

Dedicated Psychiatry Clinic for Inflammatory Bowel Disease Patients Has a Positive Impact on Depression Scores

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Keywords

Inflammatory bowel disease · Mental health · Psychological intervention · Crohn's disease · Ulcerative colitis

Abstract

Background: Psychiatric disorders, including anxiety and depression, are significantly more common in patients with inflammatory bowel disease (IBD). We established an integrated psychiatry clinic for IBD patients at our tertiary center IBD clinic to provide patients with critical, but frequently unavailable, coordinated mental health services. We undertook this study to evaluate the impact of this service on psychiatric outcomes, quality of life, and symptom experience. **Methods:** We performed a longitudinal prospective study comparing patients who had been cared for at our integrated IBD-psychiatry clinic to those who had not. We abstracted demographic and clinical information as well as contemporaneous responses to validated surveys. **Results:** Thirty-six patients cared for in the IBD psychiatry clinic were compared to a control cohort of 35 IBD patients. There was a significant reduction in the Hospital Anxiety and Depression Scale (HADS) depression score over time in the study cohort ($p =$

0.001), though not in the HADS anxiety score. When compared to the control group, the study cohort showed a significant reduction in the HADS depression score. No significant differences were observed in the Harvey-Bradshaw Index, Simple Clinical Colitis Activity Index, or Short IBD Questionnaire. **Conclusions:** This is the first study to evaluate the impact of an integrated psychiatry clinic for IBD patients. Unlike their control counterparts, individuals treated in this clinic had a significant reduction in the mean HADS depression score. Larger scale studies are necessary to verify these findings. However, this study suggests that use of an integrated psychiatry IBD clinic model can result in improvement in mental health outcomes, even in the absence of significant changes in IBD activity.

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Introduction

Inflammatory bowel disease (IBD), including Crohn's disease (CD) and ulcerative colitis (UC), is a chronic disorder of the gastrointestinal tract that is associated with increased rates of psychiatric disorders, including anxiety

and depression [1–3]. Comorbid anxiety and depression have each been shown to negatively impact patients with IBD as both have been associated with decreased treatment adherence [4–6], decreased quality of life [7–9], worsened perception of symptoms [10], and poorer disease course and outcomes [2, 11–14]. Psychiatric interventions, including counseling, cognitive behavioral therapy, and hypnosis, have the potential to improve patient quality of life and to decrease rates of depression in IBD, particularly during periods of active disease [15–18]. As a result, provision of mental health services to IBD patients is becoming increasingly recommended in the literature, and there is an emerging effort to integrate mental health services to standard IBD treatment [2, 19, 20]. Unfortunately, these services are frequently unavailable, due to the relative limitation of access to mental health specialists (particularly those with experience working in the setting of IBD). Additionally, they may be avoided by patients due to the perceived social stigma of mental health treatment and/or the associated financial costs [21].

In an attempt to improve accessibility and timeliness of psychiatric care for IBD patients, we developed and integrated a dedicated psychiatry clinic within our IBD center. This clinic is undertaken on a weekly basis within our center and is run by a dedicated psychiatrist who is able to communicate and collaborate directly with the IBD providers, to discuss various aspects of patient care. Thus far, we have received very positive feedback from patients who have participated in this clinic. However, we were interested to determine if there were measurable differences in clinical outcomes as a result of this clinic. Thus, we undertook this pilot study to evaluate whether participation in this clinic resulted in significant differences in digestive disease and mental health-related outcomes in our patients.

Methods

Study Design and Location

We performed a prospective matched case-control study of patients cared for at the IBD Center at Pennsylvania State University Hershey Medical Center (PSHMC) between September 1, 2018, and August 30, 2020. The PSHMC is a tertiary care referral hospital in south-central Pennsylvania. This pilot study compared outcomes in cohorts of IBD patients who did and did not receive care in the integrated PSHMC IBD psychiatry clinic (IPC). All patients receiving integrated psychiatric care were seen by a psychiatrist (Dr. Sanjay Yadav [S.Y.]) who also oversaw this clinic. The IPC is located at the PSHMC IBD center as a collaborative initiative and supported by nursing staff specializing in management of digestive disease and dedicated IBD nurse navigators. Interventions under-

taken in the IPC included an initial evaluation (with problem identification and diagnostic formulation), recommendations for appropriate behavioral activation, education on psychological responses to IBD illnesses, brief relaxation techniques, referral and resource identification for psychotherapy, referral to other integrated care services, and psychotropic medication initiation and management (where indicated). Please note that this study was performed in accordance with the internal rules and regulations of the Pennsylvania State University College of Medicine Institutional Review Board and carried out under protocol STUDY00013788.

