







## Research Article

# Profiling the Use of Complementary Alternative Medicines among Inflammatory Bowel Disease Patients: Results from a Single Center Survey

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**Background.** Complementary and alternative medicines (CAMs) are used by patients with chronic disorders, such as inflammatory bowel disease (IBD), with a desire to manage their disease. **Methods.** Patients visiting an IBD outpatient clinic and infusion unit in a tertiary referral center were surveyed through an anonymized Dutch version of the international questionnaire to measure the use of CAMs. **Results.** Of the 467 IBD patients who responded to the survey, 41.8% ( $n = 195$ ) reported the use of CAMs. Gender ( $p = 0.03$ , higher in females), educational qualification ( $p = 0.02$ , higher in more educated patients), and number of prior IBD medical treatments ( $p = 0.05$ , higher in patients having received more than one therapy) were significantly associated with CAM usage. Overall, there was no significant difference in CAM-usage between UC (45.3%) and CD (38.2%) patients. Over two-thirds of patients reported using CAMs to alleviate IBD-related symptoms. The most prevalent reason for CAM-usage was to minimize stress and symptoms. The top five nonsupplemental CAMs used by IBD patients included probiotics, curcumin, yoghurt, homeopathy, and yoga. Among CAMs with a minimum of 25 users, yoga (93.5%), cannabis (87.5%), and mindfulness (84.6%) had high self-reported efficacy indices. Fifty-six percent of the patients who affirmed the economic worthiness of CAMs expressed their interest to consult with their gastroenterologist about CAM-conventional therapy interactions. **Conclusion.** CAM usage in IBD patients is highly prevalent, and consultation of the patients with the gastroenterologist about the use of CAMs is warranted. Since CAMs can interact with conventional therapies, a debate could help optimizing CAM use, eventually resulting in better disease management.

## 1. Introduction

Complementary and alternative medicines (CAMs) are a broad category of substances and practices which have the potential of preventing, ameliorating, or treating health disorders. According to the National Center for Complementary and Integrative Health affiliated to the National Institute of Health (NIH), CAMs fall into the practice of “integrative health” which brings conventional and complementary approaches together in a coordinated way. The use

of CAMs has increased in recent times to manage and treat various chronic disorders, such as diabetes and cancer [1–9]. Recently, 170 of the 194 member states of the World Health Organization recognized and acknowledged the use of complementary medicines. By 2018, 50% of the member states compiled a national policy on complementary medicines, and 64% of the states reported the presence of laws and regulations for herbal medicines [10]. In addition, the WHO also framed a 10-year policy (2014–2023) for adopting and streamlining complementary, alternative, and traditional

medicines. This encompassed generating sufficient clinical evidence-base, developing practice benchmarks, identifying interactions with other medications, and integrating in national health systems [11].

Inflammatory bowel diseases (IBD) are chronic inflammatory disorders of the gut, characterized by multiple intestinal symptoms such as abdominal pain, bloody stools, and diarrhea [12, 13]. Furthermore, many IBD patients suffer from extraintestinal symptoms affecting other organs such as the liver, skin, and joints [14–17]. These systemic effects not only result in an overall reduction in quality of life (QoL) [18] but also impact the socioeconomic productivity and emotional well-being of patients [19]. Despite the development of novel therapeutical regimens and strategies [20–24], a therapeutic ceiling is encountered [25] due to several reasons such as disease heterogeneity [26], large number of intrinsic and extrinsic associations, and disease complexity [27]. In addition, several adverse reactions have been reported as side-effects of existing therapies [28–30]. Concurrently, the use of CAMs among patients with chronic disorders including IBD has increased globally over the past several years [31–34].

Despite the prevalence of CAM usage among IBD patients, the type of CAMs and the underlying reasons for which they are used are quite heterogeneous across different populations. Furthermore, evidence from clinical trials suggests a high degree of variation in terms of quality of data/evidence [35] and scientifically proven efficacy for different types of CAMs [33]. Poor efficacies across populations increase the risk of unintended adverse reactions [36–39]. Hence, there is an urgent need to optimize the use of CAMs by identifying their potential—if any—for treatment, as well as identify any associated risks [35]. Clinical practice positions on CAMs have been reported by the European Crohn and Colitis Organization (ECCO), including consideration of curcumin as a complementary therapy to 5-ASA treatment in inducing remission for UC patients with mild to moderate disease [35]. Other CAMs such as mindfulness [40], meditation [41], yoga [42], and cognitive behavioral therapy [43, 44] have been reported to either decrease inflammatory activity or to improve QoL. However, most of the CAMs have insufficient evidence for regulated inclusion into clinical practice [35]. The potential of CAMs in improving the lives of IBD patients combined with their supposedly mild adverse reactions therefore warrants the generation of further evidence.

