Inflammatory bowel disease (IBD), which encompasses Crohn's disease (CD) and ulcerative colitis (UC), is a spectrum of heterogeneous disorders with variable clinical manifestations and outcomes. It is thought to result from inappropriate and ongoing activation of the mucosal immune system driven by the presence of normal luminal flora. Although IBD manifests throughout all ethnic groups, there has been marked heterogeneity in its incidence and prevalence, presumably due to genetic and environmental factors. IBD is rare in the Chinese population, but its incidence is on the rise. This review will focus on the epidemiology of IBD in Hong Kong.

Little was known about IBD in Chinese before 1990s. Case report describing CD in our population was first published in 1994. In the past decade, incidence of CD has increased more than three-fold from 0.3 per 100,000 in 1989 to 1.0 per 100,000 in 2001. The rate of rise was greatest in the mid to late 1990s. The cause of this rise remains uncertain but may involve environmental changes associated with urbanisation and Westernisation of the living standards, culture and diet. Leong's study was conducted at the Gastroenterology outpatient clinic of the Prince of Wales Hospital. Eight-five percent of patients were born in Hong Kong and 15% were emigrants from southern mainland China. The population consisted of middle-income earners, with a median monthly income slightly higher than the median income for the whole of Hong Kong and 45% of people had received a tertiary (university or technical college) education. It is believed that a higher socioeconomic class may be implicated in the development of IBD. The study was hospital-based, yet it reasonably reflected the regional population at that time because 94% of our population attended the public hospital system rather than to the private practice. The male to female ratio was 2.5:1. The mean age of diagnosis was 33.1 years with 78% of all patients presenting below the age of 40 years. The distribution of the age of onset was bimodal with the main peak of onset in the third decade, and a secondary peak in the sixth decade. The median time to diagnosis was nine months and the common symptoms at presentations were diarrhoea (65%), abdominal pain (65%), rectal bleeding (51%), and weight loss (45%). Extraintestinal manifestations were reported in 4% of CD patients upon diagnosis.

We have extended our former CD cohort and prospectively collected clinical data since 2001. Seventy-three out of the 109 (67%) patients started off with nonstricturing, nonpenetrating disease (B1) according to the Montreal Classification (MC) which was a new classification developed by the international working party in 2005 for more precise categorisation of CD. In MC, perianal disease was no longer an independent criterion for B3 category but became a disease modifier based on the fact that perianal CD was recognised to have a different natural history from intestinal penetrating disease with respect to disease progression and outcome. The proportions of patients with stricturing (B2) and penetrating (B3) disease at diagnosis as determined by the MC were 30.3% and 2.8% respectively. CD behaviour changed significantly three years after diagnosis with an increase in the stricturing and penetrating phenotypes. The proportion of B3 increased from 2.8% to 14.3%, and B2 increased from 30.3% to 42.9% after ten years. In fact, phenotypic changes in CD also occurred in Chinese patients in the same way as Caucasian CD. The non-stricturing, non-penetrating phenotype had a tendency to progress into strictureting or penetrating disease, whereas strictureting diseases rarely developed penetrating phenotypes. This would support the concept that CD consists of a heterogeneous group of disorders that eventually result in a specific phenotypic complication. Fifty-four percent of patients in our CD cohort had ileocolonic disease (L3). Thirty-five percent and eleven percent of patients had colonic (L2) and terminal ileal disease (L1) respectively. Interestingly, there was more upper gastrointestinal tract disease (L4) as defined by any disease location proximal to the terminal ileum (excluding the mouth) in the Chinese CD patients. The figure was reported to be as high as 19%. Besides, the upper gastrointestinal location of CD often coexisted with L1 or L3 but never with the L2 location disease. This might be due to the Paneth cells being situated throughout the small bowel, which plays a vital role in secreting the inflammatory mediators for disease perpetuation. Disease location remained stable after ten years of follow up. The phenotype of CD patients reported by Lok and his group from the Tuen Mun Hospital was largely comparable to ours except that patients in the Lok's cohort (n=27) did not have L4 disease which might be due to the small number of patients or possibilities of inadequate small bowel investigation. Thirty four patients (31.2%) in our CD cohort underwent major surgery during the follow up period and the Kaplan-Meier curve is shown in Figure 1. The Kaplan-Meier curve is shown in Figure 1. The Kaplan-Meier curve is shown in Figure 1. The Kaplan-Meier curve is shown in Figure 1.
plausible explanation is that colonic CD presentations such as hematochesia, abdominal pain and diarrhoea, might drive our Chinese patients to an earlier presentation and treatment which may delay the onset of complications and subsequent surgery. In small bowel disease, symptoms might not be prominent until significant stricture develops. Age at diagnosis did not correlate with surgery in our cohort and neither was the history of smoking associated with surgery. Unlike the Caucasians, ever smoking was not a risk factor in the development of CD. The odds ratio (OR) of ever-smokers in the development of CD compared with age and sex matched healthy controls was only 1.02 (95% CI: 0.5-1.9). Interestingly, only 2 of our CD patients had a definite family history of CD and were of a father and son relationship. IBD is likely to be a polygenic disease of variable penetrance that requires a complex interaction of genes with the environment for disease manifestation. Vertical and horizontal familial clustering of IBD is reported up to 40% in Caucasians. This is in excess of the rate in Asian studies where the rate is 0-7%. The CARD15/NOD2 single nucleotide polymorphisms (SNPs) associated with CD have been confirmed in multiple Caucasian studies. Among CD patients, carrying at least one high-risk gene polymorphism increased slightly the risk for familial disease (OR: 1.5, 95% CI: 1.2 - 1.9), predicted the strictureing behaviour (OR: 1.9, 95% CI 1.6 - 2.3), and small bowel location of disease (OR 2.5, 95% CI 2.0 - 3.2). However, the prevalence of CARD15/NOD2 mutations in Chinese CD is negligible.\textsuperscript{16-17}

