

REVIEW ARTICLE

Inflammatory bowel disease and the South Asian diaspora

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Key words

diaspora, inflammatory bowel disease, South Asian.

Accepted for publication 4 January 2019.

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Declaration of conflict of interest: The authors have no conflicts of interest.

Abstract

Migration is associated with changes in the incidence of diseases, often linked to new environmental exposures or movement away from such exposures. Studies are complicated by the time and length of migration and also by differences in the experience of second- and third-generation migrants. South Asian people have migrated across the world. In this review, the incidence and prevalence of inflammatory bowel disease in these communities is considered, along with their potential role in future investigative studies of the diseases' etiology.

Introduction

The migration of peoples has been classically associated with changes in the nature of the diseases they experience. In general, communities have moved away from the diseases they experienced in their country of origin and toward the diseases of their adopted country. Over the years, there have been many descriptive epidemiological studies that have documented examples. Indeed, migrant studies only provide useful information when there is a difference in risk between the host country and the country of origin. The interpretation of such studies can be complicated when there has been a steady inward migration over many years, so the migrant population has been exposed to potential etiological factors for different periods. In such cases, there can be an advantage in comparing first- and second-generation populations, where the populations are genetically similar, in contrast to the host population. (Godfrey *et al.*, Parkin *et al.*).

Migration may be considered a large-scale natural experiment that can include the effects of urbanization and community changes in diet. A limitation, however, is that migrant communities are nonrandom samples of the population in the country of origin.²⁴ Those pull-and-push factors that led to migration distinguish migrants from their contemporaries who remained at home. Education, professional skills, and poverty can all play a part and ideally need to be taken into account as potential confounding factors. In addition, once in the host country, migrants are rarely distributed homogeneously but rather tend to settle in certain areas, often urban in character, thus establishing what may be considered a "colony" to which later migrants are drawn.¹²

South Asians and their history of migration

The movement of South Asian people from the Indian subcontinent in the 18th and 19th centuries took them to East and

South Africa, Malaysia and Singapore, Fiji, and the Caribbean. They were often neither willing migrants nor had any hope of return to the Indian subcontinent. In the 20th century, migration to the United States, Canada, Australia, and Israel became frequent destinations for migrants, with economic factors and religion being significant pull factors.²⁷

In Malaysia, Singapore, Fiji, Trinidad and Tobago, South Africa, Canada, and the United Kingdom, the populations of South Asian migrants have been sufficiently large to allow meaningful studies of prevalence and incidence (Table 1). The factors that led to the migration to these countries were significantly different and drew on various sectors of the South Asian community. In Fiji, South Asians arrived as indentured laborers between 1903 and 1916 in order to work on the sugar cane plantations. Most came from Uttar Pradesh, West Bengal, and Bihar. Since the coup of 1987, about one third of the South Asian population has emigrated to the United States, Canada, and Australia. This amounts to about 100 000 people. People from Bihar were also taken to Trinidad and Tobago as indentured labor to work on the sugar plantations and now compose almost half of the population, amounting to half a million people. Comparable data on incidence and prevalence are not available for South Asian people living in these areas, but both inflammatory bowel diseases are significantly more common in the migrant than in the indigenous population.^{10,11,25} The modern South African Indian community is also largely descended from indentured laborers who worked on the sugar plantations of Natal. Many came from southern India.

In the United Kingdom, there has been a sequence of push-and-pull factors that have drawn South Asians. In the 19th century, education, work as servants, and the merchant navy all played a part. In World War 1, South Asian troops fought on the western front and convalesced in the south of England. However,

Table 1 Studies of incidence and prevalence of inflammatory bowel disease in the South Asian diaspora

Country	Study period	Percentage of population (%)	Incidence	Prevalence	Hospital prevalence	Ratio to indigenous community
North Punjab, India UC ²⁹	1999–2000		6	44.3		
Malaysia ³⁰	1985–1998	7.3	0		17.9	4.89
Singapore ⁸	2000	9.7		16.2		2.7
Fiji ²⁰	1985–1986	44	1.7			11
Trinidad and Tobago ¹	1968–1978	40.3		93		23
Durban, South Africa ²⁶	1983–1987	2.6	2.7			
United Kingdom ²⁸		2				
Scotland ²	2000–2009					UC 1.7 Crohn's 2.0
Tower Hamlets						
UC ⁷	1972–1989		1.8			0.29
³¹	1997–2001		8.2			
CD ²²	1972–1989		2.3	33.2		0.56
³¹	1997–2001		7.3			
Leicester						
UC ^{21,23}	1981–1989		13.9	135		1.5–1.8
³	1991–1994					2.5
CD ⁶	1981–1989		3.1			0.66
Canada		2.8				
Children in British Columbia ¹⁷	1985–2005					
UC			6.7			7
CD			6.4			1.6