Inclusion and Exclusion Criteria

Participants in this study were >17 years old and had an established diagnosis of CD, UC, or IBD colitis of an indeterminate nature, based upon standard clinical criteria routinely used to identify IBD. All study participants were evaluated at the IBD center and completed surveys relating to IBD activity (Harvey-Bradshaw Index [HBI], Simple Clinical Colitis Activity Index [SCCAI]), and quality of life (Short IBD Questionnaire [SIBDQ]) and mental health status (Hospital Anxiety and Depression Scale [HADS]) [22, 23] (see below) on at least 2 separate occasions, separated by a minimum of 3 months, during the study period.

Two cohorts were compared in this study: (1) IBD patients seen in the IBD center during the study period who had received psychiatric care defined as at least 1 visit to the IPC during the study period (the “study cohort”) and (2) IBD patients, matched for age, disease subtype (CD vs. UC), sex, and baseline HADS anxiety and depression scores (see Table 1), who had been seen in the IBD center during the study period but had not received care in the IPC (the “control cohort”). Of note, the study cohort was identified first, and it included all of the patients who qualified for inclusion, using the criteria described above. The “control cohort” was consecutively selected from the remaining pool of patients receiving care at our IBD center, to match the size and characteristics of the “study cohort,” by an individual who was blinded to all follow-up clinical scores and outcomes. Additionally, in the study cohort, the survey following care in the IPC was completed at least 3 months after that visit.

Definitions and Data Abstraction

The presence and relative severity of anxiety or depression symptoms were determined based upon responses to HADS surveys completed at the time of each clinical encounter. The HADS is a 14-item survey designed to specifically screen for these symptoms, using a series of simple questions that separately evaluate states of anxiety and depression [22]. The HADS has been validated to screen for anxious and depressed states in the setting of a variety of medical conditions, including IBD [23]. HADS scores for both anxiety and depression range from 0 to 7 (normal), 8–10 (borderline abnormal), and 11–21 (abnormal) [24]. Clinically significant anxiety or depression was defined as a HADS anxiety or HADS depression sub-score of 8 or more. Health-related quality of life was assessed using the SIBDQ [25]. The SIBDQ is a 10-question survey which scores on an inverse Likert scale, with 1 representing poor disease control and 7 representing optimal disease control, where the optimal health-related quality of life is a score of 70 and minimal health-related quality of life is a score of 10. The HBI was used to assess for the severity of symptoms in CD patients [26]. The HBI score ranges from 0 to 4 (disease remission), 5–7 (mild disease), 8–16 (moderate disease), and >16 (severe disease).

Table 1. Baseline characteristics of the control and study cohorts

	Control cohort (n = 35)	Study cohort (n = 36)	p value
Age±SEM, years	37.7±13.7	39.0±10.0	0.63
Sex (female/male)	25/10	23/13	0.62
IBD type (CD/UC)	28/7	28/8	>0.99
Initial HADS anxiety score	9.4±0.5	9.0±0.7	0.68
Initial HADS depression score	5.2±0.5	5.9±0.5	0.38
SIBDQ	43.4±2.1	44.2±2.0	0.79
HBI	7.8±0.8	7.1±0.9	0.54
SCCAI	5.1±0.6	4.7±0.5	0.60

SEM, standard error measurement; CD, Crohn's disease, UC, ulcerative colitis; HADS, Hospital Anxiety Depression Survey; SIBDQ, Short Inflammatory Bowel Disease Questionnaire; HBI, Harvey-Bradshaw Index; SCCAI, Short Clinical Colitis Activity Index.

Table 2. Longitudinal assessment of clinical outcomes

	Control cohort (n = 35)				Study cohort (n = 36)				MDD (95% CI)	p value
	initial mean	follow-up mean	mean difference (95% CI)	p value	initial mean	follow-up mean	mean difference (95% CI)	p value		
HADS anxiety	9.4	8.7	-0.7 (-2.1, 0.9)	0.40	9.0	8.2	-0.8 (-2.3, 0.6)	0.26	-0.1 (-2.3, 1.9)	0.85
HADS depression	5.2	5.1	-0.1 (-1.1, 0.8)	0.81	5.9	4.3	-1.6 (-2.5, -0.6)	0.001	-1.4 (-2.8, -0.1)	0.03
SIBDQ	43.4	46.1	+2.7 (-1.3, 6.8)	0.19	44.2	47.2	3.0 (-1.0, 7.0)	0.14	0.3 (-5.4, 6.0)	0.92
HBI	7.8	7.4	-0.4 (-2.4, 1.6)	0.67	7.1	5.5	-1.6 (-3.5, 0.4)	0.12	-1.1 (-4.0, 1.7)	0.43
SCCAI	5.1	4.6	-0.5 (-1.6, 0.6)	0.37	4.7	3.5	-1.2 (-2.3, -0.1)	0.04	-0.7 (-2.3, 0.9)	0.39

Bold numbers represent factors that were found to be significantly different during statistical comparison(s). The p values reported above were determined by comparing paired changes from the initial visit to the follow-up visit in each in category between the control and study cohorts (using a 2-sample t test). 95% CI, 95% confidence interval; MDD, mean difference of differences; HADS, Hospital Anxiety Depression Survey; SIBDQ, Short Inflammatory Bowel Disease Questionnaire; HBI, Harvey-Bradshaw Index; SCCAI, Short Clinical Colitis Activity Index.