In this study, we aimed (a) to profile the use of CAMs in a cohort of IBD patients treated at an IBD tertiary referral center, (b) to identify the clinical and demographic factors associated with the use of CAMs in IBD (c), to determine the perceived efficacy of CAMs based on patient feedbacks, and (d) to decipher the attitudes of IBD patients towards CAMs.

## 2. Materials and Methods

*2.1. Ethical Approval.* The ethics committee of the University Hospitals Leuven approved the current study (reference

number S65255), which did not require an informed consent as the survey was entirely anonymous.

*2.2. CAM: Questionnaire and Sampling Cohort.* An anonymized Dutch version of the international questionnaire (Supplementary information 1-2) to measure the use of complementary and alternative medicine [45] was circulated (over an eight-week window spanning September and October 2021) among all IBD patients (approximately 1050 patients) visiting the IBD outpatient clinic and infusion unit of a tertiary referral center. The original international version of the questionnaire was customized (a) to be appropriate for IBD patients, (b) to include center-specific treatments, and (c) in terms of lay-out to make it more intuitive and user-friendly.

All participants were informed that questionnaire completion was done on a voluntary and anonymous basis. Patients completed the survey in the waiting room and deposited the questionnaire in a closed box to guarantee full anonymity.

*2.3. Statistical Analysis.* All the statistical analysis were carried out using R 4.1.0. Fisher’s exact test was used to evaluate dichotomous variables while comparing between groups. In the case of ordered categorical variables and continuous variables, the chi-squared test and Wilcoxon rank sum test were used, respectively. Efficacy index for a CAM was defined as the percentage of patients reporting “very helpful” and “somewhat helpful” outcomes, compared to the total number of patients responding to the efficacy question for the corresponding CAM. The cut-off for excluding CAMs below a certain number of users was set at a value above which the number of CAMs considered amounted to two-thirds of all the CAMs. Even though cannabis is often classified as an herbal medicine in international questionnaires, it was treated independently due to legislations on medical cannabis. Univariate associations for continuous data were evaluated using Student’s two-tailed *t*-test. Hypergeometric test was used to test the enrichment of particular categories in subsamples. Multiple testing correction on the hypergeometric test *P* values was performed using Bonferroni correction. *P* values of less than 0.05 were considered to be statistically significant.

## 3. Results

*3.1. Sociodemographic Factors and General Overview.* A total of 467 patients responded to the survey, of which thirteen patients did not provide information on diagnosis. Sociodemographic data of the 454 patients who provided their diagnostic status via the survey are listed in Supplementary information 3. Of the 454 patients (97.2% of 467) who provided information on diagnosis, 293 (64.5%) were diagnosed with CD and 161 (35.5%) with UC. Fifty-two percent of the responders were female. The vast majority of the participants had secondary education (98.2%), and 54.2% had at least a bachelor degree. Median disease duration of all participants was 12.1 (interquartile range, 5.2–23.1) years. Median disease duration (13.1 years for CD patients vs.

TABLE 1: Demographic and clinical factors and their relationship to the usage of CAMs as reported by the patients responding to the CAM questionnaire. <sup>1</sup>*n* (%); median (IQR) in years; <sup>2</sup>Pearson's chi-squared test; Fisher's exact test; Wilcoxon rank sum test.

