Socio-Psycho-Somatic (SPS) Therapy for Canine Inflammatory Bowel Disease (canIBD): A Retrospective Observational Study Integrating Microbiome-Preserving Dietary Intervention, Psychosocial Management, and One Health Medicine

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Abstract

Background: Canine inflammatory bowel disease (IBD) is a complex, chronic gastrointestinal disorder of multifactorial etiology involving dietary components, microbial dysbiosis, and immune dysregulation. Psychosocial stress factors, however, are rarely incorporated into conventional diagnostic or therapeutic frameworks. Standard immunosuppressive and antibiotic treatments frequently provide only temporary symptom relief while disrupting the intestinal microbiome, potentially leading to therapeutic dependency and long-term complications. Emerging insights into the gut–brain axis, microbiome function, and owner–dog stress synchronization suggest that a holistic approach—addressing somatic, psychological, and social dimensions simultaneously—may substantially improve outcomes.

Objective: To evaluate the clinical efficacy of a comprehensive socio-psycho-somatic (SPS) therapeutic protocol, and to introduce the multidimensional Canine Inflammatory Bowel Disease Activity Index (mCIBDAI) as a novel, anamnestic diagnostic and monitoring instrument.

Methods: A retrospective observational analysis was conducted on 50 client-owned dogs with chronic gastrointestinal signs (≥3 weeks duration), treated with the SPS protocol at a specialized veterinary telemedicine practice between January 2018 and May 2025. The mCIBDAI questionnaire was administered at baseline and at follow-up intervals (range: 2–30 months; mean: 7.5 months). The SPS intervention comprised: (1) strict elimination of ultra-processed feeds (UPF) with moderately processed dietary alternatives (IBDerma formulations); (2) microbiome-supporting supplementation emphasizing natural fermented foods and prebiotics (MIKROBIOMAX system); (3) minimal, targeted pharmacological support when clinically necessary; and (4) psychosocial stabilization of the owner–pet dyad. Statistical analysis included paired t-tests, Bonferroni–Holm correction for multiple comparisons, and Cohen's d effect sizes.

Results: Highly significant improvements were observed across all mCIBDAI parameters ($p < 0.001$) with large effect sizes (Cohen's d). Mean mCIBDAI score decreased from 6.8 at baseline to 3.6 at follow-up, representing a 52% improvement. Approximately 60–70% of patients achieved sustained clinical remission through dietary intervention alone, requiring no long-term medication. The remaining 30–40% maintained excellent symptom control on minimal maintenance pharmacotherapy. Representative case series (n = 3) demonstrated rapid improvement within 1–4 months, with sustained remission confirmed over follow-up periods of up to three years. Notably, 33% of dog owners reported concurrent gastrointestinal problems, consistent with bidirectional owner–dog stress transmission via cortisol synchronization.

Conclusions: The SPS therapeutic approach represents a paradigm shift in canIBD management. The high proportion of medication-free remissions (60–70%) challenges conventional assumptions about the necessity of lifelong immunosuppression. The observed owner–dog gastrointestinal symptom correlation underscores the importance of treating the human–animal dyad within a One Health Medicine framework. This integrative approach offers a biologically plausible, clinically effective, and economically sustainable model for chronic disease management in companion animals.

Keywords: *canine inflammatory bowel disease; IBD; canIBD; CIBDAI; mCIBDAI; IGOR; microbiome; elimination diet; ultra-processed feeds; moderately processed feed; fermented foods; psychosomatic medicine; gastroesophageal reflux; stress synchronization; human–animal bond; One Health Medicine*

Abbreviations

The following abbreviations are used in this manuscript:

CIBDAI Canine Inflammatory Bowel Disease Activity Index

canIBD Multidimensional canine inflammatory bowel disease (as defined herein)

CE Chronic Enteropathy

HPA Hypothalamic–Pituitary–Adrenal (axis)

IBD Inflammatory Bowel Disease

IGOR Inflammatory Gastro-Oesophageal Reflux

LGI Low-Grade Inflammation

mCIBDAI Multidimensional Canine Inflammatory Bowel Disease Activity Index

MPF Moderately Processed Feed

PPI Proton Pump Inhibitor

SPS Socio-Psycho-Somatic

UPF Ultra-Processed Food/Feed

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1. Introduction

Canine inflammatory bowel disease (IBD) encompasses a heterogeneous spectrum of chronic gastrointestinal disorders characterized by persistent or recurrent clinical signs and histopathologic evidence of low-grade mucosal inflammation (LGI) [1,2,52]. Despite decades of research, the etiology remains incompletely understood, therapeutic approaches vary widely, and outcomes with conventional management are often inconsistent [3,4]. The recent reclassification from 'idiopathic IBD' to chronic enteropathy (CE) with treatment-response-based subclassifications—food-responsive (FRE), antibiotic-responsive (ARE), tylosin-responsive (TRE), and immunosuppressant-responsive enteropathy (IRE)—acknowledges this multifactorial nature while highlighting the empirical character of current management [5].

1.1. Current Challenges in Conventional IBD Management

Standard diagnostic approaches, including endoscopy with histopathological examination, are invasive, costly, and frequently yield non-specific findings [6,7,52]. Histopathologic grading often does not correlate with clinical severity as quantified by the CIBDAI [8]. Treatments involving systemic corticosteroids, broad-spectrum antibiotics, and immunosuppressive agents may provide short-term relief but risk disrupting the intestinal microbiome, potentially inducing dysbiosis and therapeutic dependency [9–11]. Comprehensive reviews consistently demonstrate that long-term outcomes with conventional immunosuppressive therapy are frequently suboptimal [12,13,52], and that microbiome disruption may paradoxically worsen the underlying dysbiosis [14,15].

1.2. The Gut–Brain Axis and Psychosomatic Dimensions

Canine IBD represents not merely a gastrointestinal disorder but a systemic condition involving complex bidirectional signaling among intestinal microbiota, the enteric nervous system, immune cells, and the central nervous system [16–18]. This microbiota–gut–brain axis enables intestinal microorganisms to modulate brain function through vagal signaling, immune mediators, and microbial metabolites such as short-chain fatty acids [19,55].

Particularly relevant is the documented long-term stress synchronization between dogs and their owners, with hair cortisol concentrations correlating significantly over extended periods [20–22]. This interspecific stress transmission indicates that the owner's psychological state may directly impact canine physiology, serving as an underappreciated trigger in IBD pathogenesis. Emotional contagion has been substantiated through behavioral synchronization, cortisol mirroring, and physiological stress response coordination [23,24].

1.3. Ultra-Processed Feeds and Microbiome Disruption

Emerging evidence implicates ultra-processed feeds (UPFs—including hydrolyzed, extruded, and canned products) [51,54] as contributors to chronic intestinal inflammation [50] through microbiome disruption, increased intestinal permeability, and systemic low-grade inflammation [25–27]. Consumption of UPFs has been associated with decreased microbial diversity, reduced populations of beneficial organisms (e.g., Akkermansia muciniphila, Faecalibacterium prausnitzii), and intestinal barrier disruption [28–30]. Food additives, particularly emulsifiers, have been shown to alter gut microbiome composition and promote intestinal inflammation [31,32]. The concept of 'food matrix intolerance' may explain why many canIBD patients respond favorably to carefully formulated elimination diets [33].

1.4. Microbiome as Therapeutic Target

The intestinal microbiome has emerged as a critical therapeutic target in chronic enteropathy [34–36]. Dysbiosis is consistently observed in affected dogs [37,38]. Short-chain fatty acids, particularly butyrate, play essential roles in maintaining intestinal barrier integrity and modulating immune responses [39,40]. Dietary interventions emphasizing fermented feeds and prebiotics have shown clinical promise [41–43], and fermented foods provide not only living probiotic organisms but also bioactive postbiotic metabolites that may exert beneficial effects independently of bacterial viability [44,45].

1.5. The SPS Conceptual Framework

We propose a socio-psycho-somatic (SPS) framework recognizing three interdependent dimensions that must be addressed simultaneously for optimal therapeutic outcomes:

Somatic (S): Physical manifestations including diarrhea, vomiting, weight loss, mucoid or bloody stool coating, painful defecation, nocturnal urgency, the 'prayer position', flatulence, and measurable laboratory parameters (AP, cPLI, cortisol, CRP, albumin, folate, cobalamin).

