examining the percentage of people in the neighbourhood who had a high school diploma or less. Income was measured by calculating the mean average household income level.

Statistical analysis

Hierarchical linear modeling (HLM) was used to assess the effect that: individual/family characteristics; neighbourhood context; and the interaction between individual and neighbourhood context had on likelihood of a child being in excellent health. Multilevel analyses are widely used in health studies ^{e.g., 7,13,29-31} due to the increased validity in measuring the contextual factors. HLM increases the validity of results, while controlling for sample limitations associated with the clustering of people in non-random categories, such as neighbourhoods.^{32,33}

The Bernoulli distribution (logistic regression) was used to assess the influence that the independent variables had on the likelihood of reporting excellent health. The odds ratio of the occurrence of excellent health is reported, as are 95% confidence intervals, which examine the variation in the odds ratio.

The university ethics review boards at the University of British Columbia, Université de Montréal, and University of Toronto approved this project.

RESULTS

Descriptive statistics for the sample are shown in Table 1. The weighted sample size was 2,369. The neighbourhood sample size was originally 53. Upon conducting logistic regression, the neighbourhood sample size was reduced to 49 because some neighbourhoods did not have enough individuals in them to allow for HLM analyses.

Table 2 illustrates the influence of the individual/family and neighbourhood variables in addition to the influence of the inter-

Table 2. Logistic Regression of the Influence of Individual/Family and Neighbourhood Variables and Mixed Effects on Likelihood of Youth Reporting Excellent Health, NCCYS and Census

	Odds Ratio 0.02	Confidence Interval 0.004-0.114
Intercept		
Individual/Family variables (n=2369)		
Female	1.41	1.073-1.835
Younger cohort (4-6 yrs)	1.31	0.985-1.994
Parent high school diploma or less	0.80	0.468-1.357
Low income	1.12	0.754-1.675
Hong Kong	0.69	0.901-0.979
Mainland China	1.57	0.778-3.153
Neighbourhood variables (n=49)		
% No high school diploma	1.13	1.056-1.198
Average income	1.00	1.000-1.000
% Hong Kong	0.94	0.873-1.008
% Mainland China	1.06	0.983-1.145
Mixed model effects		
Hong Kong by % Hong Kong	0.96	0.881-1.056
Mainland China by % Mainland China	0.90	0.835-0.977

action between child's ethnicity and ethnic concentration in the neighbourhood on the likelihood of a child having excellent health. Note that the results found in Table 2 represent a parsimonious model. Length of time that the child resided in Canada, neighbourhood mobility, and ethnic density interactions were deleted from the model because they were not statistically significant. Only concepts that were theoretically central to the study remained in the analyses, regardless of whether they were statistically insignificant.

The results yielded four statistically significant findings. First, children of Hong Kong ethnicity were less likely to report being in excellent health, compared to the Filipino reference group (OR=0.69). No significant health difference was noted between Mainland Chinese and Filipino children. Female children were more likely to report being in excellent health compared to male children (OR=1.41), illustrating the need to control for sex in health research. Among the neighbourhood variables, the only significant effect that could be found was mean low educational attainment. As the percentage of adults in the neighbourhood with a high school and less than high school education increased, the likelihood of our immigrant sample of children reporting excellent health increased (OR=1.13). Neighbourhood income level did not play a role in explaining health disparities.

One important ethnic contextual effect was noted in our findings: the interaction between child's ethnicity and ethnic concentration. The health of children from Mainland China appeared to be negatively affected as Mainland Chinese ethnic concentration increased in their neighbourhood, compared to the Filipino reference group (OR=0.90). Hong Kong Chinese ethnic enclaves appeared to have no influence on the health of Hong Kong Chinese participants.

DISCUSSION

This study uncovered key findings about the health of immigrant children from Mainland China, Hong Kong and the Philippines living in urban centres. Immigration is complex and the success of each family settling into their new country depends on individual, family, neighbourhood and host country factors.

