
Posted at the Zurich Open Repository and Archive, University of Zurich.

Originally published at:
The incidence of inflammatory bowel disease in a rural region of Southern Germany: a prospective population-based study

Abstract

OBJECTIVE: Although important advances in understanding the aetiology and pathogenesis of inflammatory bowel disease (IBD) have been made, many questions remain unanswered. As the most recent data available on the incidence of IBD in Germany were collected about 15 years ago, we set up a new population-based cohort to determine current incidence data for a defined region in Germany and to establish a basic cohort for prospective follow-up. METHODS: All patients living in the region of Oberpfalz newly diagnosed with IBD between 1 January 2004 and 31 December 2006 were included in this study by setting up a network of reporting clinicians and general practitioners in hospitals as well as in private practices. Demographic and clinical characteristics such as age at first diagnosis, localization of the disease, extraintestinal manifestations or family history on IBD were documented. Age-adjusted incidence rates are presented with 95% Poisson confidence intervals (CIs), based on the European standard population. RESULTS: In total, 286 newly diagnosed patients with IBD were reported in this region, 168 patients suffering from Crohn's disease (CD), 105 patients with ulcerative colitis. Age-standardized incidence rates were 11.0/10(5) (95% CI: 9.1-11.6) for IBD, 6.6/10(5) (95% CI: 5.6-7.7) for CD and 3.9/10(5) (95% CI: 3.2-4.7) for ulcerative colitis. Peak incidences were found in the age interval of 16-24 years for both diseases, predominantly for CD. Age at first diagnosis was lower, extraintestinal manifestations and a positive family history on IBD were more common in patients with CD. CONCLUSION: The incidence rate in IBD seems to be stable in Germany as compared with previously reported data, as is the remarkable predominance of CD. Prospective follow-up studies will be based on this incidence cohort.
The incidence of inflammatory bowel disease in a rural region of Southern Germany – a prospective population based study

Claudia Ott¹, Florian Obermeier¹, Sabine Thieler¹, Daniela Kemptner¹, Alexandra Bauer¹, Jürgen Schölmerich¹, Gerhard Rogler³, Antje Timmer²

Institution:

¹Department of Internal Medicine I, University of Regensburg, Germany
²German Cochrane Center, Institute of Medical Biometry and Medical Informatics, Freiburg, Germany
³Clinic for Gastroenterology and Hepatology, University of Zürich, Switzerland

Running title:
Incidence of IBD in the region of Oberpfalz

Address for correspondence:

Claudia Ott, MD
Department of Internal Medicine I
University Regensburg
93042 Regensburg
Germany
Tel.: +49 941 944 7020
Fax.: +49 941 944 7073
e-mail: claudia.ott@klinik.uni-r.de

The study was funded by the German Competence Network Inflammatory Bowel Disease/Federal Ministry of Education and Research (BMBF) and supported by a grant from
the IOIBD and from the Bavarian Society of Gastroenterology ("Gesellschaft für Gastroenterologie in Bayern").
Abstract

Objective

While important advances in understanding the etiology and pathogenesis of IBD have been made, many questions are unanswered up to now. As the most recent data available on the incidence of IBD in Germany were collected about 15 years ago, we set up a new population-based cohort to investigate possible changes in incidence rates in Germany.

Methods

All patients living in the region of Oberpfalz newly diagnosed with IBD from January 01, 2004 to December 31, 2006 were included in this study by setting up a network of reporting clinicians and general practitioners in hospitals as well as in private practices. Demographic and clinical characteristics such as age at first diagnosis, localisation of the disease, extraintestinal manifestations or family history on IBD were documented. Age adjusted incidence rates are presented with 95% Poisson confidence intervals, based on the European standard population.