Psycho (P): Emotional and behavioral components including anxiety, stress responses, pica syndrome, excessive licking and lip-smacking, behavioral changes, and responses to environmental stressors.

Socio (S): Environmental factors including owner–pet relationship dynamics, household stability, owner psychological and gastrointestinal health, early-life adverse experiences (e.g., shelter origin), and the quality of social enrichment.

1.6. IGOR: The Overlooked Upper Gastrointestinal Component

Inflammatory gastro-oesophageal reflux (IGOR) is a frequently misdiagnosed condition presenting with nocturnal restlessness (characteristically between 02:00 and 05:00 h), excessive salivation, lip-smacking, and regurgitation, often in the absence of elevated CRP [46]. Unlike in humans, proton pump inhibitors (PPIs) appear to be largely ineffective and potentially harmful when used long-term in dogs [47,48]. The present study proposes incorporating IGOR into the canIBD nomenclature, thus broadening the diagnostic framework for canine chronic gastrointestinal enteropathy.

1.7. Study Objectives

This study aimed to:

- Introduce and validate the mCIBDAI as a comprehensive anamnestic diagnostic and monitoring tool for canIBD;
- Evaluate the clinical efficacy of the SPS therapeutic protocol in a retrospective field population;
- Assess the impact of UPF elimination and microbiome-supporting dietary intervention;
- Examine psychosocial dimensions of canIBD, including owner–dog stress synchronization, using an anamnestic Owner Score;
- Establish evidence-based treatment algorithms that minimize pharmacological intervention and iatrogenic microbiome disruption.

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2. Materials and Methods

2.1. Study Design and Patient Population

This retrospective observational study included client-owned dogs presenting with chronic or recurrent gastrointestinal signs consistent with canIBD at a specialized veterinary telemedicine practice (Müllheim, Germany) between January 2018 and May 2025. Inclusion criteria were: (1) chronic gastrointestinal signs of ≥3 weeks duration; (2) completion of a baseline mCIBDAI questionnaire; (3) owner compliance with the SPS therapeutic protocol; and (4) completion of at least one follow-up mCIBDAI assessment at 8–12 or more weeks. Exclusion criteria included confirmed intestinal neoplasia, acute infectious enteritis, and severe concurrent systemic disease.

For the primary statistical analysis, 50 consecutive cases meeting all inclusion criteria with complete paired mCIBDAI data (baseline versus follow-up) were selected. An extended clinical database comprising over 5,500 cases provided supplementary epidemiological data. Three representative patients with longitudinal follow-up (ranging from 1 month to 3 years) are presented as case series to illustrate typical clinical response patterns.

2.2. The Multidimensional CIBDAI (mCIBDAI)

The original CIBDAI developed by Jergens et al. [49] was substantially expanded to capture the full multidimensional scope of canIBD. The six traditional somatic CIBDAI parameters (stool consistency/frequency, vomiting, activity, appetite, and body weight) were retained and supplemented with an additional 58 parameters encompassing psycho and socio dimensions. In total, 64 anamnestic SPS-relevant mCIBDAI parameters were assessed, using either binary (yes/no) responses or a 1–6 severity scale (1 = very good, no problems; 6 = extremely frequent or severely impaired). The cumulative mCIBDAI score ranges from 0 to 10 (0 = no disease activity; 10 = extremely severe disease activity). The complete parameter list is provided below.

Signalment and History: breed, age, sex, reproductive status, body weight, detailed anamnesis, feeding frequency and timing, current diet and snacks, recent medications, current supplements.

Gastrointestinal Symptoms (Somatic): flatulence, vomiting, haematemesis, diarrhoea, melaena, mucoid or haemorrhagic stool coating, 'Nuremberg sausage'-type pellet feces, tenesmus, apparent abdominal pain, polyphagia, anorexia, body weight loss, borborygmi, lip-smacking/sour belching/heartburn equivalents, coprophagia, pica behavior, explosive defecation, predominantly small stool volumes, defecation frequency, alteration of general condition during gastrointestinal crises, subjective quality-of-life rating, prayer position.

Psycho and Behavioral Parameters: increased restlessness, inaccessibility, fearfulness, phobias, nocturnal restlessness and lip-smacking (especially 02:00–05:00 h, with or without nocturnal defecation urgency), recurring episodic exacerbations over time.

Laboratory Parameters (where available): Giardia, CRP, albumin, cPLI, AP, GOT, serum cortisol, folate, cobalamin.

Additional Diagnostics (where available): endoscopy results, histopathology results, presence of pruritus.

Socio and Owner Dimensions: onset age of symptoms, presence of concurrent gastrointestinal problems in the dog's social environment, restriction of owner's daily life/quality of life/social life/work capacity, owner stress burden, perceived owner–dog emotional coupling, nighttime disturbance of owner's sleep, owner gastrointestinal history predating or concurrent with the dog's illness.

2.3. Owner Score

A dedicated Owner Score was developed to systematically quantify the psychosocial burden on the owner–pet dyad. It comprised ten items: restriction of daily life (0–5), impairment of general quality of life (0–5), restriction of social life (0–5), restriction of work capacity (0–5), stress burden related to the dog's health (0–5), perceived degree of owner–dog emotional coupling (0–5), nocturnal restlessness of the dog (yes/no), constant caregiver burden (yes/no), owner's concurrent gastrointestinal symptoms (yes/no), and whether owner gastrointestinal symptoms predated the dog's illness (yes/no).

2.4. SPS Therapeutic Protocol

The SPS-focused telemedicine consultation and intervention comprised four integrated components (A–D):

A. Dietary Foundation — Ultra-Processed Feed Elimination

Strict elimination of all ultra-processed feeds was implemented. Patients were transitioned to moderately processed feeds (MPF) formulated with ruminant protein, produced by low-pressure steam treatment (3 bar, 133°C, in accordance with Regulation (EC) No 1069/2009), followed by mixing and chilled pressing. Commercial products used were from the IBDerma line (Hyposens, Happy Chi, Tapiovo Mini, VeggieSens; LupoVet GmbH, Müllheim, Germany). Feeding protocol: approximately 1.2% of body weight daily, soaked in 2–3× volume water, divided into 3–5 meals per day, including a late-evening or automated night-time portion where indicated. Grains, potatoes, ultra-processed treats, and skin-on snacks were strictly avoided.

B. MIKROBIOMAX Nutritional System — Natural Fermented Foods and Prebiotics

Commercial probiotic products were deliberately avoided in favour of naturally fermented foods and prebiotic substrates, which provide greater microbial diversity and supply beneficial postbiotic metabolites. The following foods were recommended lifelong, summarized under the mnemonic 'SAVE SELF BE CALM':

- S – Sauerkraut or fresh coleslaw, gradually increased to 1% of body weight daily
- A – Artichoke (steamed or raw), up to 0.5% of body weight daily
- V – Apple cider vinegar: large dogs up to 3 × 2 tablespoons/day; small dogs up to 3 × 1 teaspoon/day
- E – Endive (steamed or raw), up to 0.5% of body weight daily
- S – Spare ribs (lamb or goat), occasionally
- E – Chard/spinach beet (steamed or raw), up to 0.5% of body weight daily
- L – Liver (sheep or beef), occasionally
- F – Fennel or caraway tea, or seeds of fennel/caraway
- BE – Beetroot and pickled cucumbers (from jar, including juice), up to 1% of body weight daily
- C – Ripened surface-ripened cheese (e.g., Limburger): 2 × 5 g per 10 kg body weight daily; 2 × 10 g for 30–40 kg dogs
- A – Asparagus or rocket (arugula)
- L – Liver (sheep or beef), occasionally
- M – Moro soup (carrot soup, according to E. Moro), a few tablespoons per meal

C. Targeted Supplementation

The following supplements (all LupoVet GmbH, Germany) were used, individually adjusted to body weight:

Supplement	Frequency	≤10 kg	10–30 kg	>30 kg
IGOReflux or IGORvegan	3–5×/day	~1.5 g	2–4 g	4–6 g
IGORvegan capsules (alternative)	3–5×/day	1 cap.	1–3 caps.	9–12 caps.
IGORMaxi capsules (alternative)	3–5×/day	–	1 cap.	1–2 caps.
IGORzym	3–5×/day	~1.5 g	2–4 g	4–6 g
Inu-Tryptophan	2×/day	½ cap.	½–1 cap.	1 cap.
Lup-Enterol	2–3×/day	1 level tsp.	1 tsp.	1 tbsp.
Boswellia serrata 65% BA (as needed)	3×/day	½–1 cap.	1–2 caps.	2–3 caps.
PropionArte (as needed)	2×/day	½–1 cap.	1–2 caps.	2–3 caps.

