National differences in ulcerative colitis experience and management among patients from five European countries and Canada: An online survey

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Abstract

Background and aims: Patients' and physicians' perceptions of ulcerative colitis and its management are important for developing and guiding appropriate therapies. This study explored national differences in patients' and physicians' experiences, expectations, and beliefs about ulcerative colitis.
Methods: Structured, cross-sectional, online surveys evaluating various indices were completed by 775 adult patients with ulcerative colitis and 475 physicians actively managing ulcerative colitis patients from France, Germany, Ireland, Spain, the United Kingdom, and Canada.
Results: Patients' classification of their symptom severity differed across countries (mild, 16%–45%; moderate, 46%–58%; severe, 4%–36%). Expectations of disease control also varied, with 26% (Ireland) to 65% (Spain) describing that remission realistically involves "living without symptoms." Within each country, more patients (45%–69%) than physicians (28%–45%) considered ulcerative colitis symptoms to affect patients' quality of life. Mean number of patient-reported flares during the past year ranged from 2.5 in Ireland to 8.0 in France. Self-reported adherence with oral 5-aminosalicylic acid (during remission) was highest in Spain (91% vs 50%–73% across other countries). Spanish patients were more likely to self-adjust their

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medications (54% vs 2%–5%), but reported the most dissatisfaction with therapy (42% vs 9%–27%). Irish patients were least likely to arrange physician/specialist nurse visits (14% vs 36%–49%) and least open to discussion of their condition.

Conclusions: Important national differences in ulcerative colitis patients' attitudes and perceptions were observed, which may help physicians improve patient care based on country-specific needs and influence self-assessments in clinical trials. The results suggest a need for structured patient education to improve adherence and outcomes.

1. Introduction

Ulcerative colitis (UC) is an inflammatory bowel disease that typically runs a relapsing–remitting course.[1] Patients who develop this condition tend to experience a range of gastrointestinal and systemic symptoms, including bloody diarrhea, crampy abdominal pain, fecal urgency, tenesmus, loss of appetite, weight loss, and fatigue.[2] The course of the disease can vary from being well-controlled to having regular relapses; in the Norwegian IBSEN study, 55% of patients with UC reported remission or mild symptom severity after initial high activity in the previous decade, while the remaining patients reported either chronic intermittent or chronic continuous symptoms.[3]

The main objective of treatment in UC is the achievement and maintenance of disease remission, while also preventing the development of complications. Treatment for mild-to-moderate UC usually centers on 5-aminosalicylic acid (5-ASA), an anti-inflammatory compound available in a wide variety of oral and rectal formulations.[4–6] For more severe disease, corticosteroids, immunosuppressants (thiopurines or calcineurin inhibitors), or anti-tumor necrosis factor agents may also be considered.

As reported previously in the US Ulcerative Colitis: New Observations on Remission, Management and Lifestyle (UC: NORMAL) survey, perceptions, beliefs, and issues that patients have regarding UC and its treatment can differ substantially from those of physicians.[7] To investigate this further, we conducted an international survey of patients with UC and health care professionals involved in the care of UC patients to further explore the differing perspectives and perceptual gaps relating to UC and its management that exist among patients, physicians, and nurses.[8] Here we report on national differences in patients' and physicians' experiences, expectations, and beliefs about UC and its management across 5 European countries and Canada. To our knowledge, this is the first published study to evaluate national differences in these outcomes.

2. Materials and methods

2.1. Respondents

Participating patients were aged ≥18 years and had a previous formal clinical diagnosis of UC (any severity). Patients who had undergone prior colectomy were excluded. Physicians who took part in the survey included gastroenterologists or internal medicine physicians with a specialist interest in gastrointestinal medicine. Although the survey was also completed by nurse specialists, recruitment of nurses for this survey was based only in the United Kingdom and their results were excluded from the current analysis focusing on national differences. Although all physicians were involved in the management/treatment of patients with UC, they were not necessarily directly linked to the patients enrolled in this study. Physicians were excluded if: <50% of their working time was devoted to clinical care/practice; they worked in a consultative or advisory capacity to the pharmaceutical industry; they had qualified to practice within the last 3 years; or if they did not personally see patients with UC. All respondents provided their consent before completing the questionnaire and were remunerated by the sponsor for their participation. Participating physicians were paid £35 (EU countries) to £40 (Canada) each; participating patients were paid £70 each in France, Germany, Spain, and the United Kingdom, £75 each in Ireland, and £90 each in Canada.

2.2. Study design

This study was an Internet-based survey of patients with UC and physicians actively managing UC patients from Canada, France, Germany, the Republic of Ireland, Spain, or the United Kingdom. Respondents were pre-identified from patient and physician access panels and recruited via e-mail or custom "phone-to-Web" recruitment. In cases where e-mail addresses were included on the panel lists, e-mail invitations to participate in the survey were sent directly to respondents without any prior telephone or personal contact. In cases where the panel list only included telephone numbers, interviewers telephoned respondents to request their e-mail addresses and sent out e-mail invitations to them while they were still on the telephone. All e-mail invitations included a hyperlink to the applicable online questionnaire. As part of the recruitment process, respondents were carefully screened to ensure that they met the above eligibility criteria.

Patient advocacy groups and associations were not used for recruitment purposes in an attempt to avoid potential bias by over-sampling patients who were likely to be more aware of their condition and who were more actively engaged with UC management. Additionally, sampling was conducted as randomly as possible and with full geographical dispersal to try to achieve a broad and representative range of respondents in each country.

2.3. Survey tool

Respondents completed structured, cross-sectional, computer-aided, Internet-based questionnaires that assessed

various disease indices relating to disease perceptions, expectations of disease control, the burden of UC, attitudes toward treatment, and patient–physician relationships, in addition to standard demographic information. Questionnaires administered to physicians included 44 main questions (Appendix 1) and those administered to patients included 64 main questions (Appendix 2).

The questionnaires were developed by GfK Healthcare Division (London, UK), a market research company, in collaboration with the study sponsor (Shire Pharmaceuticals LLC, Wayne, PA, USA), and were based primarily on the US UC:NORMAL Internet survey questionnaire.[7,9] The current questionnaires were piloted on a mix of 13 physicians, nurses, and patient respondents in the UK and Canada in May of 2010. The survey design was reviewed and finalized by a purpose-assembled working group of UC experts, including SS, JP and EL. Only minor modifications to the wording of the questionnaires were made following this pilot stage; surveys were translated into the native language for each country. None of the terms used in the questionnaires, including "flare" and "normal," were defined for respondents and, as such, were open to individual interpretation. Physicians were asked to evaluate UC in the context of all patients with UC that they were currently treating.

2.4. Data analysis

The primary aim of the study was to identify and quantify the differing perspectives and perceptual gaps relating to UC and its management that exist between patients, physicians, and nurses; these findings are reported separately.[8] This analysis was performed to additionally explore national differences in patients' and physicians' experiences, expectations, and beliefs about UC and its management.