The incidence of UC in our locality increased two-fold from 0.6 per 100,000 in 1986 to 1.2 per 100,000 in 2001.\textsuperscript{2} There is evidence that the incidence continues to increase (unpublished data). In our UC cohort in which more than 170 patients have been recruited, the median age of diagnosis was 37 years. Extensive colitis was found in 42.4% of patients at diagnosis, followed by left-sided colitis (29.7%) and proctitis (27.9%). However, ulcerative proctitis was reported to be the commonest manifestation. Vertical and horizontal familial clustering of IBD is reported up to 40% in Caucasians.\textsuperscript{[12-13]} This is in excess of the rate in Asian studies where the rate is 0-7%.\textsuperscript{14} The CARD15/NOD2 single nucleotide polymorphisms (SNPs) associated with CD have been confirmed in multiple Caucasian studies. Among CD patients, carrying at least one high-risk gene polymorphism increased slightly the risk for familial disease (OR: 1.5, 95% CI: 1.2 - 1.9), predicted the strictureing behaviour (OR: 1.9, 95% CI 1.6 - 2.3), and small bowel location of disease (OR 2.5, 95% CI 2.0 - 3.2).\textsuperscript{15} However, the prevalence of CARD15/NOD2 mutations in Chinese CD is negligible.\textsuperscript{16-17}

Our group conducted a study comparing the IBD-related knowledge, quality of life (QoL), and use of complementary and alternative medicines and therapies (CAM) in Chinese and Caucasian IBD patients three years ago.\textsuperscript{19} The overall use of CAMT was similar in both groups (33% of Chinese and 37% of Caucasian patients) and similar for CD and UC. We found that the IBD knowledge score was higher in Caucasian than in Chinese IBD patients and was independent of education and occupation. Twenty-one percent of Chinese patients incorrectly identified their IBD type as compared to 0% in the Caucasian group. However, QoL was higher in the Chinese than the Caucasian group, but not significantly different after adjusting for disease activity inferring that health-related QoL is unlikely to be greatly influenced by disease-related knowledge or education. Treatment of IBD has undergone revolutionary changes over the past ten years since the emergence of biologics which might alter the course of the disease. Although the treatment of IBD is beyond the scope of this review, certainly there are lots of interests in the treatment response in using those new agents among our Chinese IBD patients. Clinical trials on the treatment of IBD in our population are scarce but definitely needed.

There were a number of factors which have impeded the study of IBD in our locality in the past including the absence of an IBD registry, physician unawareness, and attendance to traditional Chinese herbalists. Efforts must be made to overcome all those obstacles and hopefully, in the forthcoming years, we can establish a comprehensive regional if not national registry of IBD patients so that more meaningful epidemiology studies can be carried out to facilitate our local health policy planning and promotion and help define the natural history of the disease in our population.

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<th>Table 1. The Montreal classification of Crohn’s disease</th>
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\*Upper gastrointestinal (GI) modifier (L4) allows for the co-classification of location L4 with L1 to L3

\#Penultimate disease modifier (p)

\#B1 category should be considered "interim" until a prespecified time has elapsed from the time of diagnosis.

Figure 1. Cumulative survival of CD patients free from major surgery upon 10 years of follow-up


References