Note: Supplements were ideally administered before meals or mixed into food, with an evening dose at bedtime or during the night if required. Every patient requires individual dose adjustment.

D. Minimal Pharmacological Support

Pharmacological agents were used only when clinically indicated, following veterinary consultation, and at the lowest effective dose:

Agent	Frequency	≤10 kg	10–30 kg	>30 kg
Budesonide 3 mg caps. (in ripened cheese)	Once daily (morning)	60–150 globules	~½ capsule	½–1 capsule
Sulfasalazine 500 mg (crush if needed)	Three times daily	1/12 tablet	1/6 tablet	¼–½ tablet

Important: In <1% of cases, sulfasalazine may cause initially reversible keratoconjunctivitis sicca (KCS), typically within the first three weeks of administration. Dose reduction or discontinuation is indicated if KCS occurs.

For canIBD with elevated CRP: a single dexamethasone injection (0.2 mg/kg i.m.) may be administered at initiation, followed by sulfasalazine (~7 mg/kg three times daily for 8–12 weeks, with gradual reduction to ~1–2 mg/kg maintenance). Target: 60–70% medication-free remission after 6–12 months.

For IGOR with normal CRP: budesonide (80–120 globules per 10–15 kg body weight, exploiting its local-acting pharmacodynamic profile), combined with frequent small meals (3–5×/day), automated night-time feeding, and strict avoidance of long-term PPIs and acid-stimulating treats.

E. Psychosocial Intervention

Within each telemedicine consultation, owners were systematically educated regarding: owner–dog stress synchronization and emotional contagion mechanisms; the importance of consistent daily routines; owner self-care as a therapeutic lever; separation anxiety management; environmental enrichment strategies; and realistic expectation setting. Owners were sensitized to the projection mechanism—that their own psychological state directly influences the physiological stress response in their dog.

2.5. Statistical Analysis

Data analysis using R (Version 4.1.1) and SPSS (Version 29), For effect sizes, see Cohen (57), The tests for the CIBDAI variables were additionally adjusted for multiple testing using the Bonferroni-Holm method (59) (corresponding to the output from `p.adjust` in R), In cases involving multiple questionnaires, the "initial questionnaire" with the lowest case number and the "control questionnaire" with the highest case number were selected, respectively (57, 58, 59). Statistical significance was set at $p < 0.05$.

2.6. Ethical Considerations

This retrospective study utilized anonymized clinical data from client-owned dogs that had received or were receiving standard veterinary care with unsatisfactory outcomes. Informed consent was obtained from all owners prior to telemedicine consultation and data collection. No experimental procedures were conducted beyond routine clinical management. The study was conducted in accordance with applicable ethical guidelines for retrospective veterinary research.

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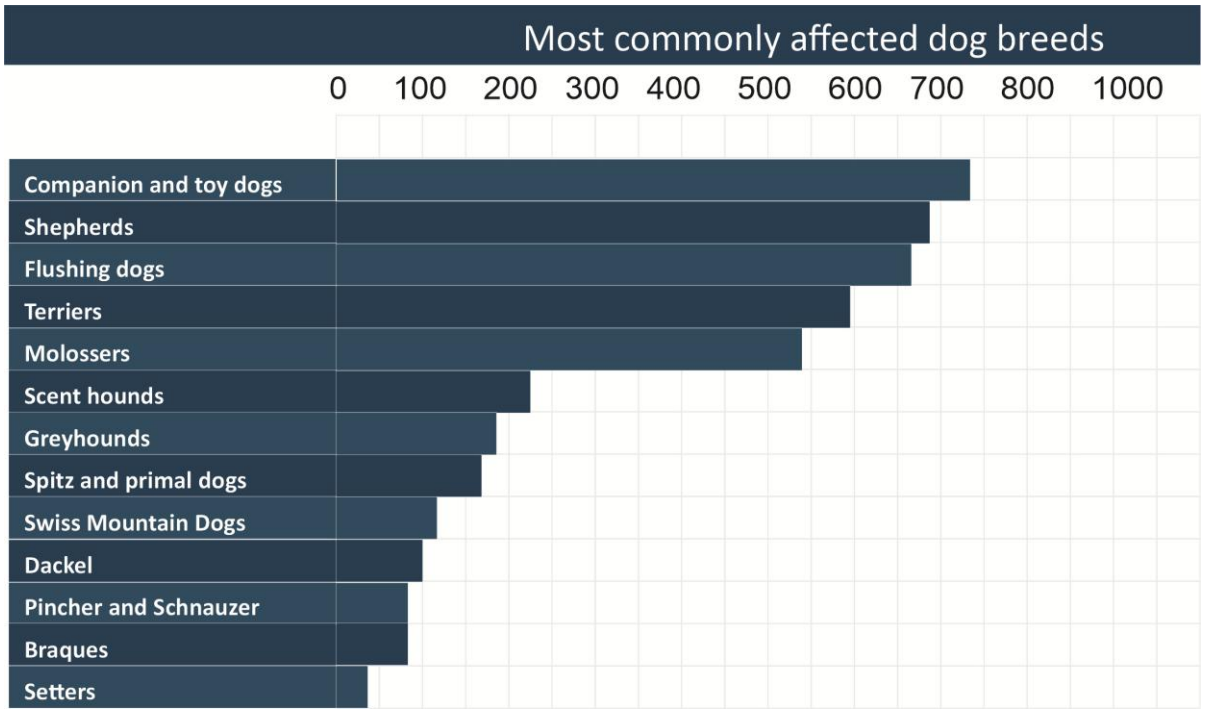
3. Results

3.1. Population Characteristics

The primary statistical cohort comprised 50 cases; the supplementary epidemiological database contained over 5,500 cases. The most frequently represented breeds were

German Shepherd, Labrador Retriever, French Bulldog, Yorkshire Terrier, Border Collie, and mixed-breed dogs; however, no breed predisposition was identified, and all breeds were affected. Both sexes were represented across a broad age range.



3.2. Clinical Presentation

Most common presenting signs (in order of decreasing frequency, database N > 5,500): nocturnal restlessness (02:00–05:00 h), flatulence and borborygmi, mucoid or haemorrhagic stool coating, prayer position, chronic-recurrent diarrhoea, tenesmus, lethargy, excessive salivation/lip-smacking, pica behavior, vomiting/nausea, weight loss, behavioral changes, exhaustion, loss of vocalisation capacity in severe IGOR, and grass consumption.

Less common signs: aggression, epileptiform seizures, anal gland involvement, and exercise intolerance.

Histological reports, where submitted, frequently described low-grade lymphocytic–plasmacytic or eosinophilic infiltration in the submucosal and mucosal layers, with no consistent correlation between histopathological grade and clinical severity as measured by the mCIBDAI.

3.3. Primary Outcome: mCIBDAI Score Changes

Independent statistical analysis confirmed highly significant improvements across virtually all mCIBDAI parameters and subscales ($p < 0.001$), with large effect sizes (Cohen's d**).**

The interval between baseline and follow-up questionnaire completion ranged from 2 to 30 months, with a mean of 7.5 months. Owner compliance with follow-up questionnaires was notably low among owners reporting high satisfaction, introducing a conservative bias into the results.