Prior to analysis, all responses were checked by GfK Healthcare Division for sense, quality, consistency, and reliability. No quality issues were identified for this study. With regard to sample accuracy (i.e., the likelihood that the sample estimate reflects the true population value), statistical accuracy ranges were calculated at 95% confidence interval (CI) limits based upon the sample point estimate and the sample size. These intervals denote with 95% confidence a range within which the true population value lies. For patients, a statistical accuracy range of $\pm 3.3\%$ to $\pm 7.6\%$ (at 95% CI limits; survey percentage 5%–50%) was calculated at the individual country level, assuming 150 respondents per country (as was the case in France, Germany, Spain, and the United Kingdom); likewise, a statistical accuracy range of $\pm 5.9\%$ to $\pm 13.6\%$ was determined if 50 patient respondents per country were assumed (as was the case in Ireland). For physicians, a statistical accuracy range of $\pm 4.1\%$ to $\pm 9.5\%$ (at 95% CI limits) was calculated at the individual country level, assuming 100 respondents per country (as was the case in France, Germany, Spain, and the United Kingdom). Comparisons drawn between individual countries were analyzed with t tests, with α set at 0.05. No statistical tests were performed between patients and physicians.

3. Results

3.1. Respondents

Questionnaires were completed by 775 patients and 475 physicians between June 10 and August 20, 2010, except in France where questionnaires were completed between January 20 and February 24, 2011. In each country 150 patients and 100 physicians participated, except Ireland, where 50 patients and 15 physicians participated, and Canada, where 125 patients and 60 physicians participated. Response rates for patients were not calculated, as different methods of recruitment were used across countries; for physicians, response rates in each country were as follows: Canada (6%), France (18%), Germany (23%), Ireland (12%), Spain (17%), and the United Kingdom (19%). Physicians from Spain and the United Kingdom were all gastroenterologists, while those from Canada, France, Germany, and Ireland included internal medicine physicians (specializing in gastrointestinal medicine) and gastroenterologists (Table 1).

The demographic characteristics of patients and physicians who completed the questionnaires in each of the 6 countries are shown in Table 1. At the time of the survey, many patients across all countries reported either being mildly symptomatic or experiencing active disease. Over two-thirds of patients in each country reported taking prescribed medication for their UC, with almost 100% of patients on medication in Spain. 5-ASA (used in monotherapy or in combination with other UC medications) was the most commonly prescribed UC therapy across all countries (56%–99%), particularly Spain (99%).

3.2. Perceptions of UC

Patients' classification of their own symptom severity varied considerably from country to country (Fig. 1A). Irish patients reported the highest percentage of severe cases (36%; $P<0.05$ vs every country except France). Spanish patients reported the highest percentage of mild cases (45%; $P<0.05$ vs every country except Canada). In contrast, physicians' assessment of UC severity among their caseloads was less variable across countries and relatively less severe (Fig. 1B). Consistent with Spanish patients, Spanish physicians reported significantly ($P<0.05$) more mild cases (63%) than any other country except Ireland (47% from 15 surveyed Irish physicians) and significantly ($P<0.05$) fewer severe cases (9%) than any other country except Ireland (16%).

The mean (standard deviation [SD]) number of self-defined flares experienced by patients during the past year ranged from lows of 2.5 (2.3) flares reported in Ireland and 2.6 (1.9) in Spain to a high of 8.0 (12.1) in France (Fig. 2). The number of flares reported by Spanish patients was significantly ($P<0.05$) lower compared with all countries except Ireland. All other between-country differences are noted in Fig. 2. Although Spanish patients reported a relatively low rate of flares, a large majority regarded this rate as "not normal" (71%; significantly more compared with any other country). Significant differences in the percentages of patients considering their flare rates as "not normal" were also found between: French patients (31%) and UK patients (15%); French patients (31%) and Canadian patients

Table 1 Demographic and baseline characteristics of patients and physicians.