Results

In total, 286 newly diagnosed patients with IBD were reported from this region, 168 patients suffering from Crohn’s disease (CD), 105 patients with ulcerative colitis (UC). Age-standardized incidence rates were 11.0/10^5 (95% CI 9.1-11.6) for IBD, 6.6/10^5 (95% CI 5.6-7.7) for CD and 3.9/10^5 (95% CI 3.2-4.7) for UC respectively. Peak-incidences were found in the age interval 16-24 years for both diseases with a lower extent in UC. Age at first diagnosis was lower, and extraintestinal manifestations and family history on IBD were more common in patients with CD.

Conclusion

The incidence rate in IBD seems to be stable in Germany as compared to previously reported data, as is the remarkable predominance of CD.

Key words:
Inflammatory bowel disease, Crohn’s disease, ulcerative colitis, incidence, population based cohort

**Introduction**

The etiology of inflammatory bowel diseases is multifactorial. Genetic factors seem to increase susceptibility to IBD, which might be influenced by immunological mechanisms and environmental factors [1]. Although there have been important advances in understanding the etiology and pathogenesis of Crohn’s disease (CD) and ulcerative colitis (UC), many questions remain unanswered. A wealth of epidemiological studies on incidence, prevalence and demographic factors of patients with inflammatory bowel diseases have been performed in different countries to provide possible clues to the etiology of IBD [2-16]. Results of these population-based studies show great variability on the incidence of IBD with highest rates in Northern countries of Europe and in North America [17]. In addition, increasing incidence rates of IBD have been reported recently from different countries [18-20]. In other regions the incidence seems to have stabilized during the last years [21].

Few papers have been published presenting population based data from Germany. A retrospective study from Marburg described patients diagnosed with IBD between 1962 and 1975 [22]. Studies from Tübingen included both retrospective and prospective data in cooperation with general practitioners of the region [23]. The most recent incidence rates available from Germany were published in collaboration with the European Collaborative Study on IBD (EC-IBD), which so far represents the largest prospective incidence cohort worldwide [14, 24, 25]. The incidence rate in Essen and Mülheim (participating centres of EC-IBD in Germany) was calculated as approximately $5/10^5$ cases per year for Crohn’s disease (25). This is in accordance with data from similar countries. In contrast, the incidence of ulcerative colitis in Germany was low with $3.5/10^5$ cases per year (excluding proctitis) (24). Prospective follow up data are not available from any of these cohorts.
The aim of our study was to investigate possible changes in incidence rates in Germany. The new cohort will form the basis of prospective analyses on the prognosis and immunological changes over time.

**Material and Methods**

*Population*

The region of Oberpfalz (Upper Palatine) is located in Bavaria (Germany) with a population of 1.089.000 inhabitants (Figure 1a), bordering the Czech Republic in the North and East, and the River Danube in the South. This rural, but well-defined geographical area is divided into 10 districts and free cities (Figure 1b). Migration rates in this area are low (4.7% in 2005). The city of Regensburg represents the regional capital with 129.929 inhabitants (June 30, 2006). In total, in the region of Oberpfalz, 46 practitioners offer endoscopy in addition to 10 endoscopy facilities located at the hospitals within the area. For as complete ascertainment of new cases as possible, we set up a network of reporting clinicians and general practitioners including internists, gastroenterologists, surgeons and paediatricians, in hospitals as well as in private practice. All cooperating physicians were regularly contacted to encourage active, prospective reporting of incident cases. Discharge registries were searched for patients with a new diagnosis of IBD to make sure all incident cases were identified.

*Inclusion criteria*

Cases were included into the study if they met the following criteria:

- Residency in the defined geographical area at time of diagnosis for 3 months or more
- A new diagnosis of ulcerative colitis, Crohn’s disease, or indeterminate colitis within the predefined inception period. Diagnosis was based on endoscopic, histological and radiological findings, as reported by the diagnosing physician, in conjunction with a symptoms suggestive of IBD. Only confirmed cases were included in this analyses.
If there was evidence of IBD but the decision on UC or CD was insufficient, the patient was classified as having inflammatory bowel disease, type unclassified (IBDU).