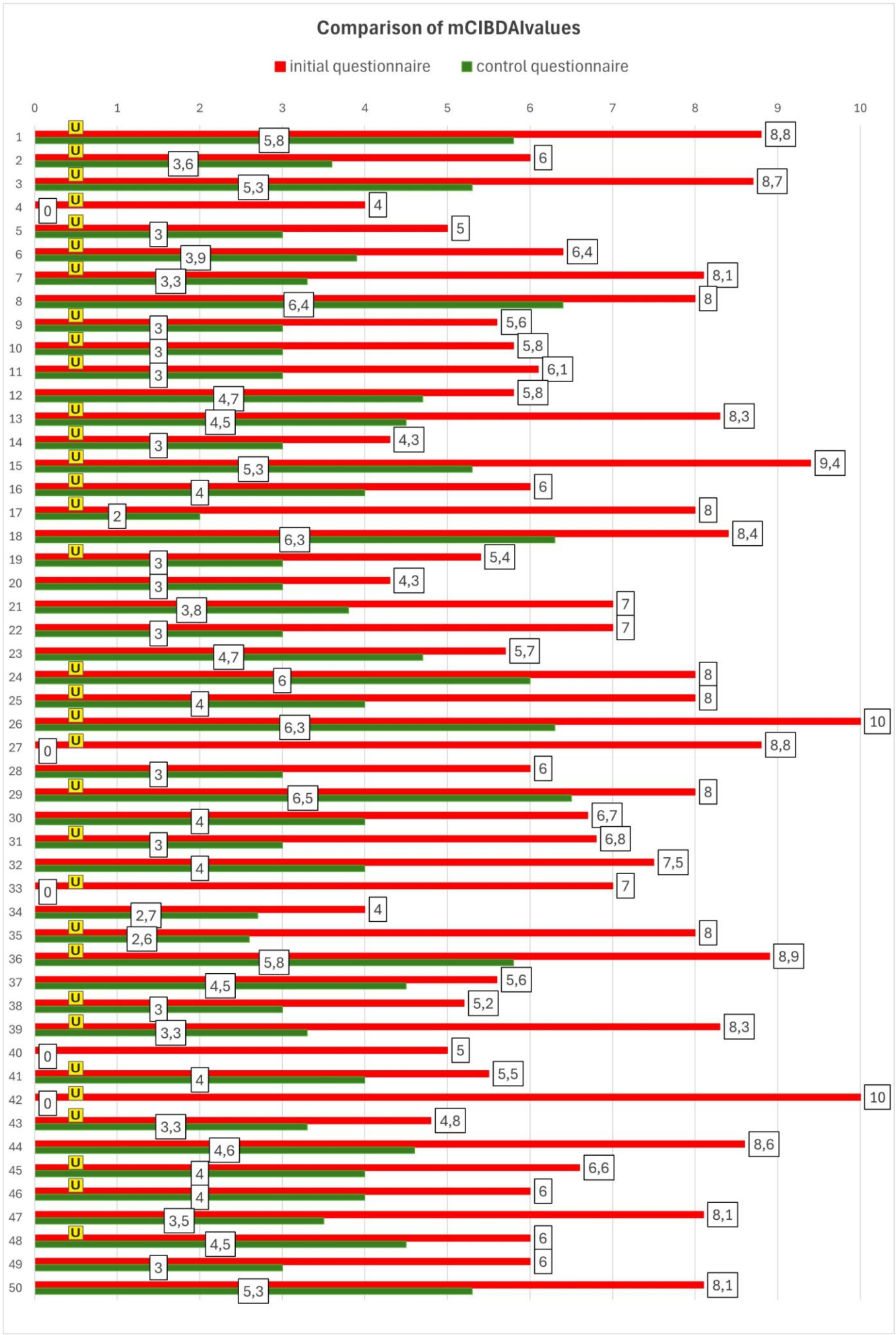

Comparison of mCIBDAIvalues
initial questionnaire
control questionnaire
0 1 2 3 4 5 6 7 8 9 10
1 5,8 8,8
2 3,6 6
3 5,3 8,7
4 0 4
5 3 5
6 3,9 6,4
7 3,3 8,1
8 6,4 8
9 3 5,6
10 3 5,8
11 3 6,1
12 4,7 5,8
13 4,5 8,3
14 3 4,3
15 5,3 9,4
16 4 6
17 2 8
18 6,3 8,4
19 3 5,4
20 3 4,3
21 3,8 7
22 3 7
23 4,7 5,7
24 6 8
25 4 8
26 6,3 10
27 0 8,8
28 3 6
29 6,5 8
30 4 6,7
31 3 6,8
32 4 7,5
33 0 7
34 2,7 4
35 2,6 8
36 5,8 8,9
37 4,5 5,6
38 3 5,2
39 3,3 8,3
40 0 5
41 4 5,5
42 0 10
43 3,3 4,8
44 4,6 8,6
45 4 6,6
46 4 6
47 3,5 8,1
48 4,5 6
49 3 6
50 5,3 8,1

Table 1: mCIBDAI Comparison of 50 canIBD cases before (red lines) and after (green lines) the SPS-treatment. U **= Ultra Processed Feed** such as hydrolyzed/extrudated or canned food /previous feeding) n= 33
Please add the complete statistical results table (individual mCIBDAI parameters, baseline vs. follow-up means, SD, p-values, and Cohen's d). This table is central to peer review acceptance.

Comparison of the two Groups: Initial vs. Control Questionnaire

Likert Scales

• The Likert scales of the questionnaire were treated as interval-scaled and analyzed using a paired t-test (58).

1) mCIBDAI

			95% CI					
Variable	Mean Difference	*SD*	Lower Bound	Upper Bound	*t*-Value	df	*p*-Value	Cohen's *d*
mCIBDAI	3.06761	1.71481	2.57506	3.56016	12.522	48	0.00000000000000010	1.789

2) Scale Variables

			95% CI						
Variable	Mean Difference	*SD*	Lower Bound	Oberer Wert	*t*-Value	df	*p*-Value	*p*-Value (adjusted)	Cohen's *d*
Loss of Appetite	0.898	1.747	0.396	1.400	3.598	48	0.000756281705	0.0083190987550	0.514012
Abdominal pain	1.776	1.636	1.305	2.246	7.595	48	0.000000000905	0.0000000253400	1.085027
Bowel sounds	1.816	1.799	1.300	2.333	7.067	48	0.000000005796	0.0000001564920	1.009632
Diarrhesl	1.592	1.593	1.134	2.049	6.994	48	0.000000007509	0.0000001952340	0.999148
Vomiting	0.980	1.233	0.625	1.334	5.561	48	0.000001165167	0.0000267988410	0.794447
Vomiting with Blood	0.143	0.677	-0.052	0.337	1.477	48	0.146180863860	0.7479958466160	0.211014

			95% CI						
Variable	Mean Difference	*SD*	Lower Bound	Oberer Wert	*t*-Value	df	*p*-Value	*p*-Value (adjusted)	Cohen's *d*
Explosive bowel movements	0.729	1.284	0.356	1.102	3.935	47	0.000273510020	0.0038291402800	0.567915
Excessive Appetite	0.816	1.976	0.249	1.384	2.892	48	0.005730664982	0.0573066498200	0.413201
Small Stool Volume	1.286	1.871	0.748	1.823	4.811	48	0.000015312717	0.0003062543400	0.687243
Bloody, mucous Stool	1.000	1.414	0.594	1.406	4.950	48	0.000009564577	0.0002008561170	0.707107
Stool with Mucus	1.938	1.435	1.521	2.354	9.353	47	0.000000000003	0.0000000000870	1.349973
Stool like small sausages	1.122	1.740	0.623	1.622	4.517	48	0.000040911889	0.0007364140020	0.645218
Nocturnal urge of Defecate	1.245	1.627	0.778	1.712	5.356	48	0.000002373899	0.0000522257780	0.765152
Painfull Urge of Defecate	0.224	1.006	-0.064	0.513	1.563	48	0.124665974436	0.7479958466160	0.223259
Tar-like Stool	0.102	1.262	-0.261	0.465	0.566	48	0.574140890699	1.0000000000000	0.080834
Restlerssness	1.388	1.718	0.894	1.881	5.655	48	0.000000839316	0.0000201435840	0.807889
Recurrent Attacks	1.875	1.931	1.314	2.436	6.727	47	0.000000021198	0.0000005299500	0.971004

Independent statistical analysis (StatistikGuru, W.A. Hemmerich) confirmed: 'Very positive results with consistently excellent significance across mCIBDAI variables. Cohen's d effect sizes substantiate these findings. Bonferroni–Holm correction was applied throughout.

The mean mCIBDAI score decreased from 6.8 (baseline) to 3.6 (follow-up), representing a mean absolute improvement of 3.2 points (52% reduction in disease activity).

3.4. Owner Burden Assessment

Analysis of the baseline questionnaire data from the 50 primary cases revealed marked owner burden: 17 owners (34%) rated the burden imposed by their dog's canIBD as low, 19 (38%) as moderate, and 14 (28%) as very high—indicating that 66% of owners were substantially affected by their dog's symptoms. Twenty-two of the 50 dogs (44%) originated from an animal shelter or had a history of adverse early-life conditions.