| Characteristic	Canada	France	Germany	Ireland	Spain	UK
Patients						
N	125	150	150	50	150	150
Male, %	34	39	35	36	45	31
Mean age, years (SD)	47.9	43.7	43.3	41.6	44.4	45.4
	(15.1)	(12.6)	(14.4)	(17.3)	(16.7)	(15.5)
National patient organization member, %	17	4	7	12	0	23
Marital status, %						
Single, no partner	23	17	31	32	31	22
Single, with partner	22	39	26	16	17	28
Married	55	44	43	52	51	50
Currently employed, %	52	70	62	50	48	65
Any comorbidity, %						
Diabetes	9	5	8	0	1	6
Epilepsy	2	1	1	2	0	2
Asthma	13	4	13	8	1	18
Heart disease	11	2	9	4	0	6
Depression	15	11	16	6	1	18
Arthritis	22	15	11	4	1	22
Migraine	15	19	21	8	0	17
Chronic back pain	18	19	28	6	1	14
UC status, %						
In flare	5	15	15	12	3	13
Mildly symptomatic	47	48	42	22	42	46
In remission	48	37	43	66	55	41
Currently receiving UC therapy, %	74	69	68	72	99	70
Type of UC therapy,% [a]						
5-ASA/aminosalicylate	71	56	70	68	99	74
Monotherapy [a]	52	35	40	51	47	40
Corticosteroids	20	37	35	24	37	32
Immune therapy [b]	14	23	16	0	43	27
Antibiotics	4	16	11	5	1	7
Biological therapy	11	14	9	7	34	2
Other	17	10	10	0	0	17
Not sure	2	5	4	22	0	3
Physicians						
N	60	100	100	15	100	100
Male, %	87	83	81	87	74	87
Mean qualification year (SD)	1988	1992	1994	1995	1988	1993
	(12.2)	(7.8)	(7.7)	(9.1)	(9.8)	(6.9)
Primary specialty, *n*						
Internal medicine	5	16	64	13	0	0
Gastroenterology	95	84	36	87	100	100
Lower GI/IBD specialist, %	40	78	67	47	75	71
Office- or hospital-based, %						
Office	28	32	26	0	12	2
Hospital	35	50	63	87	61	95
Equal	37	18	11	13	27	3
Location, %						
City center	73	72	68	40	86	61
Suburban	25	26	21	33	10	33
Rural	2	2	11	27	4	6
Teaching hospital, %	72	35	73	67	78	73
Type of hospital, %						
Public	98	79	70	100	92	100
Private	2	21	30	0	8	0
Mean % of working day devoted to clinical practice (SD)	88 (14)	87 (11)	89 (9)	92 (12)	86 (12)	87 (11)
UC patients seen in typical month, *n*	33	21	33	37	35	53
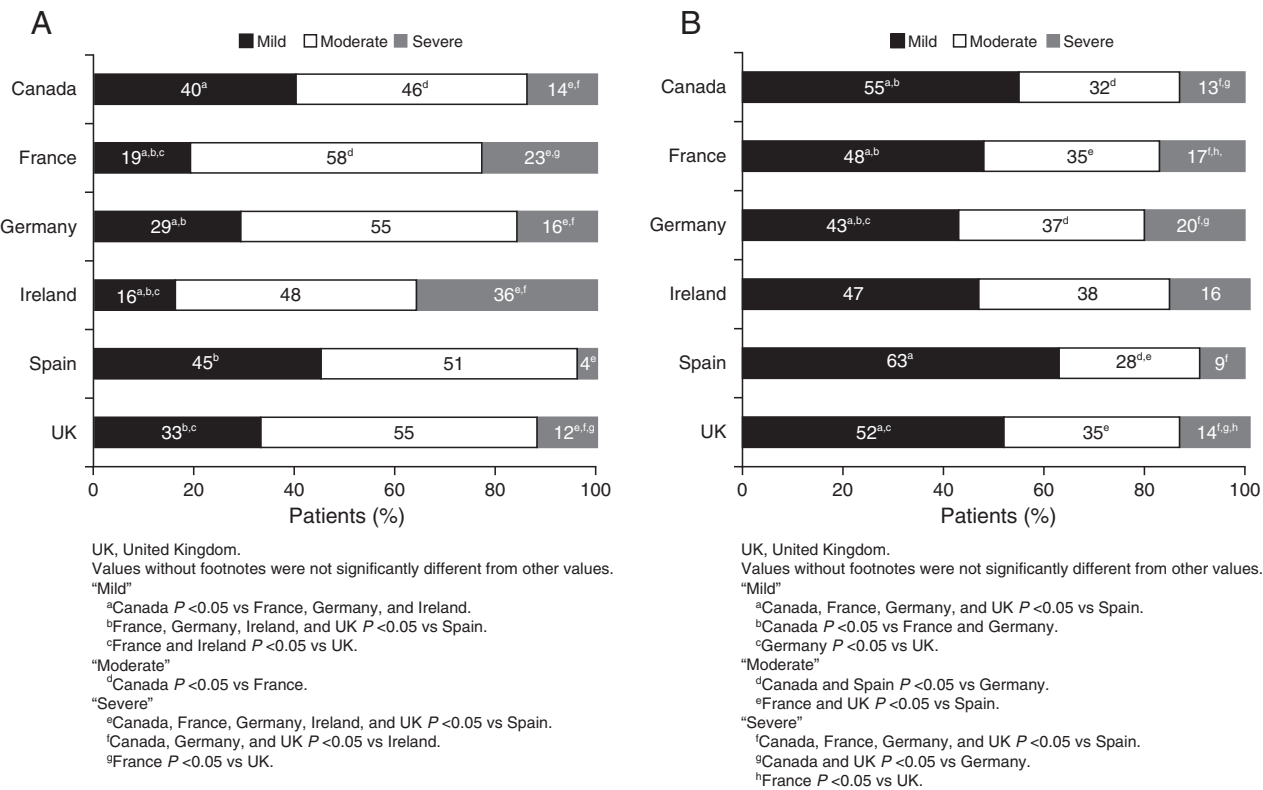
Figure 1 Ulcerative colitis severity rating across countries. (A) Patients' personal classification of ulcerative colitis severity: patients were asked how they would personally describe the severity of their ulcerative colitis overall, regardless of how their doctor described it. (B) Physicians' assessment of ulcerative colitis severity among their caseloads: physicians were asked what percentage of their current ulcerative colitis patients had mild, moderate, or severe disease. The data for each country may not always sum to 100% due to rounding.

(19%); and German patients (25%) and UK patients (15%). UK patients were the least likely (52% flare-reporting rate) and Spanish patients the most likely (92% flare-reporting rate) to discuss these flares with their doctor or nurse. Physicians' estimates of a typical number of flares experienced by a patient with UC per year were lower than patients' estimates of the number of UC flares experienced during the past 12 months in all countries besides Spain and Ireland. In every surveyed country, physicians ranked the natural course of UC as the most common cause of UC flares (38%–67%; Table 2). Physicians ranked not taking maintenance therapy as the second leading cause of flare in all countries except Ireland, where stress ranked second. By comparison, most patients ranked stress as the leading cause of flare in all countries except Ireland, where changes from regular diet was most frequently listed.

Across all surveyed nations, the highest percentage of patients stated that urgency was most bothersome (overall mean, 30%) followed by pain (overall mean, 25%; Fig. 3A). Large variations in rankings were observed: patients in the United Kingdom (43%) ranked urgency as most bothersome significantly more frequently than any other country except Canada (37%); patients in France (37%) listed blood in stools as most bothersome significantly more frequently than any other country; and patients in Spain (32%) listed number of tablets to be taken as most bothersome significantly more frequently than any other country. Physicians also believed that patients were bothered most by urgency (overall mean 36%; range across countries, 12% [Spain] to 87% [Ireland]); however, stool frequency ranked second (overall mean 34%; range across countries, 7% [Ireland] to 46% [Germany]; Fig. 3B).

Notes to Table 1

SD, standard deviation; UC, ulcerative colitis; 5-ASA, 5-aminosalicylic acid; GI, gastrointestinal; IBD, inflammatory bowel disease.

[a] All patients who reported taking prescription medication for their UC.
[b] Immunomodulator or immunosuppressant.

Figure 2 legend (chart labels):
- ■ Patient-reported number of flares experiences
- □ Patient-reported number of flares discussed with HCP
- ▩ Physician-estimated number of flares experienced by patients

Canada: 6.2[a], 4.4[d,e,f], 3.3
France: 8.0[a,b,c], 7.0[d], 3.3
Germany: 5.5[a,b,c], 4.7[d,e,f], 4.6
Ireland: 2.5[b], 1.7[d,e], 3.0
Spain: 2.6[a], 2.4[d,e,f], 3.3
UK: 6.5[a], 3.4[d], 2.6

X-axis: Mean number of flares during last 12 months (0, 2, 4, 6, 8, 10)