Characteristic	<i>N</i>	Overall, <i>N</i> = 4541	CAM users, <i>N</i> = 1851	Non-CAM users, <i>N</i> = 2691	<i>p</i> value <sup>2</sup>
Gender	441				0.025
Male		229 (52%)	104 (58%)	125 (48%)	
Female		212 (48%)	74 (42%)	138 (52%)	
Highest educational qualification	421				0.020
Currently attending school		8 (1.9%)	1 (0.6%)	7 (2.8%)	
Secondary		184 (44%)	66 (38%)	118 (48%)	
Bachelor		135 (32%)	58 (33%)	77 (31%)	
Master		93 (22%)	49 (28%)	44 (18%)	
PhD		1 (0.2%)	0 (0%)	1 (0.4%)	
Diagnosis	454				0.14
CD		293 (65%)	112 (61%)	181 (67%)	
UC		161 (35%)	73 (39%)	88 (33%)	
Disease duration	385	12 (5.23)	11 (5.22)	13 (4.23)	0.9
Number of treatments	419				0.05
Five		1 (0.2%)	0 (0%)	1 (0.4%)	
Four		1 (0.2%)	0 (0%)	1 (0.4%)	
Three		10 (2.4%)	6 (3.4%)	4 (1.7%)	
Two		39 (9.3%)	23 (13%)	16 (6.6%)	
One		368 (88%)	148 (84%)	220 (91%)	
Alcohol intake	382				0.8
More than 1 to 2 drinks per day		22 (5.8%)	9 (5.7%)	13 (5.8%)	
1 to 2 drinks per day		81 (21%)	32 (20%)	49 (22%)	
Less than 1 drink per day		233 (61%)	100 (64%)	133 (59%)	
Not a drinker		46 (12%)	16 (10%)	30 (13%)	
Smoking status	410				0.5
Ex-smoker		239 (58%)	97 (57%)	142 (59%)	
Nonsmoker		115 (28%)	53 (31%)	62 (26%)	
Smoker		56 (14%)	21 (12%)	35 (15%)	

10.2 years for UC patients,  $p = 0.004$ ), number of IBD medical treatments received ( $p = 0.001$ , more UC patients received more than one treatment than CD patients), and smoking status (17% active smokers in CD and 7.3% in UC,  $p = 0.009$ ) differed significantly between CD and UC patients, respectively.

**3.2. CAM Usage.** Gender ( $p = 0.03$ , higher in females), highest educational qualification ( $p = 0.02$ , higher in more educated patients), and number of medical IBD treatments received ( $p = 0.05$ , higher in patients having received more than one therapy) were significantly associated with CAM use (Table 1). Other sociodemographic and clinical factors such as diagnostic status, disease duration, alcohol intake, and smoking status were not linked to CAM use.

Of the 1050 IBD patients provided the questionnaire, 44.7% (467) participated. 195 (41.8%) of the respondents reported CAM usage (Figure 1), comprising 73 UC patients (37.4%,  $n = 195$ ) and 112 CD patients (57.4%,  $n = 195$ ). More than one-third (37.4%) of the CAM-using IBD patients reported to have used only one CAM, followed by those using two CAMs (28.7%) (Supplementary information

4). Based on the answers provided by the CAM-using IBD patients, the top three reasons for the use of CAMs were listed as “minimize stress and symptoms” ( $N = 65$ , 33.3%), “better control of disease” ( $N = 57$ , 29.2%), and “positive experience of CAMs” ( $N = 47$ , 24.1%) (Figure 2). Meanwhile, the most prevalent sources of information for CAMs were “by myself” ( $N = 86$ , 44.1%), “family and friends” ( $N = 68$ , 34.9%), and “Internet and media” ( $N = 31$ , 15.9%). Only 13.8% of the patients obtained information about CAMs from a CAM practitioner (Figure 3).

Usage rates per CAM ranged from a maximum of 48.2% for vitamins down to 0.5% each for meditation and Ayurveda (Figure 4). However, only 23 patients (11.8% of the total number of IBD patients using CAMs) reported using supplements (vitamins and minerals) exclusively without using any other CAMs. After excluding supplements, CAM usage in the current cohort was 36.8%. Overall, the top five nonsupplemental CAMs used included probiotics ( $N = 63$ , 32.3%), curcumin ( $N = 46$ , 23.6%), yoghurt ( $N = 43$ , 22.1%), homeopathy ( $N = 40$ , 20.5%), and yoga ( $N = 40$ , 20.5%). In terms of patient-reported efficacy, only yoga (93.5%), cannabis (87.5%), and mindfulness (84.6%) had

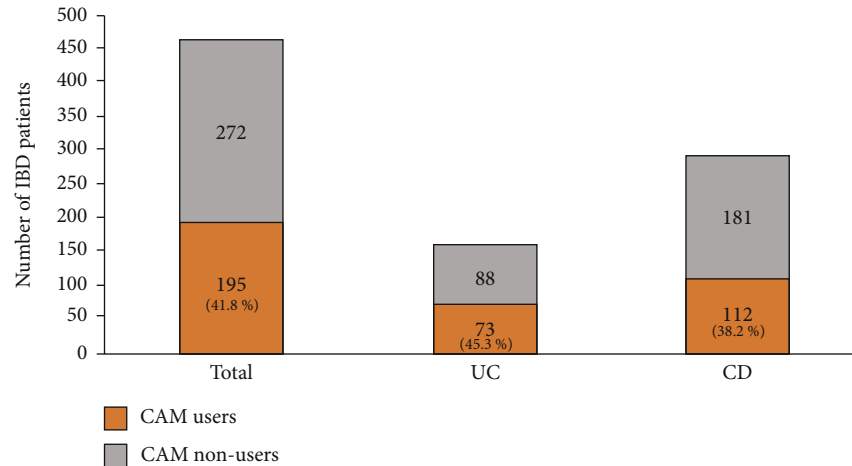


FIGURE 1: Summary of CAM use. Patients who were not classified as UC or CD are not shown here as a category.