3.5. Psychosocial Findings

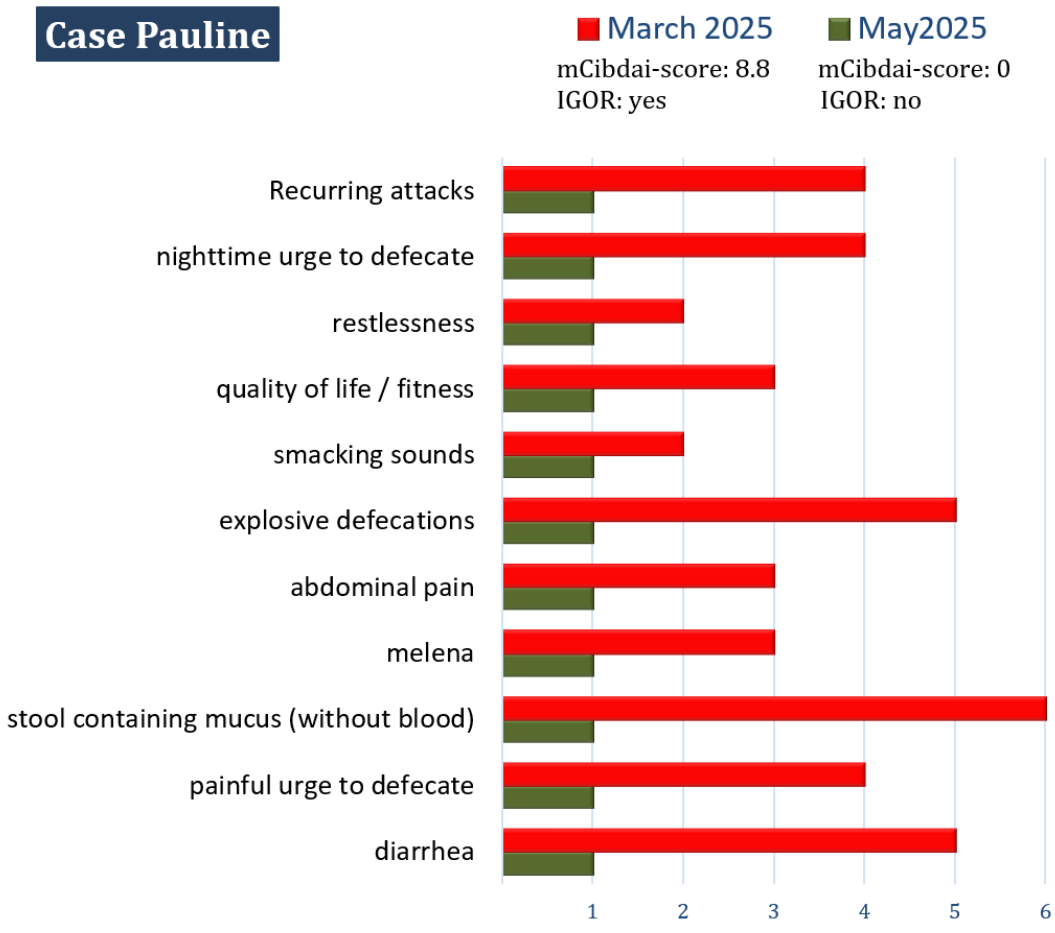
Owner–Pet Gastrointestinal Correlation: According to the Owner Score, approximately 33% of dogs had owners reporting concurrent gastrointestinal problems, consistent with the hypothesis of bidirectional emotional contagion and cortisol synchronization within the owner–dog dyad.

Common identified psychosocial triggers: early weaning or separation trauma, shelter origin, genetic predisposition, owner unemployment or illness, household changes, travel, relationship conflicts, fireworks and other acoustic stressors, loss of a caregiver, and abrupt dietary changes.

3.6. Representative Case Series

Three cases are presented to illustrate typical clinical trajectories under SPS therapy.

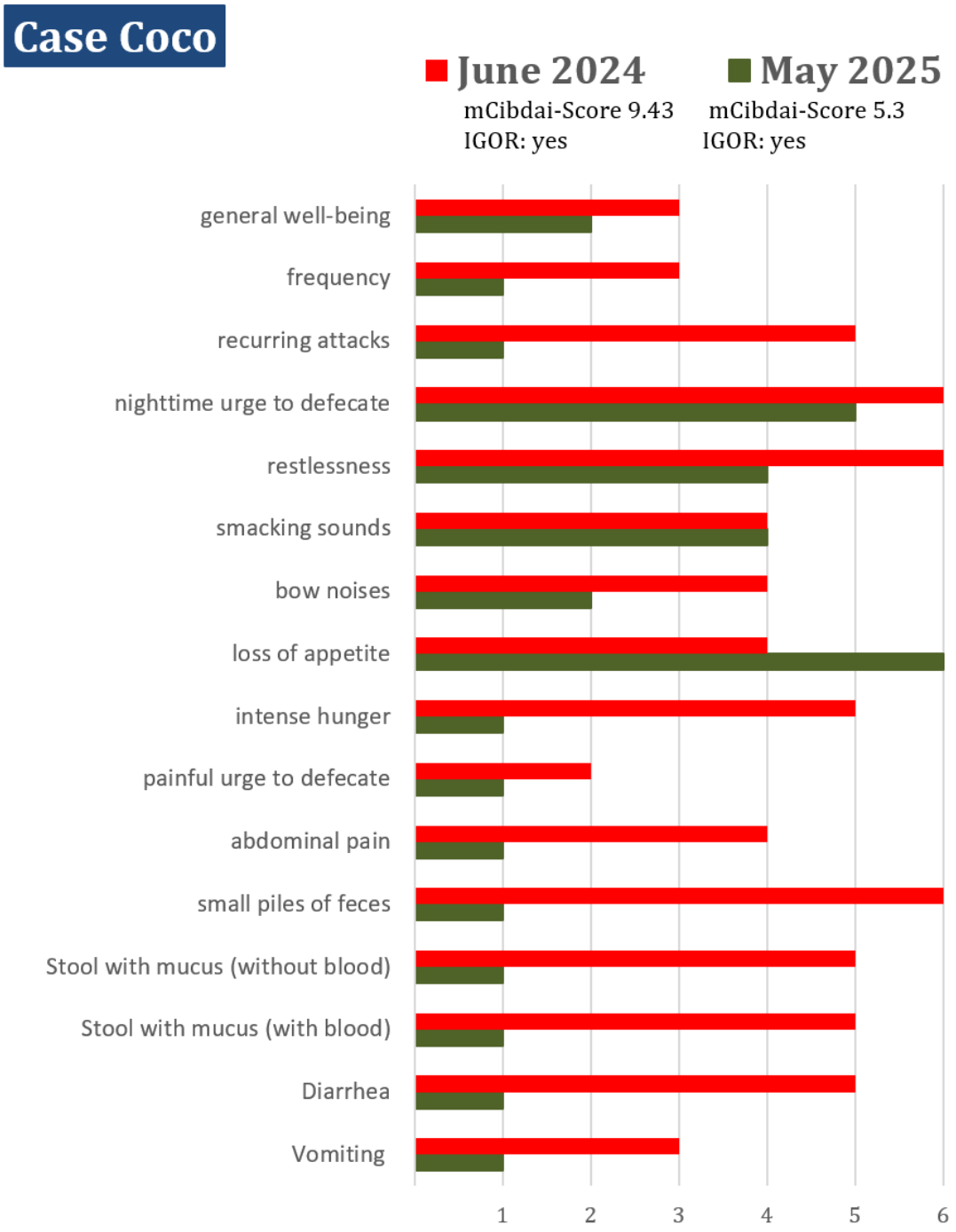
Case 1 (Pauline, Case #27) — Complete Remission



Pauline (March 2025 – May 2026), Case 27:
Dramatic improvement, owner rating 1 (school grade) until March, 19 2026. Complete resolution of all major symptoms.

Pauline presented with severe canIBD in March 2025. Following initiation of the SPS protocol, dramatic improvement was observed within weeks. At the last owner assessment (19 March 2026), the owner rated overall disease management as 1 on the German school grading scale (equivalent to excellent). All major gastrointestinal symptoms had resolved completely.