HCP, health care professional; UK, United Kingdom.
"Patient-reported number of flares experienced"
  [a]Canada, France, Germany, and UK $P < 0.05$ vs Spain.
  [b]France and Germany $P < 0.05$ vs Ireland.
  [c]France $P < 0.05$ Germany.
"Patient-reported number of flares discussed with HCP"
  [d]Canada, Germany, Ireland, Spain, and UK $P < 0.05$ vs France.
  [e]Canada, Germany, and Spain $P < 0.05$ vs Ireland.
  [f]Canada and Germany $P < 0.05$ vs Spain.
"Physician-estimated number of flares experienced by patients"
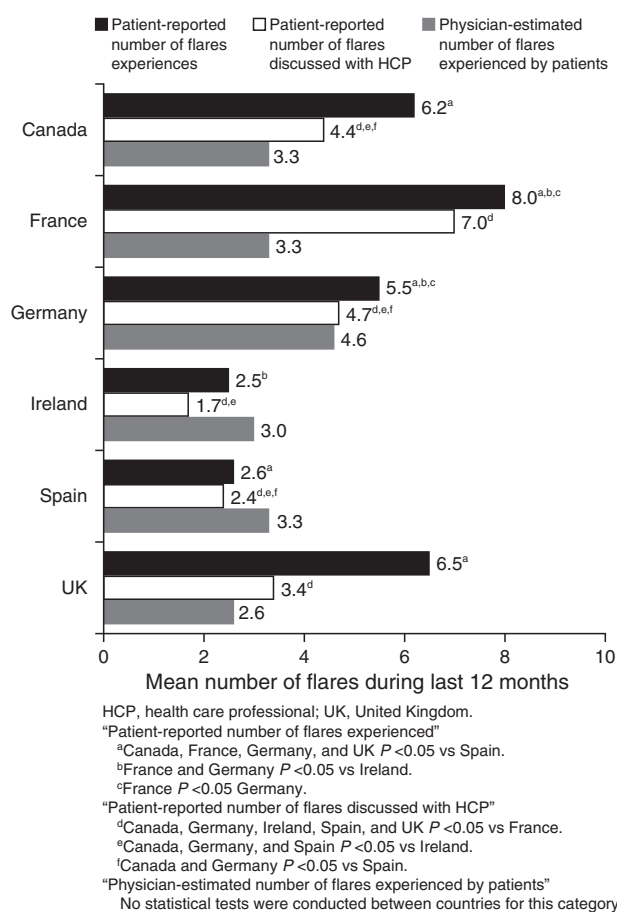 No statistical tests were conducted between countries for this category.

Figure 2 Mean number of flares experienced (patient-defined), reported to a health care professional, and estimated by physicians (past 12 months). Patients were asked how many flare-ups of their ulcerative colitis they had experienced during the past 12 months and how many of these flare-ups they had discussed with their health care professional. The data for each country may not always sum to 100% due to rounding.

3.3. Expectations of disease control

Patients' expectations of UC control differed considerably across countries (Fig. 4). Significantly more Spanish patients (65%) stated that remission realistically involves "experiencing no symptoms" compared with any other country (range, 26% [Ireland] to 52% [France]). For most other countries (except France), a majority of patients stated that remission realistically involves "living with symptoms" (with or without interruptions to daily life). By comparison, a majority of physicians in all surveyed countries defined remission as including a complete absence of symptoms (Germany, 51%; UK, 53%; Spain, 57%; France, 76%; Ireland, 80%; Canada, 82%) and a normalized, as opposed to improved, quality of life (France, 60%; Germany, 60%; Spain, 63%; UK, 63%; Ireland, 73%; Canada, 75%). Canadian physicians were the most likely to rank complete absence of symptoms, as opposed to reduced symptoms, as a necessary requirement of remission in mild-to-moderate UC, while nearly half of German physicians included reduced but not completely absent symptoms as part of their definition of UC remission. Canadian physicians were also the most likely to rank normalized quality of life, as opposed to improved quality of life, as a necessary requirement of UC remission, while German and French physicians were the least likely. Many physicians perceived that patient definitions of remission were less stringent than their own, particularly those in Canada (50%), France (46%) and the United Kingdom (44%).

3.4. Burden of disease

Across all countries, many patients (Ireland, 34%; Spain, 45%; Canada, 52%; Germany, 57%; UK, 59%; France, 63%) reported being symptomatic (in flare or mildly symptomatic [defined as fluctuating mild symptoms that can be bothersome but are not enough to be called a flare]) at the time of survey completion (Table 1). Despite national variations in current UC status, within each country, a consistently higher proportion of patients (45%–69%) considered their UC symptoms as causing at least some quality of life disruption when compared with the perception of physicians of what percentage of patients' quality of life was affected (28%–45%; Fig. 5); this difference

Table 2 Most likely cause of flare, ranked by patients and physicians.

Perceived cause of flare, %[a]	Canada	France	Germany	Ireland	Spain	UK
Patients						
Stress	46[b]	41[b]	51[b]	20[b]	27[b]	41[b]
Natural course of the condition	19[c]	25[c]	28	24	25	35[c]
Changes from regular diet	22[d,e]	19[d]	12[d,e]	44[d]	27[d,e,f]	15[d,f]
Not taking maintenance therapy when UC is in remission	12[g]	16[h]	9[g]	12	21[g]	8[g,h]
Physicians						
Stress	10[i]	18	27[i]	20	27[i]	11[i]
Natural course of the condition	58[j]	57[j]	38[j]	67	42[j]	59[j]
Changes from regular diet	0	1	4	0	1	1
Not taking remission maintenance therapy when UC is in remission	32	24	31	13	30	29

UK, United Kingdom; UC, ulcerative colitis.
[a]Percentages may not total 100% due to rounding.
Values without footnotes were not significantly different from other values.
Patients' rankings.
"Stress".
[b]Canada, France, Germany, and UK $P<0.05$ vs Ireland and Spain.
"Natural course of the condition".
[c]Canada and France $P<0.05$ vs UK.
"Changes from regular diet".
[d]Canada, France, Germany, Spain, and UK $P<0.05$ vs Ireland.
[e]Canada and Spain $P<0.05$ vs Germany.
[f]Spain $P<0.05$ vs UK.
"Not taking maintenance therapy with UC is in remission"
[g]Canada, Germany, and UK $P<0.05$ vs Spain.
[h]France $P<0.05$ vs UK.
Physicians' rankings.
"Stress".
[i]Canada and UK $P<0.05$ vs Germany and Spain.
"Natural course of the condition".
[j]Canada, France, and UK $P<0.05$ vs Germany and Spain.

was most apparent in France and least apparent in the United Kingdom. Patients in France reported the highest prevalence of symptoms affecting quality of life (69%), while those in Spain (45%) and the United Kingdom (48%) reported the lowest prevalence (Fig. 5A). Across all countries, many patients (UK, 41%; Germany, 45%; Canada, 46%; France, 48%; Spain, 60%; Ireland, 66%) strongly agreed that they were worried about the long-term health effects of having UC.

3.5. Attitudes toward 5-ASA therapy

Patient-reported adherence with maintenance 5-ASA therapy (during their most recent period of remission) varied from country to country (Table 3). Adherence was significantly ($P<0.05$) higher in Spanish patients (91%) compared with patients from any other country (range, 50%–64%) except Ireland (73%). Compared with patient-reported adherence, physicians over-estimated adherence with prescribed 5-ASA therapy among their caseloads in France (65% vs 50%, respectively), Germany (61% vs 53%, respectively), and the United Kingdom (56% vs 52%, respectively), and under-estimated adherence in Canada (55% vs 64%, respectively), Spain (70% vs 91%, respectively), and Ireland (57% vs 73%, respectively). Many more patients from Spain reported being likely to self-adjust their UC medication during a flare that

was not discussed with their doctor or nurse (54%) than those from Canada (2%), Germany (2%), France (3%), or the United Kingdom (5%); meaningful estimates were not available for Irish patients due to low patient numbers. Despite high adherence rates, the percentage of Spanish patients who reported being "not very" or "not at all" satisfied with their current 5-ASA therapy (42%) was higher than in the other countries (range, 2%–27%), while the large majority of patients in Canada, the United Kingdom and France (all ≥89%) reported being "somewhat" or "very" satisfied (Table 3).

