

Sex Ratios at Birth Among Indian Immigrant Subgroups According to Time Spent in Canada



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Abstract

Objectives: To examine whether son-biased male to female (M:F) ratios at birth among linguistically different subgroups of Indian immigrants vary according to duration of residence in Canada.

Methods: We analyzed a retrospective cohort of 46 834 live births to Indian-born mothers who gave birth in Canada between 1993 and 2014. The M:F ratio at birth was calculated according to the sex of previous live births and stratified by (1) time since immigration to Canada (<10 and ≥10 years) and (2) mother tongue (Punjabi, Gujarati, Hindi, and other). We estimated adjusted odds ratios (aORs) using multivariate logistic regression to assess the probability of having a male newborn with 5-year increases in duration of residence in Canada for each language group. ORs were adjusted for married status, knowledge of English/French, maternal education at arrival and age and neighbourhood income at delivery.

Results: Among all Indian immigrant women with two previous daughters, M:F ratios were higher than expected (1.92, 95% CI 1.73-2.12), particularly among those whose mother tongue was Punjabi (n = 25 287) (2.40, 95% CI 2.11-2.72) and Hindi (n = 7752) (1.63, 95% CI 1.05-2.52). M:F ratios did not diminish with longer duration in Canada (Punjabi 5-year aOR 1.03, 95% CI 0.81-1.31; Hindi 5-year aOR 0.94, 95% CI 0.42-2.17).

Conclusion: Among the Punjabi and Hindi women with two previous daughters, longer duration of residence did not attenuate son-biased M:F ratios at the third birth. Gender equity promotion may focus on Punjabi- and Hindi-speaking Indian

immigrant women regardless of how long they have lived in Canada.

Résumé

Objectif : Déterminer si la durée de résidence au Canada influence le rapport des sexes à la naissance dans différents groupes linguistiques d'immigrants indiens, dans lequel ce rapport est habituellement en faveur des garçons.

Méthodologie : Nous avons mené une étude rétrospective dans le cadre de laquelle nous avons retenu 46 834 naissances vivantes de mères d'origine indienne ayant eu lieu au Canada entre 1993 et 2014. Nous avons calculé les rapports des sexes M:F en fonction du sexe des autres enfants de la famille (naissances vivantes antérieures), et classé les rapports obtenus selon deux critères : 1) le temps écoulé depuis l'immigration au Canada (moins de 10 ans ou 10 ans et plus); et 2) la langue maternelle (panjabi, gujarati, hindi, etc.). À l'aide d'une régression logistique à plusieurs variables, nous avons calculé les rapports de cote ajustés (RCA) afin de calculer la probabilité que naisse un garçon dans chacun des groupes linguistiques selon le temps écoulé depuis l'arrivée au Canada (par tranches de cinq ans). Les rapports de cotes (RC) ont été ajustés pour tenir compte de l'état matrimonial de la mère, de sa connaissance du français ou de l'anglais, de son niveau d'éducation à son arrivée au Canada, ainsi que de son âge et le revenu moyen des habitants du quartier au moment de la naissance.

Résultats : Le rapport des sexes à la naissance était plus élevé que prévu chez toutes les immigrantes indiennes ayant déjà eu deux filles (1,92; IC à 95 % : 1,73-2,12), surtout chez celles dont la langue maternelle est le panjabi (n = 25 287; RC : 2,40; IC à 95 % : 2,11-2,72) ou l'hindi (n = 7 752; RC : 1,63; IC à 95 % : 1,05-2,52). Le rapport des sexes à la naissance n'a pas diminué en fonction de la durée de résidence au Canada (panjabi : RCA pour 5 ans : 1,03; IC à 95 % : 0,81-1,31; hindi : RCA pour 5 ans : 0,94; IC à 95 % : 0,42-2,17).