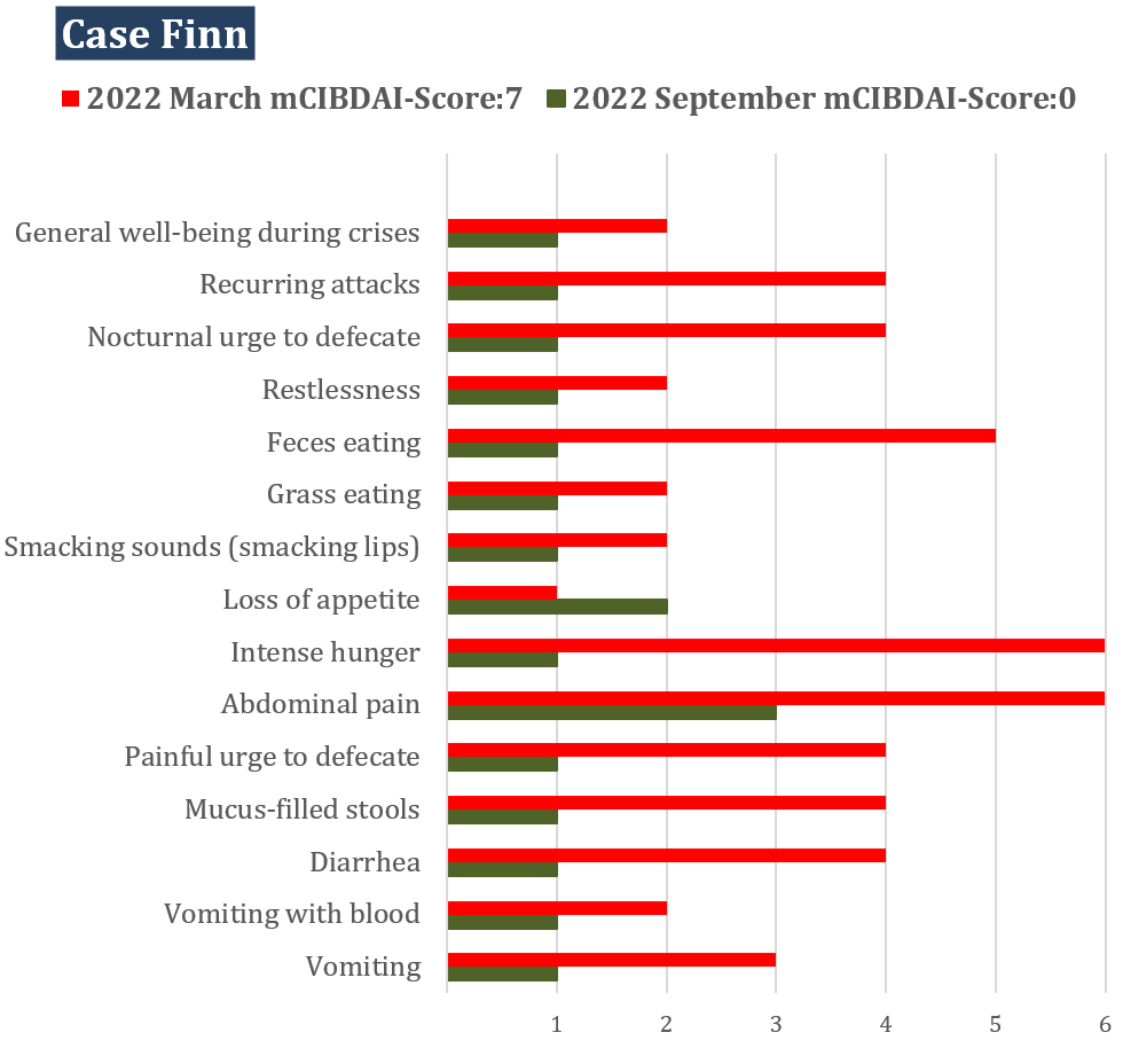
Case 2 (Coco, Case #15) — Significant Sustained Improvement



Coco (June 2024 - May 2025), Case 15: significant improvement was observed in many areas. Interim assessment of the canIBD therapy by the dog owner: 2 (school grade) until March, 19 2026

Coco was enrolled in June 2024. At follow-up assessment in May 2025, significant improvement was documented across multiple mCIBDAI domains. The owner rated overall management as 2 (very good) at the last assessment (19 March 2026), with maintained improvement.

Case 3 (Finn, Case #33) — Sustained Long-Term Remission



Finn (March22 – Sep2023), Case 33: After 6 months of implementing the treatment concept, significant improvements were seen in all areas. owner rating 1 (school grade) until March, 19 2026.

Finn was enrolled in March 2022. After 6 months of SPS treatment, significant improvement was observed across all symptom categories. The owner's long-term assessment (19 March 2026) rated outcomes as 1 (excellent), confirming sustained remission over more than three years.

3.7. Medication Use Patterns and Adverse Events

Medication-free remission: 60–70% of patients achieved sustained clinical remission through dietary and nutritional intervention alone, requiring no long-term pharmacotherapy.

Minimal maintenance pharmacotherapy: 30–40% required low-dose sulfasalazine (~5 mg/kg) or low-dose budesonide. No patient required long-term systemic corticosteroids, immunomodulators, or chronic antibiotic therapy.

Adverse events: Sulfasalazine-associated KCS was extremely rare at the low doses used. Budesonide demonstrated minimal systemic effects owing to its local pharmacodynamic profile. Dietary intervention was well tolerated with high palatability across all cases.

Time course: Clinically meaningful improvement was observed in some cases within 1–4 weeks; most patients showed substantial improvement by 8–12 weeks. Sustained remission was documented for up to 3 or more years in long-term follow-up cases.

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4. Discussion

4.1. The SPS Framework: A Paradigm Shift

Conventional canine IBD management typically focuses on somatic symptom suppression—anorexia, weight loss, diarrhoea, haematochezia, and mucoid feces—combined with histopathological diagnosis and empirical pharmacotherapy. The present study demonstrates that a comprehensive socio-psycho-somatic approach, centered on the mCIBDAI as a multidimensional assessment instrument, achieves superior and sustained clinical outcomes compared to conventional somatic-only management. The integration of microbiome-preserving diet, minimal targeted pharmacology, and systematic recognition of psychosocial factors represents a fundamental shift from symptom suppression to addressing root pathophysiological mechanisms.

The three-dimensional SPS model acknowledges that canIBD cannot be adequately understood or treated through a purely biomedical lens. The high prevalence of concurrent owner gastrointestinal symptoms (~33%) and the systematic identification of psychosocial triggers lend clinical support to the hypothesis that chronic stress plays a central pathogenic role [16–24]. Biological plausibility is supported by multiple mechanisms: HPA axis dysregulation, autonomic imbalance, altered microbiome composition, and secondary behavioral changes.

4.2. Microbiome Preservation as a Therapeutic Imperative

The MIKROBIOMAX system deliberately avoids commercial probiotic products in favour of naturally fermented foods and prebiotic substrates for three principal reasons: (1)

microbial diversity—fermented whole foods provide vastly greater species diversity than any commercial probiotic formulation [41]; (2) postbiotic metabolites—delivery of bioactive compounds beyond live organisms [44,45]; and (3) long-term microbiome resilience—dietary modulation produces more stable and durable microbiome shifts than transient supplementation [42,43]. Organic acid substrates (vinegar, fermented vegetables) additionally create a microenvironmental pH unfavorable to pro-inflammatory organisms while supporting beneficial populations.

4.3. Ultra-Processed Feed Avoidance

Strict UPF elimination addresses what may be a primary driver of microbial dysbiosis and low-grade intestinal inflammation in companion animals [25–32]. Translational evidence from human research establishes that UPFs are associated with altered microbiome composition, increased intestinal permeability, chronic LGI, and metabolic dysfunction. Emulsifiers in particular disrupt the protective mucus layer and increase bacterial translocation [31,32]. The moderately-processed self -empiric-evidence- designed IBDerma and supplement formulations were invented to minimize obvious destroyed food matrix-related immune stimulation through a conservative food finalization and the use of novel proteins alternative carbohydrate sources respectively.