**Exclusion criteria**

Chronic inflammatory disease other than IBD / infection: positive test from bacteriological or virological culture of faeces with evidence for pathogenic gut bacteria (excluding myobacterium avium), findings of parasites, cysts and eggs, genetic screening of microbes in faeces. Particular attention was payed on patients who have spent time in epidemic areas for entamoeba histolytica and patients undergoing treatment with antibiotics or immunosuppressants. Confirmation of eosinophilic colitis, Bechet’s disease, secondary inflammation, solitary ulcer or celiac disease was used as exclusion criteria as well.

Cases with a possible or likely, but yet unconfirmed diagnosis of IBD were not included in the analyses, but followed up separately for further review (not reported).

**Data collection**

Recruitment started at January 01, 2004, data up to December 31, 2006 are reported. For each patient, a standardized data form was completed at the time of first diagnosis a by the attending physician including demographic data (date of birth, gender, place of residence), onset of symptoms, date of diagnosis, extent of disease, familial occurrence of IBD, extraintestinal manifestations and actual laboratory tests. After informed consent, all patients were then contacted by the study centre personnel. Information on risk factor exposure, as well as general and disease specific health related quality of life and sociodemographic variables were collected using pretested standardized questionnaires.

The Vienna classification [26] was applied in order to describe clinical patient subgroups in Crohn’s disease with L1: disease limited to the terminal ileum with or without spill into coecum, L2: disease location at any position between coecum and rectum without
involvement of the small bowel or upper gastrointestinal tract, L3: involvement of the terminal ileum and the colon, L4: any disease location proximal to the terminal ileum.

Extent of UC was defined as proctitis, left-sided (to the splenic flexure), subtotal (beyond the splenic flexure but not the total colon) and total colitis.

Statistics
Statistical analyses were performed using SPSS software (12.0). Data are given as numbers and percentages, medians, and range.

Exploratory analyses were performed using chi squared testing (or t-tests for continuous variables) based on a 95% confidence level (two sided).

Incidence rates were calculated using population data by age and sex for the catchment area as supplied by the Department of Statistics of Bavaria [27] and subsequently converted to age standardized incidence rates based on the European standard population. 95% confidence intervals (CIs) for incidence rates were calculated assuming the Poisson distribution [28].

Results
During the study period from January 1,2004 to December 31, 2006, 286 newly diagnosed patients with IBD were reported. In total, 168 patients with Crohn’s disease (CD), 105 patients suffering from ulcerative colitis (UC) and 13 patients with indeterminate colitis (IC) were documented. Median age at first diagnosis of all patients was 32.7 years (range 1-83.4 yrs). 55% of CD patients, 49% of UC patients and 54% of IC patients were female. Disease specific demographic characteristics are provided in table 1.

Table 1

Incidence
The mean annual crude incidence rate for IBD in this region was $10.5/10^5$ (95% CI 8.7-11.1). Crude incidence for CD was calculated with $6.1/10^5$ (95% CI 5.2-7.1) and for UC with $3.9/10^5$ (95% CI 3.2-4.7), respectively. The age-related comparison of incidence in CD and UC is shown in figure 2.

*Figure 2*

Age-standardized incidence rates were $11.0/10^5$ (95% CI 9.1-11.6) for IBD, $6.6/10^5$ (95% CI 5.6-7.7) for CD and $3.9/10^5$ (95% CI 3.2-4.7) for UC. Age-specific incidence rates by gender are given in Figure 3.

*Figure 3*

Age specific incidence peaked in the age group 16 to 25 years in both CD and UC, as expected. The peak was more pronounced in CD ($18.5/10^5$) as compared to UC ($6.5/10^5$). Median duration from onset of disease symptoms to first diagnosis in all IBD patients was 60 days (range 0 days – 34 years). In patients with CD the time until first diagnosis was 90 days (range 0 days- 34 years), which was slightly longer than in patients with UC, whose time to diagnosis was 60 days (range 0 days- 28 years). There was no evidence for variation in seasonal onset of symptoms or first diagnosis.

