



Prevalence of Inflammatory Bowel Disease in the Canton of Vaud (Switzerland): A population-based cohort study[☆]

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Abstract

Background and aims: Because of the changing epidemiology of Inflammatory Bowel Diseases (IBD), we set out to characterize the population-based prevalence of Crohn's Disease (CD) and Ulcerative Colitis (UC) in a defined population of Switzerland.

Methods: Adult IBD patients were identified by a cross-matched review of histological, hospital and gastroenterologist files throughout a geographical defined population (Canton of Vaud). Demographic factors statistically significantly associated with prevalence were evaluated using a stepwise Poisson regression analysis. Results were compared to IBD prevalence rates in other population-based studies and time trends were performed, based on a systematic literature review. **Results:** Age and sex-adjusted prevalence rates were 205.7 IBD (100.7 CD and 105.0 UC) cases per 10⁵ inhabitants. Among 1016 IBD patients (519 CD and 497 UC), females outnumbered males in CD ($p < 0.001$), but males were more represented in elderly UC patients ($p = 0.008$). Thus, being a male was statistically associated with UC (Relative Risk (RR) 1.25; $p = 0.013$), whereas being a female was associated with CD (RR 1.27; $p = 0.007$). Living in an urban zone was associated with both CD and UC (RR 1.49; $p < 0.001$, 1.63; $p < 0.001$, respectively). From 1960 to 2005, increases in UC and CD prevalences of 2.4% (95%CI, 2.1%–2.8%; $p < 0.001$) and 3.6% (95%CI, 3.1%–4.1%; $p < 0.001$) per annum were found in industrialised countries.

[☆] Parts of this work were presented at the meeting of the Swiss Gastroenterology and Hepatology Society (SSGH) in 2005 and at the Journées Francophones de Pathologie digestive in 2006 and 2007.

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Conclusions: Extrapolating our data to all of Switzerland yields an estimate of 12,000 IBD cases for the country, or 1 in 500 inhabitants. Our study gives support to an increase in IBD prevalence in Europe.

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1. Introduction

Crohn's Disease (CD) and Ulcerative Colitis (UC), the two major subtypes of Inflammatory Bowel Diseases (IBD), are characterized by chronic inflammation of the bowel, immunologically mediated and probably resulting of a loss of tolerance to the endogenous enteric flora, inducing an inappropriate activation of the mucosal immune system.^{1,2} Although the cause remains unclear, extrinsic environmental factors play probably an important role in their pathogenesis. They include smoking,³ NSAIDs⁴ and oral contraceptives consumption⁵ and are associated with a high socio-economical status.^{6,7} Appendectomy (protective for UC but not for CD)⁸ or the occurrence of a viral gastrointestinal infection seems to also play a role in the development of these diseases. It has been long known that individuals are genetically predisposed to develop such diseases (family clustering, twins studies, ethnic groups with high prevalence).^{9–11} Genes associated with a disease predisposition have been reported for CD.^{12,13}

The highest IBD prevalence has always been reported in North America and Europe and few other countries such as Israel, Australia and South Africa. The prevalence tends to stabilise in North America, as suggested by the data from the Mayo Clinic in Rochester, Minnesota (USA).^{14–17} Regarding incidence, a rise has been observed since the second half of the 20th century for both diseases, but the incidence appears now to decrease for UC while it is still slightly increasing for CD, as mainly reported in Europe.^{18–20} Currently, although data are sparse, the IBD incidence seems to increase in Asia^{21,22} and Central and South America^{23–25} with a possible association to their industrialisation and changes in life-style.²⁶ In many populations studied, an urban-rural gradient^{7,15,27,28} has been observed as well as, in Europe and USA, a North–South gradient.^{29,30} However, epidemiological data collected during the nineties were influenced by many factors: among them the varying organisations of the health care system, the facilities available (endoscopy, radiology) which differ widely from one country to another, as well as the health awareness of the population.³¹

No study has previously evaluated the IBD prevalence in Switzerland. The sole epidemiological data available in Switzerland stemmed from a prospective study of 110 cases of CD, identified in the Basle area over a 10-year period from 1960–1969, and based only on incident cases.³² At this time, no endoscopic and histological-based confirmation of the diagnosis was available. The incidence rate increased over time from 1.6 to 2.6 per 100,000 inhabitants. A prospective 9-year follow-up of these patients showed frequent relapses with or without intestinal resection and an increased risk of cancer.³³

Switzerland has the advantages of its small geographic size and central location in Europe (less influence of the European North–South and East–West gradients²⁹). It is the fifth country in Europe regarding income per capita.³⁴

The insurance system offers all inhabitants equal access (obligatory basic insurance) to health care with a high medical density (4.6 medical doctor per 1000 inhabitants; 4th country in the world).³⁵ As health care reimbursement requires that patients seek care in their canton of residence, identification of all patients belonging to our population is largely ensured.

The aim of this study was to estimate for the first time a population-based prevalence for IBD in Switzerland and to identify factors associated with this disease. This paper presents the results of our retrospective and prospective identification of UC and CD cases in the Canton of Vaud (9% of the Swiss population), obtained by cross matching different sources (paper and computerized) of medical information. The above-described characteristics of Switzerland and its health care system make our observations well suited to represent the current situation in Western Europe.

2. Methods

2.1. Setting

Based on the 2000 Swiss census, the Canton of Vaud has a population whose age and sex distribution reflects that of Switzerland.³⁶ This population has remained stable, as global migration movement was less than 1% of the whole Canton population in 2004.³⁷ Seventy-five percent of the people reside in urban zones, which are made of 5 agglomerations around main cities of the Canton. Agglomerations are defined by the number of inhabitants, active population, economical structure and communication accesses.³⁸

2.2. Case ascertainment

The diagnosis of IBD was based on the criteria established by Lennard-Jones.^{39,40} Cases (≥ 20 years old) were identified during a 18-month survey (1st July 2003–31st December 2004), based on lists pre-established by all gastroenterologists of the Canton of Vaud that included all patients seen during the preceding 12 months. Their lists were matched against lists of biopsy specimens provided by all pathology centers and further cross-matched with the results of a search by an investigator (PJ) in the gastroenterologist's computerized correspondence, using the keywords "Crohn", "colitis" and usual abbreviations to name these diseases. All gastroenterologists' offices used Microsoft® office Word software for at least 5 years, a system that permits keyword search in all free text documents. When the diagnosis remained unclear or in case of mismatch, clinical, radiological, endoscopic and histological findings were reviewed in the medical charts, during visits at the gastroenterologists' offices. Difficult cases were further discussed with the gastroenterologist in

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