4.4. Minimizing Iatrogenic Harm

A central tenet of the SPS approach is 'primum non nocere' applied to the microbiome. Conventional therapy with systemic corticosteroids and broad-spectrum antibiotics disrupts microbial communities and risks creating therapeutic dependency [9–15]. The 60–70% medication-free remission rates observed in this study directly challenge the assumption that lifelong immunosuppression is necessary in the majority of canIBD patients. For those requiring pharmacotherapy, locally acting budesonide and low-dose sulfasalazine represent more targeted approaches that preserve systemic immune competence and microbiome integrity.

4.5. IGOR Recognition and Reclassification

The identification and specific treatment of IGOR addresses a frequently overlooked component of canine chronic gastrointestinal disease. The characteristic nocturnal presentation, lip-smacking behaviors, and consistently normal CRP values distinguish IGOR from classical colonic IBD. The author proposes formally incorporating IGOR into the canIBD umbrella term, reflecting the broader spectrum of the condition and enabling more targeted therapeutic decision-making. The demonstrated failure of PPI therapy and its associated long-term risks [47,48] support the alternative strategy of frequent small meals, mucosal-protective supplements, automated night-time feeding, and strictly topically acting budesonide.

4.6. The One Health Medicine Dimension

The documented bidirectional gastrointestinal symptom correlation between owners and their dogs (33.76% concurrent prevalence in this cohort) provides compelling observational support for the One Health Medicine framework applied to companion animal gastroenterology. Treating the owner–dog dyad—rather than the dog in isolation—is not a conceptual abstraction but a clinical necessity. This finding aligns with the stress synchronization literature [20–22] and has direct therapeutic implications:

interventions targeting owner stress, lifestyle stability, and emotional regulation may be as clinically relevant as dietary changes.

4.7. Study Limitations

This study has several limitations that should be acknowledged. The retrospective, non-randomized design without a concurrent control group limits causal inference; however, the magnitude and consistency of improvements across cases, and the statistical significance of results, support validity of the anamnestic therapeutic approach. Selection bias is inherent: cases with adequate follow-up and owner compliance are overrepresented, and non-responders or non-compliant owners may be underrepresented. Systematic histopathological assessment was not performed across the 50 primary cases, limiting microscopic insight; however, this reflects the clinical reality and intentional design of the anamnestic approach. Owner-reported symptom data are subject to recall and subjectivity bias, though they closely reflect real-world quality-of-life outcomes. Single-center, telemedicine-based origin limits generalizability. The heterogeneity of breeds, ages, and severity levels reflects real-world clinical breadth rather than a methodological limitation.

4.8. Future Directions

Priority areas for future research include:

- Prospective, controlled trials comparing SPS vs. conventional management;
- Longitudinal fecal microbiome sequencing to elucidate mechanistic pathways;
- Identification of predictive biomarkers for dietary treatment response [53];
- Formal psychometric validation of the expanded mCIBDAI scoring instrument;
- Extended follow-up (≥5 years) to assess long-term remission durability;
- Head-to-head comparison of specific MPF dietary formulations;
- Cost-effectiveness analysis relative to conventional lifelong immunosuppression;
- Investigation of specific MIKROBIOMAX components through controlled dietary trials.

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5. Conclusions

The socio-psycho-somatic therapeutic approach for canine inflammatory bowel disease represents a comprehensive, evidence-informed paradigm that addresses the multifactorial nature of the condition. By integrating microbiome-preserving, ultra-processed feed-free dietary strategies; natural fermented food supplementation; minimal, targeted pharmacological intervention; and systematic recognition and mitigation of psychosocial stressors—all assessed with the novel mCIBDAI instrument—this protocol achieves sustained clinical remission in the majority of patients: 60–70% without any long-term medication, and the remainder requiring only minimal maintenance doses.

The statistical validation ($p < 0.001$ across all parameters; large Cohen's d effect sizes) supports clinical efficacy, while the representative case series demonstrates real-world applicability across diverse clinical presentations. The observation that 33% of affected dogs have owners with concurrent gastrointestinal symptoms confirms the clinical relevance of bidirectional stress transmission and underscores the imperative of treating the human–animal dyad.

As veterinary medicine embraces integrative and One Health Medicine approaches, the SPS framework offers a new model for chronic disease management that honors biological complexity, minimizes iatrogenic harm, and empowers pet owners as active therapeutic partners. In the spirit of Karl Popper's epistemological principle, the SPS approach invites the profession to critically examine—and where necessary replace—conventional assumptions about lifelong immunosuppression in canIBD. The consistency of the findings presented here further highlights that standard diagnostic investigations (blood biochemistry, endoscopy, histopathology, microbiome analysis) often fail to positively confirm canIBD or guide long-term treatment. A validated, psychosocially comprehensive anamnestic questionnaire such as the mCIBDAI may prove to be the most reliable and sustainable diagnostic tool available to the veterinary clinician.

Author Contributions

Conceptualization, E.M.B.; methodology, E.M.B.; data collection, E.M.B.; formal analysis, E.M.B. (with independent statistical verification by W.A. Hemmerich/StatistikGuru.de); writing—original draft preparation, E.M.B.; writing—review and editing, E.M.B..

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Institutional Review Board Statement

This retrospective study utilized anonymized clinical data obtained during standard veterinary telemedicine consultations. No experimental procedures beyond standard clinical care were performed. Formal institutional review board (IRB) approval was not required. The study was conducted in accordance with applicable ethical guidelines for retrospective veterinary observational research.

Informed Consent Statement

Informed consent for inclusion of clinical data in the study was obtained from all dog owners prior to telemedicine consultation and data collection.

Data Availability Statement

The datasets supporting the conclusions of this study are available from the corresponding author upon reasonable request. Full statistical analysis reports and case-by-case mCIBDAI data are maintained in a secure clinical database.

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Conflicts of Interest

The author declares the following potential conflict of interest: the dietary formulations and nutritional supplements referenced in this study (IBDerma product line, MIKROBIOMAX system, and associated supplement products) are commercially produced and distributed by LupoVet GmbH, of which the author is Chief Executive Officer and product developer: The author had to develop the needed products in order to have both, complete suiting formulations and a UPF-free dietary tool at hand. He has made every effort to present the clinical findings objectively and transparently. Independent statistical analysis was performed by a third party (StatistikGuru.de) to mitigate analytical bias.

References

1. Jergens AE, Schreiner CA, Frank DE, et al. A scoring index for disease activity in canine inflammatory bowel disease. J Vet Intern Med. 2003;17(3):291–297.
2. Allenspach K, Wieland B, Gröne A, et al. Chronic enteropathies in dogs: evaluation of risk factors for negative outcome. J Vet Intern Med. 2007;21(4):700–708.
3. Jergens AE, Simpson KW. Inflammatory bowel disease in veterinary medicine. Front Biosci. 2012;4:1404–1419.
4. Jergens AE. Pitfalls and progress in the diagnosis and management of canine inflammatory bowel disease. Vet Clin North Am Small Anim Pract. 2011;41(2):381–398.
5. DVM360. Decoding chronic enteropathy in canine patients. 2025 Feb 13.
6. Cornell University. Inflammatory bowel disease (IBD). Riney Canine Health Center; 2024.

7. Washabau RJ, Day MJ, Willard MD, et al. Endoscopic, biopsy, and histopathologic guidelines. J Vet Intern Med. 2010;24(1):10–26.

8. Allenspach K, Rüfenacht S, Sauter S, et al. Pharmacokinetics and clinical efficacy of cyclosporine treatment. J Vet Intern Med. 2006;20(2):239–244.

9. Suchodolski JS, Dowd SE, Wilke V, et al. 16S rRNA gene pyrosequencing reveals bacterial dysbiosis in the duodenum of dogs with idiopathic inflammatory bowel disease. PLoS One. 2012;7(6):e39333.

10. Honneffer JB, Minamoto Y, Suchodolski JS. Microbiota alterations in acute and chronic gastrointestinal inflammation of cats and dogs. World J Gastroenterol. 2014;20(44):16489–16497.

11. Pilla R, Suchodolski JS. The role of the canine gut microbiome and metabolome in health and gastrointestinal disease. Front Vet Sci. 2020;6:498.