*Extent and course of Disease*

Applying the Vienna-classification the most frequent subtypes were patients with a none structuring, non penetrating inflammatory course, diagnosed before the age of 40, with inflammation either of the small bowel only (classification code A1L1B1, $n = 28; 17\%$), or affecting both small and large bowel (A1 L3 B1, $n = 22; 13\%$).

Overall, 121 patients (72%) were classified A1 (age at first diagnosis below 40 years), 46 patients (27.4%) were A2 (equal to 40 years or above).

Fifty-nine patients (35.1%) of patients with CD were classified L1, 55 patients (32.7%) were L3, 30 patients (17.9%) were L2 and 24 patients (14.3%) were found to be L4 (Figure 4).
Figure 4

The course of the disease mostly was reported to be B1 (non-stricturing, non-penetrating, 113 patients, 67.3%), in 7 patients a stricture was found at first diagnosis (B2, 4.2%), and in 30 patients (17.9%) the behaviour was penetrating (B3). In patients classified A1 (age below 40 years), a penetrating course of the disease was found in 26 patients (15.5%) versus 4 patients (2.4%) aged above 40 at time of first diagnosis (p=0.07).

Among patients with UC, 30 patients were reported having proctitis (28.6%), another 30 patients had left-sided colitis (28.6%), 6 patients had subtotal colitis (5.7%) and 33 patients were diagnosed having pancolitis (31.4%) (Figure 5).

Figure 5

Surgical procedures including treatment of fistulas became necessary in 24 of all patients (8.4%) around the time of diagnosis (+/- 3 months). In patients with CD, 8 patients (4.7% of patients with CD) underwent resection of the terminal ileum, 6 of them at time of first diagnosis, 2 other patients one and two months after first diagnosis. Three patients (1.8% of patients with CD) had partial resection of large bowel and one patient (0.5%) had undergone partial resection of small bowel at time of first diagnosis and another patient one month after first diagnosis. In 11 patients (6.5% of patients with CD), surgical treatment of fistulas or abscesses was performed (in 4 patients prior to first diagnosis, in one patient at first diagnosis, in 3 patients 2-4 months after first diagnosis, in 3 patients the exact date was not applicable). In patients with UC, only 2 surgical procedures became necessary, 1 patient had proctocolectomy at time of first diagnosis, in another patient parts of large bowel had to be resected.

Family history, extraintestinal manifestations and smoking status

As shown in Table 1, 30 patients (10.5%) reported a family history positive of IBD. This was more frequent in patients with CD than in UC (21 vs 9 cases, p=0.4). In 20 of these 30
patients (66%), more detailed informations were available about the inflammatory bowel disease of the affected relative. Eleven patients had relatives with CD, 9 relatives were diagnosed with UC. In 21 patients, a first-degree relative was affected (70%), 15 relatives were reported having the same diagnosis as the case (50%), 5 relatives (17%) had another type of IBD.

The frequency of extraintestinal manifestations is shown in Table 2. Involvement of the joints was the most common manifestation. Patients with CD were slightly more often affected by extraintestinal manifestations in general than patients with UC (26.8% versus 21.9%, p=0.39).

**Table 2**

Of all 286 patients, 107 patients (37%) reported current or former smoking, the rest never smoked before. At the time of first diagnosis, 16.1% of the patients with CD (27 cases) were current smokers compared to 7.5% of patients with UC (12 cases). Of note 30.5% of patients with UC (32 cases) reported they had previously smoked, but only 20.8% of patients with CD (35 cases).