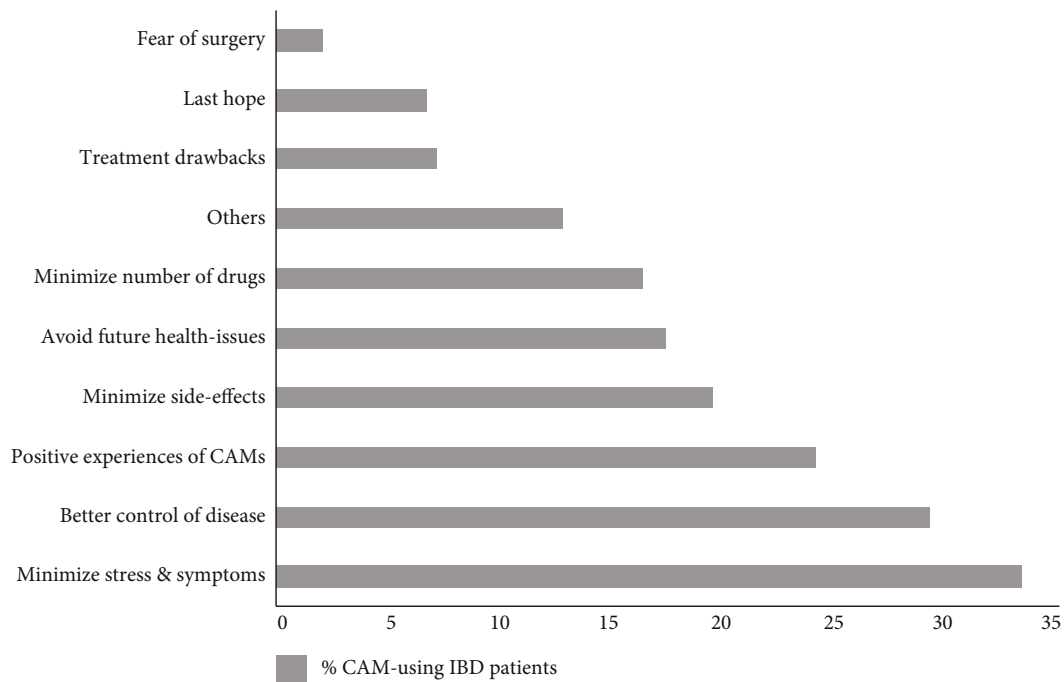


FIGURE 2: Reasons for CAM usage in IBD patients. The numbers in brackets represent the number of patients per corresponding category.

efficacy rates of >80% among CAMs with at least 25 users. Other CAMs, such as curcumin, with high user rates had lower efficacy rates (57%) compared to yoga, cannabis, and mindfulness (Figure 4, refer to glossary of terms for definitions).

Of the 80 patients who provided information on the type of symptoms (IBD or non-IBD related) for which CAMs were being used, over two-thirds reported to use CAMs to alleviate IBD-related symptoms. More CD (48.7%) than UC (22.5%) patients used CAMs for IBD-related symptoms ( $p = 0.04$ ). Furthermore, cannabis (19.6% vs. 4.1%,  $p = 0.002$ ) and minerals (17% vs. 6.85%,  $p = 0.04$ ) were used more frequently by CD patients than UC patients (Supplementary information 5).

**3.3. Worthiness of CAMs.** On average, patients spent 407 euros annually on CAMs. Numerically, CD patients spent more money on CAMs on a yearly basis as compared to UC patients (464 euro vs. 294 euro,  $p = 0.26$ ).

Interestingly, all participants responded that the financial expenditure on CAMs is “worth it.” 56% (53/95, hypergeometric enrichment test  $p = 0.00012$  signifying over-representation) of the patients who reported that the money they spent on CAMs is “worth it” expressed their interest to consult with their gastroenterologist about the interactions of CAMs with their ongoing conventional treatments. However, 51% ( $p = 0.0023$ ) of the CAM users using CAMs specifically against IBD symptoms reported that they did not consult with their gastroenterologist or IBD-specialist.