3.6. Patient–physician relationship

Between 62% (Ireland) and 82% (Canada) of patients across surveyed nations ranked doctors/nurses at their general practitioner's surgery/practice or at their hospital among their top sources of information about UC and UC treatment options. Despite this, many patients in all countries did not see their doctors or specialist nurses on a regular basis (Table 4). Among all surveyed nations, Irish patients were significantly less likely than patients from other nations to arrange regular visits to see their doctor about their condition. Irish patients were also the least likely to be open to discussion of their UC during healthcare visits.
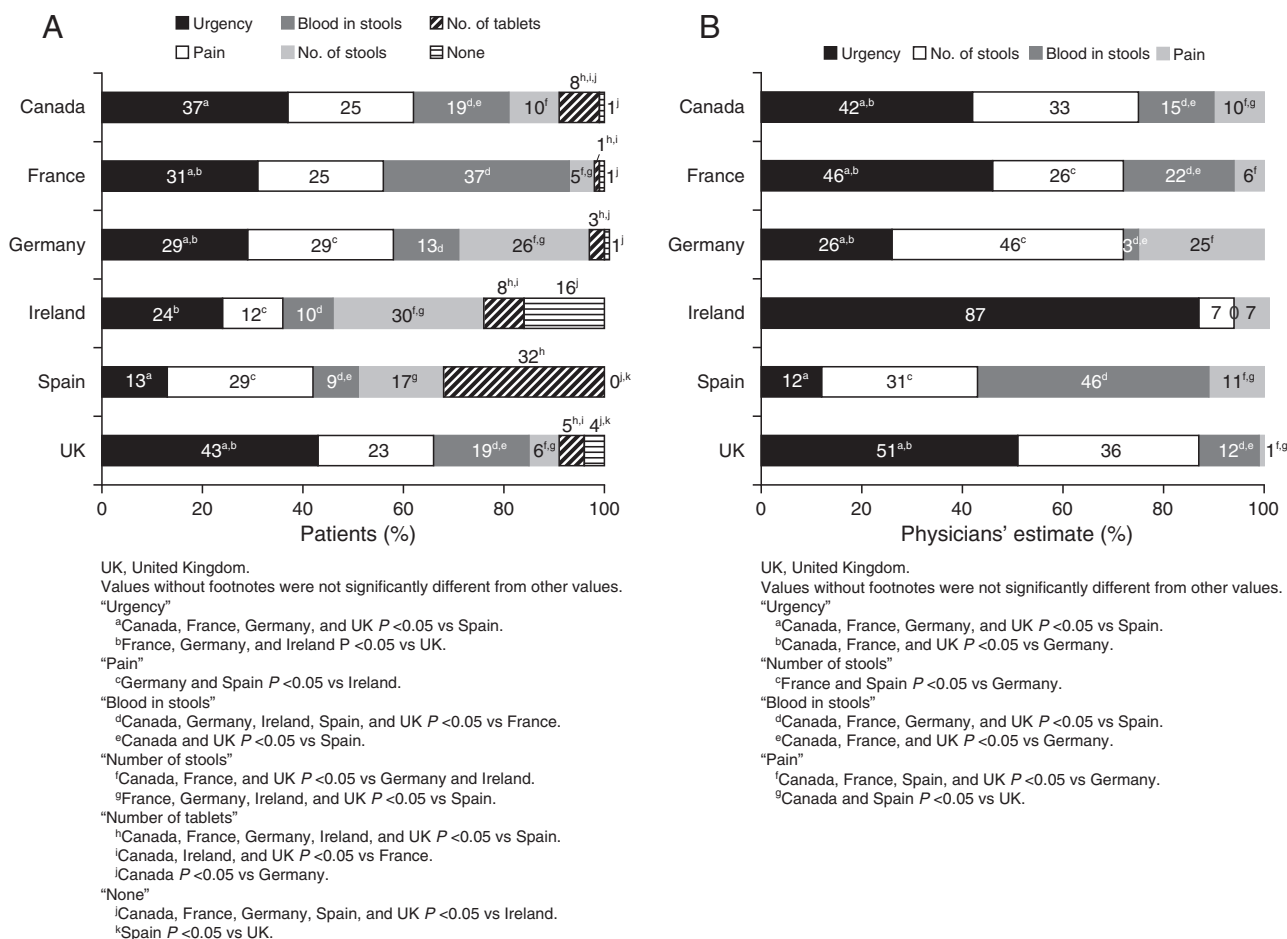
Figure 3 Most bothersome factor for patients, as assessed by patients and physicians. (A) Patients were asked which one of the following bothered them the most about their ulcerative colitis: urgency, pain, number of stools per day, blood in your stools, number of tablets to be taken, or none of the above. (B) Physicians were asked which one of the same choices they thought bothered their ulcerative colitis patients the most. The data for each country may not always sum to 100% due to rounding.

4. Discussion

This survey identified important differences in outcomes, attitudes, and perceptions relating to the experience of UC and its treatment among patients from Canada and 5 European countries. These aspects included disease perceptions, expectations of disease control, the burden of UC, attitudes toward 5-ASA treatment (including adherence), and patient–physician relationships. This is the first survey to explore national differences in outcomes related to the burden of UC and its management.

Overall, Spanish patients appeared to have the most optimistic perceptions of UC (i.e., they had lowest self-reported levels of UC severity and the lowest prevalence of symptoms affecting their quality of life), the highest expectations of UC control (i.e., they were the most likely to expect remission to be symptom-free and the least likely to accept their flares as being "normal"), and had the highest 5-ASA adherence rates (91%). Spain and Germany were the only nations in which the proportion of patients who expected remission to include absence of symptoms was within 10

percentage points of physician estimates. In all other nations, patients had lower expectations of remission compared with physicians (i.e., more patients expected remission to include living with some symptoms). Spanish patients were also much more likely than those from other nations to self-adjust their UC medication during a flare that was not discussed with their doctor or nurse. However, patients from Spain were also the least satisfied with their current 5-ASA treatment, which may reflect their high expectations of UC control, and were the second most worried about the long-term health effects of UC. These latter issues could be addressed during regular patient consultations with their doctor or nurse.