**Discussion**

Since the most recent data on the incidence of IBD in Germany were collected between 1991 and 1995, the aim of this study was to investigate the current situation and identify changes in incidence of these diseases. The reference area is particularly suitable for valid assessment of incidence data, as it is traditionally a very low migration region. The area borders the Czech Republic in the North and East, and the river Danube to the South, so the catchment area is very well defined. Exact numbers on inhabitants are available from regional authorities. Completeness of case ascertainment was furthered by the successful establishment of a network of reporting clinicians and general practitioners from all over the region, including internists, gastroenterologists, surgeons and pediatricians in hospitals and also private practices.
The mean annual incidence rate for CD with 6.6/10^5 per year was rather high compared to the estimated number of 5/10^5 per year, whereas the incidence for UC with 3.9/10^5 was less than expected. In most population-based studies, the incidence of UC is described to be higher than for CD (5,10,12,14,20-21,[29]) with incidence rates for UC up to 24.3/10^5 Reykjavik (Iceland) or 16.6/10^5 for Crete (14). Only few population based studies found higher incidence rates in CD as compared to UC. For example, a high incidence of CD was reported from Northern France (6). Studies from Canada showed the highest incidence for CD reported at that time (16, 18). In these studies, incidence rates were calculated retrospectively using health databases. Recently, population-based data from Croatia also showed more incident cases for CD than for UC (13). Furthermore, Gearry et al. found high incidence rates for CD in New Zealand with 16.5/10^5 (3), which represents one of only two population-based studies from the southern hemisphere. Of note, this incidence was calculated only for the first year of prospective patient recruitment, which is indicative of bias due to raised awareness based on commencing recruitment (table 3). However, up to now, there is no convincing explanation for these geographical differences in the incidence of both diseases.

With findings from Copenhagen and Croatia, two well-defined population based cohorts have been described, which both are at similar distance from the region of Oberpfalz (about 1000 kilometers to Croatia, 1100 kilometers to Copenhagen). Whereas the incidence rates in the region of Oberpfalz are similar to results from Croatia (13), the latest data from Copenhagen show much higher incidences with a predominance for UC (20). Although these findings are likely caused by demographic characteristics such as racial and ethnic influences, they also strongly suggest the presence and importance of environmental factors in the pathogenesis of IBD.

In contrast to the higher incidence of CU in the “northern” cohort of Copenhagen compared to the data of the “southern” cohorts from Oberpfalz and Croatia, recent findings from France show a north-south gradient for CD with lower incidences in southern parts of France [30]. As
The authors discuss possible reasons for the higher incidence of CD in the northern areas, the authors discuss a more “prudent diet” with fruits, vegetables, fish and olive oil preferred in southern France, compared to diet-habits with more consumption of sausage, butter and beer in the north, which might have influences on the different incidence. Similar to northern France, most people of the region of Oberpfalz prefer a diet with meat, sausages and beer, which might led us to corroborate this hypothesis. However, in the studied region of Croatia, people are adopted to the mediterranean diet, which is in contrast to the possible explanation mentioned above. As the consumption of beer is different in these regions, there might be a possible effect on the incidence rates caused by this environment factor.

As another approach to explain the differences of higher incidence of CD in some areas, the incidence of UC is suggested to stabilize during the last decades whereas the incidence of CD tended to increase [31]. Furthermore, better diagnostic tools as MR-enteroclysis or capsule endoscopy are discussed to increase incidence rates in CD in the later cohorts [20,32]. In contrast to these findings, data from Germany from 1970-1984 from Tübingen showed a higher incidence and prevalence for CD in this region, so this disease might be more common in the studied parts of Germany [23]. In addition, since our number of cases with proctosigmoiditis (28%) in patients with UC is highly comparable to previous reports [10,20], we might not underestimate the incidence of UC by missing mild or moderate courses of the disease.