12. VCA Animal Hospitals. Inflammatory Bowel Disease in Dogs. 2024.

13. Gluckstadt Animal Hospital. Inflammatory Bowel Disease (IBD) in Dogs. 2024 Apr 23.

14. Simpson KW, Dogan B, Rishniw M, et al. Adherent and invasive Escherichia coli is associated with granulomatous colitis in boxer dogs. Infect Immun. 2006;74(8):4778–4792.

15. Manchester AC, Hill S, Sabatino B, et al. Association between granulomatous colitis in French Bulldogs and invasive Escherichia coli. J Vet Intern Med. 2013;27(1):56–61.

16. Cryan JF, O'Riordan KJ, Cowan CSM, et al. The microbiota–gut–brain axis. Physiol Rev. 2019;99(4):1877–2013.

17. Mayer EA, Nance K, Chen S. The gut–brain axis. Annu Rev Med. 2022;73:439–453.

18. Bercik P, Collins SM, Verdu EF. Microbes and the gut–brain axis. Neurogastroenterol Motil. 2012;24(5):405–413.

19. Carabotti M, Scirocco A, Maselli MA, et al. The gut–brain axis: interactions between enteric microbiota, central and enteric nervous systems. Ann Gastroenterol. 2015;28(2):203–209.

20. Sundman AS, Van Poucke E, Svensson Holm AC, et al. Long-term stress levels are synchronized in dogs and their owners. Sci Rep. 2019;9:5552.

21. Sundman AS, Persson EK, Larsson L, et al. Long-term stress in dogs is related to the human–dog relationship and personality traits. Sci Rep. 2021;11:8612.

22. Canine Evolutions. Chronic stress in dogs—A synchronization between dog and human. 2024 Jan 28.

23. Buttner AP, Arcediano M, Thompson L, et al. Early life adversity in dogs produces altered physiological and behavioral responses. J Exp Anal Behav. 2023;120(1):55–68.

24. Mongillo P, Pitteri E, Candaten M, et al. Validation of a selection protocol of dogs involved in animal-assisted intervention. J Vet Behav. 2015;10(2):103–110.

25. Whelan K, Bancil AS, Lindsay JO, Chassaing B. Ultra-processed foods and food additives in gut health and disease. Nat Rev Gastroenterol Hepatol. 2024;21(6):406–427.

26. Brichacek AL, Florkowski M, Abiona E, Frank KM. Ultra-processed foods: a narrative review of the impact on the human gut microbiome. Nutrients. 2024;16(11):1738.

27. Lane MM, Gamage E, Du S, et al. Ultra-processed food exposure and adverse health outcomes: umbrella review of meta-analyses of observational studies. BMJ. 2024;384:e077310.

28. Agnello M, Chilian LR, Praderio AN, et al. The detrimental impact of ultra-processed foods on the human gut microbiome and gut barrier. Nutrients. 2025;17(5):859.

29. Capra BT, Hudson S, Helder M, et al. Ultra-processed food intake, gut microbiome, and glucose homeostasis: a controlled feeding trial. Contemp Clin Trials. 2024;137:107427.
30. Pagliai G, Dinu M, Madarena MP, et al. Consumption of ultra-processed foods and health status: a systematic review and meta-analysis. Br J Nutr. 2021;125(3):308–318.
31. Chassaing B, Koren O, Goodrich JK, et al. Dietary emulsifiers impact the mouse gut microbiota promoting colitis and metabolic syndrome. Nature. 2015;519(7541):92–96.
32. Viennois E, Merlin D, Gewirtz AT, Chassaing B. Dietary emulsifier-induced low-grade inflammation promotes colon carcinogenesis. Cancer Res. 2017;77(1):27–40.
33. Gaschen FP, Merchant SR. Adverse food reactions in dogs and cats. Vet Clin North Am Small Anim Pract. 2011;41(2):361–379.
34. Suchodolski JS. Diagnosis and interpretation of intestinal dysbiosis in dogs and cats. Vet J. 2016;215:30–37.
35. AlShawaqfeh MK, Wajid B, Minamoto Y, et al. A dysbiosis index to assess microbial changes in fecal samples of dogs with chronic inflammatory enteropathy. FEMS Microbiol Ecol. 2017;93(11):fix136.
36. Pilla R, Suchodolski JS. The role of the canine gut microbiome in health and disease. Front Vet Sci. 2020;6:498.
37. Minamoto Y, Otoni CC, Steelman SM, et al. Alteration of the fecal microbiota and serum metabolite profiles in dogs with idiopathic inflammatory bowel disease. Gut Microbes. 2015;6(1):33–47.
38. Jergens AE, Guard BC, Redfern A, et al. Microbiota-related changes in unconjugated fecal bile acids are associated with naturally occurring, insulin-dependent diabetes mellitus in dogs. Front Vet Sci. 2019;6:199.
39. Canani RB, Costanzo MD, Leone L, et al. Potential beneficial effects of butyrate in intestinal and extraintestinal diseases. World J Gastroenterol. 2011;17(12):1519–1528.
40. Smith PM, Howitt MR, Panikov N, et al. The microbial metabolites, short-chain fatty acids, regulate colonic Treg cell homeostasis. Science. 2013;341(6145):569–573.
41. Wilson LM, Metzger L, Swanson KS. The influence of biotics on the gut microbiome of dogs and cats. Vet Rec. 2024;195(Suppl 2):e4914.
42. Liversidge BD, Gomez DE, Dodd SAS, et al. Comparison of the fecal microbiota of adult healthy dogs fed a plant-based or animal-based diet. Front Microbiol. 2024;15:1367493.
43. Pinna C, Biagi G. The nexus of diet, gut microbiota, and inflammatory bowel diseases in dogs. Vet Sci. 2022;9(12):689.
44. Perini MP, Pedrinelli V, Marchi PH, et al. Potential effects of prebiotics on gastrointestinal and immunological modulation in healthy dogs. Fermentation. 2023;9(7):693.
45. AnimalBiome. Boost dog health with probiotics, prebiotics, and postbiotics. 2024 Oct 17.
46. www.IBD-Hund.de. Information zur chronischen Pankreatitis, Leberentzündung, Giardienbefall. 2024.
47. Vaezi MF, Yang YX, Howden CW. Complications of proton pump inhibitor therapy. Gastroenterology. 2017;153(1):35–48.
48. Freedberg DE, Kim LS, Yang YX. The risks and benefits of long-term use of proton pump inhibitors. Gastroenterology. 2017;152(4):706–715.
49. Jergens AE, Schreiner CA. A scoring index for disease activity in canine inflammatory bowel disease. J Vet Intern Med. 2003;17(3):291–297.

50. Hemida M, Vuori KA, Moore R, Anturaniemi J, Hielm-Björkman A. Early life modifiable exposures and their association with owner-reported inflammatory bowel disease symptoms in adult dogs. Front Vet Sci. 2021;8:552350.
51. Monteiro CA. Nutrition and health: the issue is not food, nor nutrients, so much as processing. Public Health Nutr. 2009;12:729–731.
52. Heilmann RM, Jergens AE, Kathrani A, Allenspach K, Salavati Schmitz S, Priestnall SL, Dandrieux JRS, O'Connor AM. ACVIM-endorsed consensus statement and systematic review on guidelines for the diagnosis and treatment of chronic inflammatory enteropathy in dogs. J Vet Intern Med. 2026;40(1).
53. Armstrong TS, Chappell KA, Ajibelu L, Wong K. Dietary biomarkers of ultra-processed foods: a narrative review. Clin Nutr Open Sci. 2025;62:156–173.
54. Pet Treats Machine. Pet food extruder temperature and pressure range. https://petreatsmachine.com/pet-food-extruder-temperature-pressure-range/ [Accessed March 2026].
55. Marks SL. How I treat inflammatory bowel disease in dogs. In: World Small Animal Veterinary Association World Congress Proceedings; 2009.
56. Spillmann T. How I treat canine inflammatory bowel disease. In: World Small Animal Veterinary Association World Congress Proceedings; 2008.
57. Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences. Lawrence Erlbaum Associates.
58. Harpe, S. E. (2015). How to analyze Likert and other rating scale data. Currents in Pharmacy Teaching and Learning, 7(6), 836–850. https://doi.org/10.1016/j.cptl.2015.08.001
59. Holm, S. (1979). A Simple Sequentially Rejective Multiple Test Procedure. Scandinavian Journal of Statistics, 6(2), 65–70. http://www.jstor.org/stable/4615733