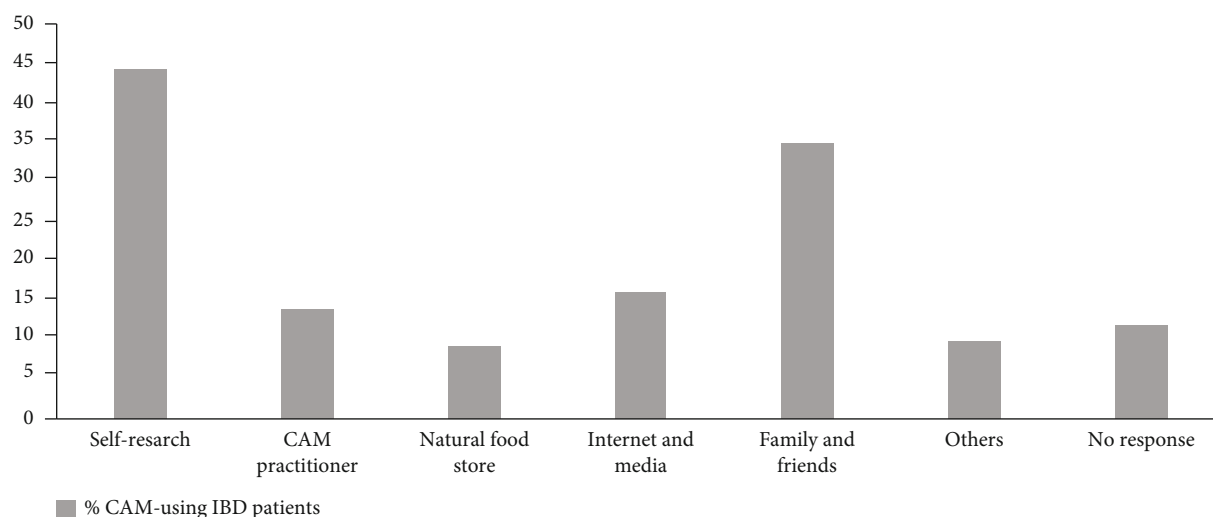


FIGURE 3: Sources of information about CAMs. The numbers in brackets represent the number of patients per corresponding category.

CAM	IBD patients using CAMs	% of IBD CAM users	% users responding to efficacy question	Very helpful (1)	Somewhat helpful (2)	Not at all helpful (3)	Don't know (4)	Efficacy index*
Acupuncture <sup>(8)</sup> 67-69, (-)47, (+)67-69	25	12.8	92	8	7	6	2	65.2
Aloe vera <sup>(8)</sup> 70	10	5.1	70	1	4	1	1	71.4
Ayurveda	1	0.5	100	0	1	0	0	100
Cannabis <sup>(8)</sup> 55,56	27	13.8	88.9	15	6	0	3	87.5 <sup>§</sup>
Curcumin <sup>(-)</sup> 42 <sup>(8)</sup> 49,50	46	23.6	56.5	4	11	3	8	57.7
Green tea	30	15.4	80	5	12	0	7	70.8
Homeopathy	40	20.5	92.5	8	13	8	8	56.8
Hypnotherapy <sup>(8)</sup> 71	3	1.5	100	0	1	1	1	33.3
Meditation	1	0.5	100	1	0	0	0	100
Mindfulness <sup>(+)</sup> 57	31	15.9	83.9	13	9	2	2	84.6 <sup>§</sup>
Minerals	24	12.3	62.5	8	4	1	2	80
Other CAMs <sup>^</sup>	31	15.9	74.2	8	9	4	2	73.9
Vitamins	94	48.2	61.7	21	24	2	11	77.6
Yoga <sup>(8)</sup> 42,54	40	20.5	77.5	14	15	2	0	93.5 <sup>§</sup>
Yoghurt	43	22.1	62.8	12	8	1	6	74.1