Conclusions : Une durée accrue de résidence au Canada n'a pas contribué à atténuer la préférence pour les garçons observée au moyen du rapport des sexes à la troisième naissance chez les femmes ayant déjà deux filles et dont la langue maternelle est le panjabi ou l'hindi. Il serait donc approprié que les campagnes de

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sensibilisation à l'égalité des sexes ciblent les immigrantes indiennes dont le panjabi et l'hindi sont la langue maternelle, sans égard au moment où elles sont arrivées au Canada.

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Population-based studies have demonstrated son-biased male to female ratios at higher birth orders among Indian immigrants in Canada.^{1–3} Son-bias appears to strengthen with previous abortions, pointing to sex selective practices.² Son-biased sex ratios among Indian immigrants have been identified in a number of immigrant-receiving countries.^{4–6} Research has suggested that family building practices in these communities may be influenced by son preference and female discrimination.^{4,7}

Identifying factors that contribute to son-biased sex selection is an important first step to inform intervention strategies. One relevant factor is time since immigration. In the immigrant health literature, the convergence hypothesis states that differences in health outcomes between immigrants and non-immigrants will lessen with increasing length of stay, suggesting unidirectional assimilation into the new society.^{8,9} A number of research studies have supported the convergence hypothesis,⁹ but to our knowledge none has examined sex ratios. Our primary aim was to examine whether son-biased M:F ratios among Indian immigrant women weaken with time spent in Canada.

India is a culturally and linguistically diverse country,¹⁰ with Indian immigrants in Canada exhibiting similar diversity.¹¹ Considering this diversity and the cultural roots of son-bias,⁷ it is unsurprising that M:F ratios also vary considerably across India, with several northern states consistently showing male-favored sex ratios.¹² Language varies across states in India and is an important symbol of group identity, unifying meaningful cultural characteristics.¹³ Therefore, to more clearly characterize son-bias among Indian immigrants according to time spent in Canada and reduce aggregation bias, we studied the relationship to time since migration within different linguistically homogeneous subgroups.

ABBREVIATION

M:F male to female

MATERIALS AND METHODS

We analysed 46 834 birth/delivery records to Indian-born mothers who delivered up to 3 consecutive singleton live births in Ontario hospitals between April 1993 and March 2014 and immigrated to Canada between 1985 and 2012. Mothers who gave birth to twins or triplets or did not have all their singleton births in Ontario were excluded, along with all their children.

We conducted a population-based retrospective cohort study. We reconstructed the reproductive histories of mothers so that we could assess the sex of the index newborn in relation to the sex of previous siblings, the birthplace of the mother, her duration of residence in Canada, and her mother tongue.

We used population-based administrative databases linked at the Institute for Clinical Evaluative Sciences in Toronto through an encrypted individual unique identifier issued to all individuals eligible for coverage under the Ontario Health Insurance Plan. We ascertained maternal birthplace through the Immigrant Refugee and Citizenship Canada permanent resident database, which contains the legal immigration records of all individuals who obtained permanent residency in Canada from January 1985 to December 2012 along with several immigration-related characteristics. About 90% of individuals in the immigration database were matched to a resident of Ontario with a valid health card number. Socio-demographic characteristics did not significantly differ between matched and unmatched individuals, suggesting little, if any, bias in the linkage. Birth characteristics such as infant sex and birth order were obtained from the Canadian Institute for Health Information's Discharge Abstracts Database. Vital status of previous siblings at the time of subsequent pregnancies was assessed via a linkage with the death database of the Ontario Office of the Registrar General, complemented by in-hospital deaths.

Infant sex was defined as the biological sex at birth. We defined birth order as the complete sequence of up to three consecutive live births from the same mother. We updated birth order at each subsequent live birth by removing prior siblings who were no longer alive at the estimated conception date of the current live birth, based on the assumption that among subgroups potentially practicing prenatal sex selection, fertility decisions are based on the number and sex of the children currently alive. Duration of residence in Canada was defined as the time elapsed from immigration (i.e., obtaining legal

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