a major push factor was the expulsion of South Asians from Uganda by Idi Amin as well as their leaving Malawi, Kenya, and Tanzania. The resulting distribution of South Asian communities around the United Kingdom has meant that most of the Asian community in Leicester is of Gujarati or Punjabi origin, whilst in Tower Hamlets, the community is largely of Bangladeshi origin.

The majority of Indian Jews migrated to Israel after 1948. Most settled in agricultural settlements or in the area of Beersheba. However, despite there being a significant number of epidemiological studies from this area, none have focused on the Indian community, which has largely been subsumed amongst those “born in Asia.” However, the concept of studying disease incidence amongst Indian Jews has been raised by Odes *et al.*¹⁴ in a study of esophageal cancer.

South Asians and inflammatory bowel disease

To date, there have been studies on the incidence and prevalence of inflammatory bowel disease amongst South Asian communities in Canada, the United Kingdom, West Indies, South Africa, Fiji, Singapore, and Malaysia. (Table 1) A major limitation is that, although comparisons can be made with the indigenous populations of those countries, there is only one study from Punjab in the north of India, and this was almost 20 years ago. A further limitation is that there have been few sequential studies assessing how incidence has changed. The only study concerning both ulcerative colitis and Crohn's disease, covering a 30-year period where the same methods of case identification and definition were used, was in Tower Hamlets. During this period, the frequency of the diseases increased between three- and fourfold. A study from Leicester demonstrated that the severity of the disease was

significantly worse in the second generation compared with the first generation or with the indigenous population. Whether such differences are linked to changes in diet and social habits, such as the chewing of betel nut, remain open to discussion.⁹ At the time of the study which suggested that chewing betel nut might confer benefits comparable to smoking in ulcerative colitis, there was some evidence that its use was on the decline, especially in the Bangladeshi community of East London. Nevertheless, 77% of young people had engaged in the habit, and between 54 and 92% of these people remained current users.^{4,13,18} With effective education programs aimed at reducing the frequency of betel nut use, any protective effect it may have had will disappear, and it is likely that the frequency and severity of inflammatory bowel disease in second- and third-generation South Asians will dramatically increase. It is of some interest that such changes have already been seen in diabetes and cardiovascular disease.

The incidences of ulcerative colitis in Tower Hamlets and Fiji during similar periods are comparable amongst South Asian communities of similar origins. In contrast, ulcerative colitis was much more common amongst the indigenous population of Tower Hamlets than it was in Fiji. The incidence of ulcerative colitis amongst South Asians only started to move toward that of the indigenous community after they had lived in London for 25 years. Support for such a lag period also comes from the study of first- and second-generation migrants in Leicester. Clearly, in areas such as Canada, Australia, New Zealand, and the United States, where South Asian migration is relatively recent, it is unlikely that dramatic changes in incidence will be seen for a quarter of a century.^{10,11} The situation, however, is complicated by migration from areas of high incidence, such as the United Kingdom, and the changes may appear in a much shorter period.

One study that considered the diet of South Asian patients with inflammatory bowel disease would suggest that they have

adopted the lifestyle of the community in which they live.²⁰ Again, as with diabetes and cardiovascular disease, such dietary changes may themselves be important etiological factors but also reflect a more widespread change in lifestyle.

The future of migrant studies

With the dispersal of South Asian people across the world, the only approach to investigating incidence and etiological factors in the diaspora would be through a central organization. For example, with the existence of Shree Ramkabar Bhakta Samaj and its publication of directories of members of the Bhakta family in the United States, Canada, Australia, New Zealand, the United Kingdom, Zambia, and Panama, this becomes a possibility. Perhaps the most important factor is the existence of a directory for Bhaktas living in India, largely in Gujarat. Central directories have already proven to be valuable in studies of inflammatory bowel disease where work on Mormons confirmed the role of nonsmoking as a risk factor for ulcerative colitis.¹⁶ Work amongst South Asian migrant communities may provide clues to understanding why inflammatory bowel disease has become so common over the last 40 years.

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