FIGURE 4: Efficacy indices of CAMs as reported by IBD patients responding to the survey. \*Defined per CAM as the % of patients reporting very helpful (1) and somewhat helpful (2) outcomes compared to the total number of patients responding to the efficacy question. Rectangle orange: mind-body medicine; rectangle blue: medicinal practices; rectangle green: herbal medicines; rectangle gray: other CAMs; rectangle yellow: cannabis. <sup>§</sup>CAMs with >80% efficacy index with a minimal sample size cut-off ( $N > 25$ ). <sup>^</sup>Other CAMs include Brazinfort, blueberry fennel tea, vegetarian diet, osteopathy, low FODMAP diet, melatonin drops, ozone therapy, "other herbs," glucosamine, foot reflexology, omega-3 fatty acids, psyllium, reiki, and light therapy. Refer to glossary of terms for definitions. <sup>(8)</sup>: CAMs with prior evidence in inducing and/or maintaining clinical remission of IBD. <sup>(-)</sup>: CAMs with prior evidence in inducing and/or maintaining endoscopic remission of IBD. <sup>(+)</sup>: CAMs with prior evidence in inducing decreased expression of proinflammatory biomarkers or increased expression of anti-inflammatory biomarkers [42, 47, 49, 50, 54, 56, 57, 64–68].

Overall, 44.1% (86/195) of the CAM users discussed the use of CAMs with their gastroenterologist or IBD-specialist.

#### 4. Discussion

CAM use among IBD patients is becoming increasingly prevalent. In our study focused on IBD patients from a tertiary referral center in Belgium, we report an overall CAM usage of 41.8%, in line with the observations from various

other studies [31, 46–48]. Although restricted to one center, this is also one among the very first studies to have profiled CAM usage among Belgian IBD patients. CAM usage was higher in patients with greater educational qualifications which could stem from an increased self-awareness about health as well their higher economic affordability for purchasing and accessing complementary products and services. Even after excluding the exclusive use of supplements which are generically and often seasonally used as nonmedicinal

nutraceuticals in the general population, 36.8% of IBD patients were found to use CAMs. The most frequently used CAMs included probiotics (32.3%), curcumin (23.6%), yoghurt (22.1%), homeopathy (20.5%), and yoga (20.5%). Frequently used CAMs (with at least 25 users) with high patient-reported efficacy indices (>80%) included yoga, cannabis, and mindfulness.

However, some CAMs do not have explicit and conclusive evidence based on clinical trials [35] or have side-effects and adverse reactions [49–53]. For example, homeopathy has no direct evidence of clinical or endoscopic efficacy in treating IBD patients, while curcumin and cannabis are reported to have mild side-effects despite exhibiting clinical or endoscopic efficacy [49–52]. This could be attributed to various reasons including formulation and dosage in addition to other drawbacks of the study which are discussed below. Despite the drawbacks of patient-reported efficacies and outcomes, observations from our survey confirm previous evidence and clinical practice positions, with yoga and cannabis indeed reducing clinical symptoms [42, 54–56], while mindfulness is known to modulate the downregulation of objective inflammatory biomarkers [57]. As far as the clinically “accepted” CAMs are concerned [35], curcumin, probiotics, yoga, and mindfulness/relaxation-related techniques stand out.

Given that many of the CAMs (be it products or services) are not recognized as medicinal therapies and thereby not subject to stringent regulatory oversight, the risks associated with an ad hoc use of CAMs cannot be underestimated. Furthermore, the results from our survey reflect the above-mentioned inference with about 51% of the IBD patients using CAMs specifically for IBD-related symptoms having not consulted their gastroenterologist. Besides, many patients also reported that they would like to discuss with their treating physician whether CAMs could potentially interfere with their conventional therapies. Hence, based on CAM usage and the type of CAMs in use, IBD patients need professional guidance from gastroenterologists or dedicated care-specialists to optimize or avoid usage. Therefore, various stakeholders (funders, research institutions, pharmaceutical industry, clinical bodies) need to acknowledge the use of CAMs and facilitate participative clinical decision making along with patients in order to (1) minimize side-effects due to the CAMs themselves or due to the interactions between CAMs and conventional therapies, (2) minimize economic expenditure on CAMs with low efficacies, (3) enable the establishment of holistic patient-centric care, and (4) encourage evidence-based CAM use to ameliorate IBD symptoms, improve quality of life, and/or induce/maintain objective outcomes of disease activity [58].

However, we acknowledge that several hurdles exist for the above-described recommendations to be translated into real-life clinical care. First, CAMs are not regulated in the same way as conventional therapies. This poses challenges in interpreting the authenticity of CAMs available in the market. Second, due to the adverse reactions induced by some of the CAMs, many clinicians are still suspicious of CAMs. Third, evidence for the efficacy of CAMs is very limited in terms of number of properly conducted randomized

clinical trials. This poses a considerable limitation while evaluating CAM efficacy objectively. Finally, all of the above-mentioned aspects result in the lack of scientific considerations to adopt CAMs into mainstream health-care, which is a major hurdle since it marginalizes CAMs and thereby promotes misuse by patients who do not find symptomatic relief.