In contrast to Spanish patients, patients from Ireland had the highest self-reported levels of UC severity, despite being the least symptomatic at the time of surveying and reporting the fewest number of flares in the past year. In addition, Irish patients were the least likely (26%) to expect periods of remission to be symptom-free (similar low patient expectations for remission have been reported previously[10]), were the most worried about the long-term health effects of their condition, and were the second-least satisfied with treatment. Ireland
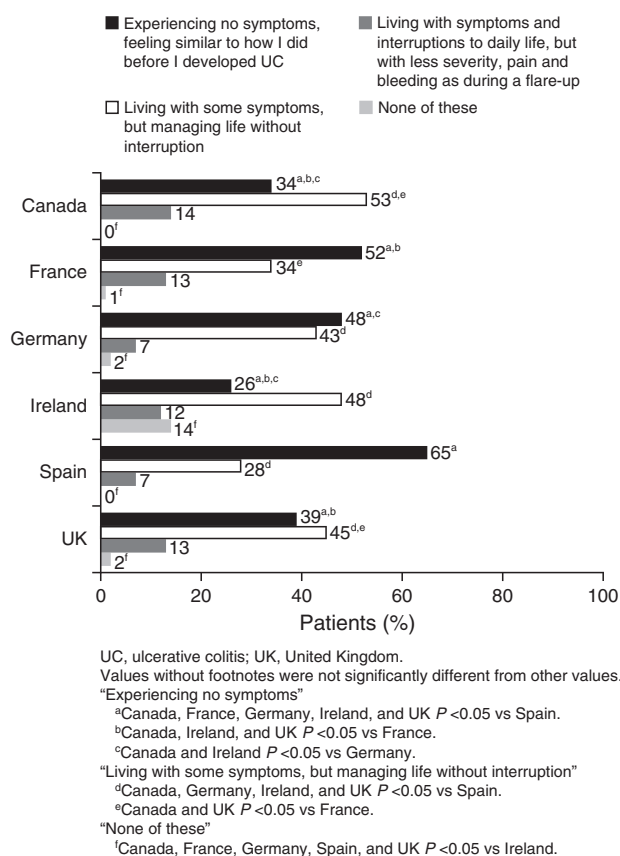
Figure 4 Patients' descriptions of what remission realistically means. Patients were asked which one of the following statements best described what remission realistically meant for them personally: (1) experiencing no symptoms, feeling similar to how I did before I developed ulcerative colitis; (2) living with some symptoms, but managing life without interruption; (3) living with symptoms and interruptions to daily life, but with less severity, pain, and bleeding as during a flare-up; and (4) none of these. The data for each country may not always sum to 100% due to rounding.

demonstrated the largest discrepancy between patient and physician expectations of UC remission; in contrast to low patient expectations, Irish physicians (80%) were the most likely of any surveyed country to include a complete absence of symptoms as a necessary requirement of remission. Irish patients were also less likely than those from other countries to arrange visits to see their doctor or specialist nurse and were the least open to discussion of their UC with their doctor. This lack of openness with their doctor and reduced contact with their doctor or specialist nurse may have compounded Irish patients' more negative expectations and perceptions about their disease and its treatment, and highlights a need for better communication and education.

With regard to other nationalities, French patients appeared to have the greatest symptom burden, including the highest number of self-defined flares in the past year (8.0) and the highest prevalence of symptoms affecting their quality of life. These findings may be partially explained by the 50% treatment adherence rate, which was the lowest of all the countries

sampled. Despite low adherence, French patients were among the most satisfied with treatment and among the most open with their doctor about their UC. By comparison, patients from the United Kingdom had the second-lowest prevalence of symptoms affecting their quality of life and were among the least worried about the long-term effects of UC on their health, indicating a lower burden of disease. Although they had the second-lowest treatment adherence rate (52%), UK patients were the second most satisfied with their current 5-ASA therapy, ranking only behind Canadian patients. UK patients were also the least likely to discuss their flares with their doctor or nurse, yet paradoxically reported being the second most open (behind Canadian patients) about their condition with their physician. Finally, Canadian patients were the most likely to see their doctor or specialist nurse at regular intervals.

National differences in outcomes, attitudes, and perceptions observed among patients and physicians from the surveyed countries may reflect variations in treatment practices and healthcare provision, as well as social and cultural differences. Although European and International guidelines for the management of UC are available,[4–6] treatment practices in individual countries will vary due to variations in health service infrastructure, treatment pathways, expertise, and availability of resources. Indeed, differences in treatment practice that may occur between countries have been reported recently in a study comparing the inpatient care of patients with UC or Crohn's disease at two institutions in the United Kingdom (Oxford) and Italy (Milan).[11] Over a 2-month audit period, consistent procedural differences were observed between the 2 institutions in terms of admissions, surgery, endoscopy, imaging investigations, medical therapy, use of biomarkers, nursing care, and nutritional assessment. All 6 nations surveyed provide universal healthcare, but there are differences between them in terms of healthcare organization, access, and funding.[12,13] In addition to these national differences, this survey also identified differences between patients and physicians in their perceptions of UC (reported separately[8]), further highlighting the need for improved communication in the management of UC. It is unclear if patient self-reported differences in UC severity and burden across sampled nations reflect actual differences in severity; if actual differences in mean UC severity across nations could be objectively confirmed, it would be of great interest to study the correlation between disease severity and cultural differences in diet and lifestyle.