The main limitations of this study concern the use of secondary datasets. First, since both datasets measure language categories and not ethnicity, our conceptualization and operationalization of eth-

nicity is not a perfect match. While we acknowledge that language is one key aspect of ethnicity, we recognize that the two are not identical concepts. In addition, sample bias exists not only due to the non-random sampling but also because people from NCCYS source countries who spoke other languages were not included in the study. As such, findings can only be representative of immigrants from the source country who spoke the one specific language included in the study. This being said, considering the large sample size and the use of weighting, results may be inferred beyond the NCCYS sample. Further research is needed to test the results presented herein.

Previous studies have shown moderate neighbourhood effects on adult health.⁷ This was confirmed by one of the few Canadian studies, which found that only 3% of the variation in adult health status was attributable to neighbourhood effects.³⁴ It is possible that Canadian policies and programs may reduce the effects of neighbourhood influences on health in this country. Cross-national research is needed to examine this issue within and between immigrant groups.

Our results are intriguing and consistent with previous reports that illustrate the importance of capturing ethnic context when examining immigrant children's health and well-being.^{20,25} The results suggest that children from Hong Kong are negatively influenced when living in neighbourhoods with high concentrations of others with the same background. We challenge other researchers to assist with explaining how this relates to the schema of acculturation and integration in larger society. Empirically speaking, little is known about within- and between-group differences of immigrant children's health in Canada. Housing prices tend to dictate that people who have certain financial resources tend to live in neighbourhoods with others who have similar resources; however, we do not know if other attributes of neighbourhood characteristics are because of the "pull" or the "push" of familiarity. Some immigrants may choose to live near others with the same background in terms of nationality, language and religion because they seek a community with which they are familiar. How much this is due to personal choice or to exclusivity of the host society is not known. In an immigrant-receiving country, knowledge about the influence of living in cultural "enclaves" is essential to best serve our population and strengthen the future of our nation. One of our main findings suggests that specific ethnic enclaves do not influence the health of immigrant children from various ethnic groups uniformly. More research is needed to test and better understand the contextual circumstances of immigrant children's health.

The other critical finding that our research illustrates is the value in taking a contextual approach to understanding health disparities of children in Canada. Researchers and others have traditionally grouped all immigrants, or all Asian immigrants, as homogenous. Our study, which disaggregates immigrant communities, illustrates the importance of distinguishing between "Asians" from different backgrounds and countries. It has found that what influences one community may not be influential for another. Our study not only highlights the fallacy of conceptualizing and operationalizing "immigrants" as a homogenous group, but equally important, addresses the fallacy of treating "Asian" as a homogenous group. The three "Asian" groups we studied have different cultures and histories in Canada and need to be viewed as heterogeneous. We call on researchers and policy decision-makers to identify these dif-

ferences and integrate the heterogeneous nature of immigrants and "Asians" in their work.

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RÉSUMÉ

OBJECTIFS : Comprendre l'effet des caractéristiques du quartier sur la santé des enfants immigrants dans les villes canadiennes. Nous nous demandons si la santé des enfants immigrants est influencée par le fait qu'ils vivent dans des enclaves de gens aux antécédents ethniques et socioéconomiques semblables.

MÉTHODE : Nous avons utilisé deux jeux de données : celles de la Nouvelle Étude canadienne sur les enfants et les jeunes (NECEJ) et celles du Recensement de Statistique Canada. La NECEJ comprend des enfants de Hong Kong, des Philippines et de la Chine continentale vivant dans les plus grandes villes du Canada. Nous avons procédé par régression logistique pour examiner les influences de la composition ethnique du quartier et du revenu moyen sur la santé.

RÉSULTATS : Les filles étaient plus susceptibles d'être déclarées en excellente santé que les garçons, tout comme les enfants vivant dans des quartiers avec un niveau moyen de scolarité parentale inférieur. Les enfants ayant émigré de Hong Kong étaient moins susceptibles d'être en excellente santé que le groupe témoin. Dans le groupe de la Chine continentale seulement, nous avons observé une relation inverse entre l'état de santé déclaré et la concentration de gens de la même ethnie dans le quartier.

CONCLUSION : La santé des enfants de différents antécédents ethniques est influencée par divers facteurs sociaux et économiques. Dans la pratique comme dans la recherche, les « immigrants » et même les groupes culturels au sens large, comme les « immigrants asiatiques », devraient être considérés comme des groupes hétérogènes.

MOTS CLÉS : enfants immigrants; santé de l'enfant; quartier; immigration