Despite the interesting findings, our survey has some inherent limitations. We did not profile CAM usage among non-IBD or healthy controls. Even though the reported rates of CAM usage in IBD patients in our survey are comparable to those reported in other studies, the voluntary basis of the current survey might have induced some bias and potentially enriched responses by CAM believers over nonbelievers. Also, as a single center-based study, there is an inherent limit to the generalizability of the results, especially given the possibility that the more refractory patients might be more predisposed to using CAMs. However, we do believe that the anonymous character of the survey resulted in more honest feedback, given some patients experience a big hurdle to speak about their CAM use with their treating physician. Nevertheless, self-reported efficacies by the patients need not necessarily mirror real-world efficacies. In addition, the variability across various CAMs in terms of users who responded to the efficacy-related queries could have biased the interpretation of the results. Finally, the granularity of the survey limited the retrieval of specific details such as phenotypical IBD characteristics or the formulation of CAMs or the subclassifications of CAMs. An example would be cannabis which has both medicinal and recreational formulations with differing effects [59–63]; this level of specificity was not included in the survey.

In conclusion, based on the profiling of CAM usage among IBD patients in a tertiary IBD referral center, more than one in three patients use CAMs for both IBD- and non-IBD-related symptoms. Even though some of the CAMs such as yoga, cannabis, and mindfulness have high patient-reported efficacy indices, CAMs in general could have side effects and interfere with concomitant conventional therapies. Therefore, patient education and engagement need to be prioritized, as well as properly conducted trials to objectively assess the potential of CAMs in the holistic care of patients with IBD.

#### 4.1. Glossary of Terms

**4.1.1. Acupuncture.** Acupuncture is a technique in which practitioners stimulate specific points on the body—most often by inserting thin needles through the skin. It is one of the practices used in traditional Chinese medicine [69].

**4.1.2. Ayurveda.** The ancient Indian medical system, also known as Ayurveda, is based on ancient writings that rely on a “natural” and holistic approach to physical and mental health. Ayurvedic medicine is one of the world’s oldest medical systems and remains one of India’s traditional health care systems. Ayurvedic treatment combines products (mainly derived from plants but may also include animal, metal, and mineral), diet, exercise, and lifestyle [69].

**4.1.3. Cognitive Behavioral Therapy.** Psychotherapy combines cognitive therapy with behavior therapy by identifying faulty or maladaptive patterns of thinking, emotional response, or behavior and substituting them with desirable patterns of thinking, emotional response, or behavior [43, 44].

**4.1.4. Curcumin.** Curcumin is a major component of turmeric, and the activities of turmeric are commonly attributed to curcuminoids (curcumin and closely related substances). Curcumin gives turmeric its yellow color [69].

**4.1.5. Homeopathy.** Homeopathy, also known as homeopathic medicine, is a medical system that was developed in Germany more than 200 years ago. It is based on two unconventional theories: “Like cures like”—the notion that a disease can be cured by a substance that produces similar symptoms in healthy people. “Law of minimum dose”—the notion that the lower the dose of the medication, the greater its effectiveness. Many homeopathic products are so diluted that no molecules of the original substance remain [69].

**4.1.6. Hypnotherapy.** Hypnosis (also called hypnotherapy) has been studied for a number of conditions, including irritable bowel syndrome (IBS), state anxiety (e.g., before medical procedures or surgeries), menopausal symptoms, hot flashes in breast cancer survivors, headaches, and posttraumatic stress disorder. It has also been studied for pain control and smoking cessation [69].

**4.1.7. Mindfulness.** Mindfulness is the practice of maintaining a nonjudgmental state of heightened or complete awareness of one’s thoughts, emotions, or experiences on a moment-to-moment basis [69].

**4.1.8. Meditation.** Meditation can be defined as a set of techniques that are intended to encourage a heightened state of awareness and focused attention. Meditation has a long history of use for increasing calmness and physical relaxation, improving psychological balance, coping with illness, and enhancing overall health and well-being [69].

**4.1.9. Yoga.** Yoga is an ancient and complex practice, rooted in Indian philosophy. It began as a spiritual practice but has become popular as a way of promoting physical and mental well-being and consists of physical postures, breathing techniques, and sometimes meditation to promote physical and emotional well-being [69].