With the exception of Spain, adherence rates with 5-ASA therapy were low, but typical of those reported in observational studies involving patients with UC.[7,10,14–20] The poor adherence rates in most countries are concerning, however, given that non-adherence with 5-ASA therapy is linked to an enhanced risk of flare and higher medical costs.[15,19,21,22] In turn, increased disease activity can result in a reduction in patient quality of life.[23–27] Although formal statistical analyses were not conducted, Spanish patients did demonstrate a high rate of adherence, the most optimistic perceptions of UC, highest expectations of UC control, and better treatment outcomes. These findings suggest that strict adherence should be promoted to achieve optimal outcomes. These observations may prompt a discussion regarding the need for structured patient education to improve adherence and, thereby, long-term outcomes.
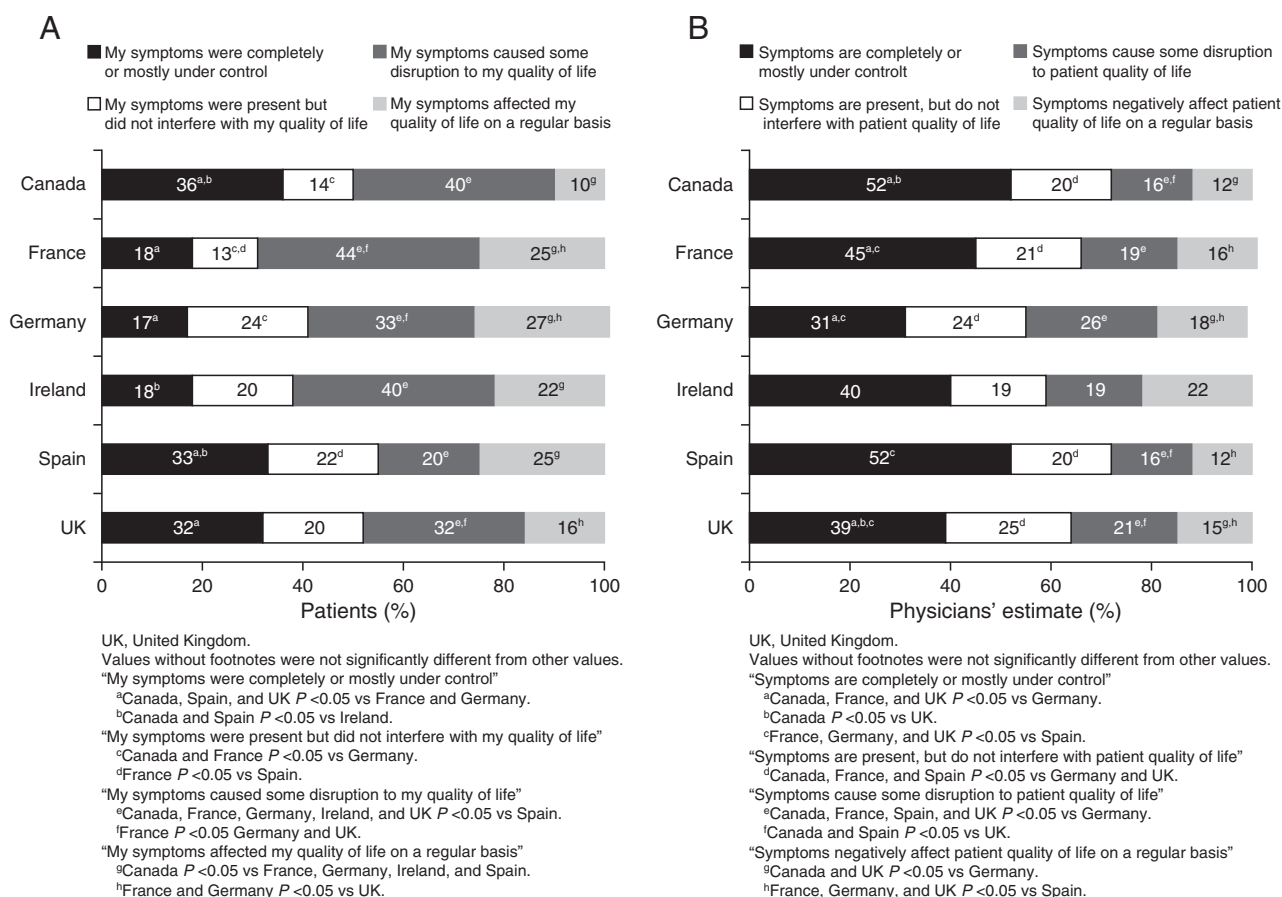
A

- ■ My symptoms were completely or mostly under control
- □ My symptoms were present but did not interfere with my quality of life
- ▨ My symptoms caused some disruption to my quality of life
- ▨ My symptoms affected my quality of life on a regular basis

Country				
Canada	36[a,b]	14[c]	40[e]	10[g]
France	18[a]	13[c,d]	44[e,f]	25[g,h]
Germany	17[a]	24[c]	33[e,f]	27[g,h]
Ireland	18[b]	20	40[e]	22[g]
Spain	33[a,b]	22[d]	20[e]	25[g]
UK	32[a]	20	32[e,f]	16[h]

Patients (%) 0–100

UK, United Kingdom.
Values without footnotes were not significantly different from other values.
"My symptoms were completely or mostly under control"
[a] Canada, Spain, and UK P <0.05 vs France and Germany.
[b] Canada and Spain P <0.05 vs Ireland.
"My symptoms were present but did not interfere with my quality of life"
[c] Canada and France P <0.05 vs Germany.
[d] France P <0.05 vs Spain.
"My symptoms caused some disruption to my quality of life"
[e] Canada, France, Germany, Ireland, and UK P <0.05 vs Spain.
[f] France P <0.05 Germany and UK.
"My symptoms affected my quality of life on a regular basis"
[g] Canada P <0.05 vs France, Germany, Ireland, and Spain.
[h] France and Germany P <0.05 vs UK.

B

- ■ Symptoms are completely or mostly under control
- □ Symptoms are present, but do not interfere with patient quality of life
- ▨ Symptoms cause some disruption to patient quality of life
- ▨ Symptoms negatively affect patient quality of life on a regular basis

Country				
Canada	52[a,b]	20[d]	16[e,f]	12[g]
France	45[a,c]	21[d]	19[e]	16[h]
Germany	31[a,c]	24[d]	26[e]	18[g,h]
Ireland	40	19	19	22
Spain	52[c]	20[d]	16[e,f]	12[h]
UK	39[a,b,c]	25[d]	21[e,f]	15[g,h]

Physicians' estimate (%) 0–100

UK, United Kingdom.
Values without footnotes were not significantly different from other values.
"Symptoms are completely or mostly under control"
[a] Canada, France, and UK P <0.05 vs Germany.
[b] Canada P <0.05 vs UK.
[c] France, Germany, and UK P <0.05 vs Spain.
"Symptoms are present, but do not interfere with patient quality of life"
[d] Canada, France, and Spain P <0.05 vs Germany and UK.
"Symptoms cause some disruption to patient quality of life"
[e] Canada, France, Spain, and UK P <0.05 vs Germany.
[f] Canada and Spain P <0.05 vs UK.
"Symptoms negatively affect patient quality of life on a regular basis"
[g] Canada and UK P <0.05 vs Germany.
[h] France, Germany, and UK P <0.05 vs Spain.

Figure 5 Estimation of disease control by patients and physicians (last 12 months). (A) Patients were asked which one of the following statements best described how effectively their ulcerative colitis had been controlled over the past 12 months: (1) my symptoms were completely or mostly under control; (2) my symptoms were present but did not interfere with my quality of life; (3) my symptoms caused some disruption to my quality of life; or (4) my symptoms affected my quality of life on a regular basis. (B) Physicians were asked (in terms of how effectively the patient' ulcerative colitis had been controlled over the last 12 months) approximately what percentage of their mild-to-moderate ulcerative colitis patients fell into each of the following groups (see above statements). The data for each country may not always sum to 100% due to rounding.

As with all real-life studies, this survey was subject to a number of limitations. Differences in 5-ASA medication adherence may have been related to differences in the relative percentage of patients on oral and rectal forms of 5-ASA across countries; route of drug administration was not recorded. The study was also limited by the lack of relationship between surveyed patients and physicians; thus, it is possible that the patient respondents had a different disease profile (including disease severity and flare rate) compared with the patients included in the physicians' caseloads. Furthermore, patients and physicians were not given standard definitions of disease severity or flares on which to base their responses. Also, there was a limited sample size in individual countries, particularly Ireland, where just 50 patients and 15 physicians completed the survey. Information on race and ethnicity was not collected; therefore the homogeneity of patient samples with regards to race across surveyed countries is unknown. As an observational study, this study may be prone to bias relating to participant selection, data collection, analysis, and interpretation, even though measures (i.e., "random" sampling,

wide geographic dispersal, and not using patient organizations for recruitment) were taken to try to mitigate this impact. Despite these limitations, it should be noted that it is almost impossible to acquire such an insight into patients' and physicians' perceptions in a controlled clinical trial setting. The demographic profile of patient respondents was also similar to that reported in previous surveys[7,9,10] and within the general UC patient population,[28–31] and therefore these results may be applicable to the larger UC population.