With regard to gender-relation, we found a preponderance for women in CD, whereas in UC the male to female ratio was close to 1. This distribution confirms findings in some previous studies [4,14,33]. Median age at first diagnosis was similar to findings published elsewhere [15,20] with 29 years for CD and about 10 years later (39.5 years) for patients with UC. We found the expected peak-incidence in the age interval 16-25 years in both, CD and UC, but the height of the peak in patients with UC was rather low in contrast to 18.5/10^6 new cases of
Incidence of IBD in the region of Oberpfalz

CD at that age. With increasing age beyond the peak, the incidence in CD is decreasing rapidly, whereas incidences in UC remain stable in later decades of life. In accordance to latest findings from Copenhagen (20), we did not register a second peak of incidence later in life, neither in CD nor in UC, as described in other studies (10,11,[33, 34]. During the last decades, time from onset of symptoms to first diagnoses decreased steadily. Previously, the median delay for CD was 2,2 years (31), more recent findings describe a median delay of 4,5 months for UC and 8,3 months for CD (20). With a median delay of 60 days for UC and 90 days for CD, diagnosis in our series was made even more rapidly. As previously suggested, improvement of diagnostic tools and an increasing awareness of IBD might be an explanation for this development.

The extent of the disease in UC was comparable to previous studies, whereas in patients with CD a relatively high number of patients (14%) showed an involvement of the upper gastrointestinal tract. This stands in contrast to other studies, which described an affection of the upper GI-tract in only 6-7% of patients (13,20,[35].

Regarding surgery rates, family history and smoking status, our findings are comparable with previous studies, reporting of low surgery rates at or shortly after first diagnosis (20) and a slight more frequent family history of IBD in patients with CD (17,[36], which was not statistically significant in our series. Also, with respect to the occurrence of extraintestinal manifestations similar numbers were found to previous reports with observation of at least one extraintestinal manifestation in 26.8% and 21.9 % patients, respectively [37]. As reported previously, the most commonly involved organs were joints, eyes and skin, whereas no PSC was found at all in our cohort.

In conclusion, this present prospective, population-based study from the region of Oberpfalz showed a nearly stable incidence compared to the last data available from Germany. Noteworthy, that the incidence of CD was found to be higher than the incidence of UC in this region, which supports the importance of environmental factors in the etiology and
pathogenesis of these diseases. As the clinical characteristics of our patients are very similar to those described in previous studies, this cohort with a prospective follow-up provides a highly favourable basis for further studies on etiologic factors in IBD.

Acknowledgments

Angela Takses and Irina Bosnjak are thanked for data management and data entry. Special thank goes to all general practitioners and specialists supporting this study by active reporting of cases.

The study was funded by the German Competence Network Inflammatory Bowel Disease/Federal Ministry of Education and Research (BMBF) and supported by a grant from the IOIBD and from the Bavarian Society of Gastroenterology ("Gesellschaft für Gastroenterologie in Bayern").

References


Incidence of IBD in the region of Oberpfalz


27. Bevölkerungszahlen 2004-2006


Legends to figures:

Figure 1a: The region of Oberpfalz located at the north-eastern part of Bavaria

Figure 1b: Districts and free cities in the region of Oberpfalz

Figure 2: Age-related incidence of CD and UC

Figure 3: Age-specific IBD incidence by gender

Figure 4: Location of Crohn’s disease

Figure 5: Extension of ulcerative colitis
Table 1: Demographic characteristics of the IBD incidence cohort

<table>
<thead>
<tr>
<th>Gender Male/Female</th>
<th>Age at first diagnosis Median (range)</th>
<th>Time from first symptoms to first diagnosis Median (range)</th>
<th>Familial history of IBD (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD</td>
<td>75/93</td>
<td>28.9 (1-75)</td>
<td>90 days (0 days-34 years)</td>
</tr>
<tr>
<td>UC</td>
<td>54/51</td>
<td>39.5 (7-81)</td>
<td>60 days (0 days-28 years)</td>
</tr>
<tr>
<td>IC</td>
<td>6/7</td>
<td>26.9 (15-34)</td>
<td>90 days (30 days-240 days)</td>
</tr>
</tbody>
</table>