**4.1.10. Osteopathy.** Osteopathy is a way of detecting, treating, and preventing health problems by moving, stretching, and massaging a person’s muscles and joints. Osteopathy is based on the principle that the well-being of an individual depends on their bones, muscles, ligaments, and connective tissue functioning smoothly together [70].

**4.1.11. Low FODMAP Diet.** A FODMAP diet is a 3-step diet used to help manage the symptoms of medically diagnosed irritable bowel syndrome (IBS). IBS is a very common gut problem with symptoms including abdominal (tummy) pain, bloating, wind (farting), and changes in bowel habit (diarrhea, constipation, or both) [71].

**4.1.12. Reiki.** Reiki is a complementary health approach in which practitioners place their hands lightly on or just above a person, with the goal of directing energy to help facilitate the person’s own healing response. It is based on an Eastern belief in an energy that supports the body’s innate or natural healing abilities [69].

## Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

## Conflicts of Interest

MF reports research support from AbbVie, Amgen, Biogen, Janssen, Pfizer, Takeda, and Viatris; speaker’s fees from AbbVie, Amgen, Biogen, Boehringer Ingelheim, Falk, Ferring, Janssen, Lamepro, MSD, Mylan, Pfizer, Sandoz, Takeda, and Truvion Healthcare; and consultancy fees from AbbVie, Boehringer Ingelheim, Celltrion, Janssen, Lilly, Medtronic, MSD, Pfizer, Sandoz, Takeda, and Thermo Fisher. JS reports research support from Galapagos; speaker’s fees from AbbVie, Falk, Takeda, Janssen, and Fresenius; and consultancy fees from Janssen and Ferring. SV reports research support from AbbVie, J&J, Pfizer, Galapagos, and Takeda and consultancy and/or speaking fees from AbbVie, Abivax, Agomab, Arena Pharmaceuticals, Avaxia, Bristol Myers Squibb, Boehringer Ingelheim, Celgene, Dr. Falk Pharma, Ferring, Galapagos, Genentech-Roche, Gilead, GSK, Hospira, Janssen, Mundipharma, MSD, Pfizer, ProDigest, Progenity, Prometheus, Robarts Clinical Trials, Second Genome, Shire, Surrozen, Takeda, Theravance, and Tillotts Pharma AG. BV reports research support from Pfizer; speaker’s fees from AbbVie, Biogen, Bristol Myers Squibb, Chiesi, Falk, Ferring, Galapagos, Janssen, MSD, Pfizer, R-Biopharm, Takeda, Truvion, and Viatris; and consultancy fees from Alimentiv, Applied Strategic, Atheneum, Bristol Myers Squibb, Galapagos, Guidepoint, Ipsos, Janssen, Progenity, Sandoz, Sosei Heptares, Takeda, and Tillotts Pharma.

## Authors’ Contributions

PS was involved in data curation, formal analysis, methodology, software, visualization, and writing original draft and reviewing/editing. BK was involved in conceptualization and review/editing. RS, EdD, PG, AP, and TL were involved in project administration. JW and JS were responsible for the resources and reviewed/edited the manuscript. MF was involved in supervision and review/editing. SV was involved in conceptualization, funding acquisition, supervision, and review/editing. BV was involved in conceptualization, funding acquisition, investigation, project administration, supervision, writing original draft, and reviewing/editing. All the authors read and approved the final version of the manuscript.

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## Supplementary Materials

*Supplementary 1.* Supplementary information 1: English version of the questionnaire used in the study.

*Supplementary 2.* Supplementary information 2: Dutch version of the questionnaire used in the study.

*Supplementary 3.* Supplementary information 3: demographic and clinical factors and their relationship to the diagnostic status (UC, CD) of patients responding to the CAM questionnaire. <sup>1</sup>*n* (%); median (IQR) in years; <sup>2</sup>Pearson's chi-squared test; Fisher's exact test; Wilcoxon rank sum test. *N* represents the number of patients who responded to the corresponding query.

*Supplementary 4.* Supplementary information 4: fraction of patients sorted according to the number of CAMs used. Individual CAMs were used rather than their classifications (medical practices, mind-body medicine, cannabis, other CAMs).

*Supplementary 5.* Supplementary information 5: comparison of CAM usage between UC and CD patients. \*10 patients who were not classified as UC or CD were not included. <sup>§</sup>CD used as the base group for the calculation of the odds ratio.

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