In conclusion, this survey identified potentially important national differences in patient outcomes, attitudes, and perceptions relating to UC and its management. Spanish patients appeared to have the most optimistic perceptions of UC, highest expectations of UC control, and best adherence rates. Irish patients, on the other hand, appeared to have the most pessimistic perceptions of UC, lowest expectations of disease control, and were the least likely to visit their doctor or specialist nurse on a regular basis and be open and frank in discussions about their condition. It is possible that these differences may be driven by social and

Table 3 Attitudes of patients from different countries towards 5-ASA treatment.

Characteristic	Canada (n=64)	France (n=54)	Germany (n=74)	Ireland (n=26)	Spain (n=141)	UK (n=84)
Adherence to 5-ASA, %[a]						
Always took most or all of my medication that my doctor wanted me to	64[b]	50[b]	53[b]	73	91[b]	52[b]
Tried taking fewer tablets than prescribed (but did not stop)	30[c,d]	24[c]	15[d]	8	9[c]	23[c]
Tried not taking medication at all for a period of time	6[e,f]	26[e,f]	32[e,f]	19	0[e]	25[e,f]
Satisfaction with 5-ASA, %[a]						
Very satisfied/happy	58[g]	20[g]	28[g]	15	18[g]	44[g]
Somewhat satisfied/happy	41[h]	69[h]	49[h]	58	40[h]	46[h]
Not very satisfied/happy	2[i,j]	9[i]	15[i,j]	12	38[i]	8[i]
Not at all satisfied/happy	0[k]	2	8[k]	15	4	1[k]

UK, United Kingdom; 5-ASA, 5-aminosalicylic acid.

[a]All respondents who were currently taking daily oral 5-ASA medication for UC; percentages may not total 100% due to rounding. Values without footnotes were not significantly different from other values.

Adherence to 5-ASA.

"Always took most or all of my medication that my doctor wanted me to."

[b]Canada, France, Germany, and UK $P<0.05$ vs Spain.

"Tried taking fewer tablets than prescribed (but did not stop)".

[c]Canada, France, and UK $P<0.05$ vs Spain.

[d]Canada $P<0.05$ vs Germany.

"Tried not taking medication at all for a period of time".

[e]Canada, France, Germany, and UK $P<0.05$ vs Spain.

[f]Canada $P<0.05$ vs France, Germany, and UK.

Satisfaction with 5-ASA, %.

"Very satisfied/happy".

[g]Canada and UK $P<0.05$ vs France, Germany, and Spain.

"Somewhat satisfied/happy".

[h]Canada, Germany, Spain, and UK $P<0.05$ vs France.

"Not very satisfied/happy".

[i]Canada, France, Germany, and UK $P<0.05$ vs Spain.

[j]Canada $P<0.05$ vs Germany.

"Not at all satisfied/happy".

[k]Canada and UK $P<0.05$ vs Germany.

cultural factors, combined with differing treatment practices and health service organization. Learning to recognize these factors and address them during therapy may improve treatment outcomes and the standard of healthcare available to patients with UC in specific countries.

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Conflict of interest

Stefan Schreiber has received consultancy and speaker fees from Shire that were not related to this article; has received lecture fees from the Falk Foundation; and has consulted for various companies developing novel biologic agents. Julián Panés has received consultancy fees from Abbott, Bristol-Myers Squibb, Cellerix, Genentech, MSD, Novartis, Palau Pharma, Pfizer, and Roche; has received speaker fees from Abbott, Ferring, MSD, Shire, and Tillotts Pharma; and has received unrestricted research grants from Abbott and MSD. Edouard Louis has received consultancy fees from Schering Plough, Abbott, MSD, Ferring, Shire, Millennium, and UCB; has received research or educational grants from MSD, Schering Plough, Astra Zeneca, Abbott; and has received lecture fees

Table 4 Relationships of patients from different countries with their doctor or specialist nurse.

Characteristic	Canada (n = 125)	France (n = 150)	Germany (n = 150)	Ireland (n = 50)	Spain (n = 150)	UK (n = 150)
Visits to see the doctor or nurse, %[a]						
I arrange regular visits	49[b,c]	41[b]	48[b,c]	14[b]	36[b,c]	43[b]
Only when I'm not feeling well or have a flare-up	26[d]	39[d]	26[d]	46[d]	27[d]	21[d]
I try to stay away from seeing the doctor/specialist nurse unless a serious flare-up happens	21[e]	17[e,f]	25[g]	32[f]	37[e,g]	33[e]
I never go to see the doctor/specialist nurse	5[h,i]	3[h]	1[i]	8[h,i]	0[h]	3[h]
Degree of openness with the doctor, %[a]						
I'm completely open, volunteering all information about my UC symptoms and issues	79[j,k]	68[j,k]	67[j,k]	46[j]	67[j,k]	71[j]
I'm open but only if my doctor carefully questions me	18	26	18	22	19	21
I keep some things from my doctor	3[l,m]	6[l]	12[m]	20[l]	11[m]	6[l]
I often keep things from my doctor	0[n]	0[n,o]	3[n,o]	12[n]	2[n]	1[n]

UC, ulcerative colitis; UK, United Kingdom.
[a]Percentages may not total 100% due to rounding.
Values without footnotes were not significantly different from other values.
"I arrange regular visits".
[b]Canada, France, Germany, Spain, and UK $P<0.05$ vs Ireland.
[c]Canada and Germany $P<0.05$ vs Spain.
"Only when I'm not feeling well or have a flare-up".
[d]Canada, Germany, Spain, and UK $P<0.05$ vs France and Ireland.
"I try to stay away from seeing the doctor/specialist nurse unless a serious flare-up happens".
[e]Canada and France $P<0.05$ vs Spain and UK.
[f]France $P<0.05$ vs Ireland.
[g]Germany $P<0.05$ vs Spain.
"I never go to see the doctor/specialist nurse".
[h]Canada, France, Ireland, and UK $P<0.05$ vs Spain.
[i]Canada and Ireland $P<0.05$ vs Germany.
"I'm completely open, volunteering all information about my UC symptoms and issues".
[j]Canada, France, Germany, Spain, and UK $P<0.05$ vs Ireland.
[k]Canada $P<0.05$ vs France, Germany, and Spain.
"I keep some things from my doctor".
[l]Canada, France, and UK $P<0.05$ vs Ireland.
[m]Canada $P<0.05$ vs Germany and Spain.
"I often keep things from my doctor".
[n]Canada, France, Germany, Spain, and UK $P<0.05$ vs Ireland.
[o]France $P<0.05$ vs Germany.

involved in the design, collection, analysis, interpretation, and fact checking of information, the content of this manuscript, the ultimate interpretation, and the decision to submit it for publication in the Journal of Crohn's and Colitis was made by the authors.

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