Incidence of IBD in the region of Oberpfalz
Table 2: Extraintestinal manifestations

<table>
<thead>
<tr>
<th>Extraintestinal manifestation</th>
<th>Crohn’s disease (% of disease)</th>
<th>Ulcerative colitis (% of disease)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uveitis, Iridocyclitis, Iritis</td>
<td>1 (0.5%)</td>
<td>4 (3.8%)</td>
</tr>
<tr>
<td>Arthralgia</td>
<td>18 (10.7%)</td>
<td>10 (9.5%)</td>
</tr>
<tr>
<td>Arthritis</td>
<td>11 (6.5%)</td>
<td>6 (5.7%)</td>
</tr>
<tr>
<td>Sacroileiitis, Spondylitis, M. Bechterew</td>
<td>5 (3.0%)</td>
<td>0</td>
</tr>
<tr>
<td>Pyoderma gangraenosum</td>
<td>3 (1.8%)</td>
<td>2 (1.9%)</td>
</tr>
<tr>
<td>Erythema nodosum</td>
<td>7 (4.2%)</td>
<td>1 (0.9%)</td>
</tr>
<tr>
<td>PSC</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>45 (26.8%)</strong></td>
<td><strong>23 (21.9%)</strong></td>
</tr>
</tbody>
</table>
Table 3: Incidence rates of Crohn’s Disease and Ulcerative Colitis of different selected cohorts

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Incidence dates</th>
<th>Crohn’s Disease (cases/100 000)</th>
<th>Ulcerative Colitis (cases/100 000)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IBSEN (Norway) [10, 11]</td>
<td>1990-1993</td>
<td>5.8</td>
<td>13.6</td>
</tr>
<tr>
<td>Copenhagen [33, 34]</td>
<td>1980-1987</td>
<td>4.1</td>
<td>9.2</td>
</tr>
<tr>
<td>[20]</td>
<td>2003-2005</td>
<td>8.6</td>
<td>13.4</td>
</tr>
<tr>
<td>Olmsted County [15, 38]</td>
<td>1984-1993</td>
<td>6.9</td>
<td>8.3</td>
</tr>
<tr>
<td>[21]</td>
<td>1990-2000</td>
<td>7.9</td>
<td>8.8</td>
</tr>
<tr>
<td>EC-IBD (German center) [14]</td>
<td>Oct. 1991-Sept. 1993</td>
<td>3.5</td>
<td>4.3</td>
</tr>
<tr>
<td>Oberpfalz</td>
<td>2004-2005</td>
<td>6.6</td>
<td>3.9</td>
</tr>
</tbody>
</table>
Figure 1a:

Figure 1b:
Figure 2:

![Figure 2. Age-related incidence of CD and UC](image1)

Figure 3:

![Figure 3. Age-specific IBD incidence by gender](image2)

Figure 4:
Figure 5:

**Localisation of CD**

<table>
<thead>
<tr>
<th>Localisation</th>
<th>% of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>L1 - small bowel only</td>
<td>38%</td>
</tr>
<tr>
<td>L2 - large bowel only</td>
<td>20%</td>
</tr>
<tr>
<td>L3 - small and large bowel</td>
<td>32%</td>
</tr>
<tr>
<td>L4 - upper GI tract</td>
<td>10%</td>
</tr>
</tbody>
</table>

**Extension of UC**

<table>
<thead>
<tr>
<th>Extension</th>
<th>% of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proctosigmoiditis</td>
<td>30%</td>
</tr>
<tr>
<td>Left sided colitis</td>
<td>30%</td>
</tr>
<tr>
<td>Subtotal colitis</td>
<td>10%</td>
</tr>
<tr>
<td>Total colitis</td>
<td>30%</td>
</tr>
</tbody>
</table>