The SCCAI was used to assess for the severity of symptoms in UC patients [27]. The SCCAI ranges from 0 to 19, in which 0 represents no symptoms and 19 represents severe symptoms. Additional demographic and clinical characteristics were abstracted from the medical record, including patient age, sex, and disease subtype.

Statistical Analysis

The primary outcomes of interest were the HADS anxiety and depression scores, while secondary outcomes were the disease activity scores (HBI and SCCAI), and health-related quality of life (SIBDQ) (as defined above). Between cohort comparisons for demographic and clinical/psychiatric scores, variables were assessed using unpaired t tests for continuous variables and χ^2 tests (or Fisher's exact test if the expected cell count was <5) for categorical variables. Within cohort comparisons (i.e., difference between 2 time points per subject: [1] "baseline": at a clinic visit prior to psychiatric intervention and [2] "post-intervention": at a clinic visit at least 3 [3] months after intervention at the IPC) were assessed using paired t-tests for continuous variables. Parametric assumptions (e.g., normality of the distribution) for the t-tests were evaluated using residual diagnostics. All hypothesis tests were 2 sided, and analyses were performed using SAS software, version 9.4 (SAS Institute Inc., Cary, NC, USA), GraphPad Prism version 8 (San Di-

ego, CA, USA), or R (R Core Team. R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. 2020. <https://www.R-project.org>). Of note, p values of <0.05 were considered to be statistically significant.

Results

Description of Study Participants

Utilizing the inclusion criteria described above, 36 patients were enrolled in the "study cohort" and 35 patients in the "control cohort." These cohorts had similar mean ages and baseline HADS, HBI, and SCCAI scores as well as similar distributions of gender and IBD types (Table 1).

Within the study cohort, the majority (60%) were referred to the IPC for anxiety, while 32% were referred for "distress" and 24% for depression. Twenty (20) participants (55.6%) had clinically significant symptoms of anxiety, while 11 (30.6%) had clinically significant symptoms

of depression. Thirteen individuals (36.1%) were being treated with corticosteroids, and 8 (22.2%) were treated with opiates. For the study cohort, the mean interval of time between visiting the IPC and the follow-up clinic visit was 9.0 ± 0.8 months (compared to 13.9 ± 1.5 months between the initial and follow-up clinic visits in the control cohort [$p = 0.003$]).

Impact of the Integrated IBD Psychiatry Clinic

First, we evaluated HADS anxiety and depression scores over time in the study and control cohorts separately. In the study cohort, there was a significant decrease in the mean HADS depression score after the IPC intervention (5.9 vs. 4.3, $p = 0.001$) (Table 2). The number of patients with depression demonstrated a nonsignificant reduction (11 vs. 6, $p = 0.27$) after IPC intervention. No significant difference was observed in the mean HADS anxiety score (9.0 vs. 8.2, $p = 0.22$) or proportion of individuals with clinically significant symptoms of anxiety after being seen in the IPC (20 vs. 20, $p = 1.0$). When considering the clinical scores, while there was a reduction in the mean SCCAI (4.7 vs. 3.5, $p = 0.04$), there were no significant differences in the HBI ($p = 0.22$) or SIBDQ (i.e., quality of life) scores over time (Table 2).

In the control cohort, no significant differences were found in the mean HADS anxiety (9.4 vs. 8.7, $p = 0.40$) or HADS depression (5.2 vs. 5.1, $p = 0.77$) scores or in the proportion of individuals with clinically significant scores of anxiety (26 vs. 20, $p = 0.21$) or depression (11 to 7, $p = 0.41$) over time. There were also no significant differences seen in the SIBDQ, HBI, or SCCAI scores over time.

Finally, we compared relative changes in the primary and secondary outcomes between the control and study cohorts. The psychiatric intervention cohort demonstrated a significantly greater drop in the mean HADS depression score than that in the control group ($p = 0.03$) (Table 2). There were no differences in the HADS anxiety score, SIBDQ, HBI, or SCCAI scores when comparing the control and study cohorts when considering the mean changes over time (Table 2).

Discussion

This is the first study to evaluate the impact of a dedicated and integrated psychiatric clinic for outpatient IBD patients. Unlike their control counterparts, patients treated in this clinic demonstrated significant improvements in depressive symptoms, even without measurable changes in disease severity scores or quality of life. Thus, this

type of clinic appears to have a positive effect on depressive symptoms, even if IBD activity itself is not optimally controlled. Of note, no significant impact was exhibited in regard to symptoms of anxiety.

The results of this investigation support the findings of several previous investigations. It has previously been recognized that more formally integrating specialty clinics into the care of IBD patients can result in improvements in a variety of clinical outcomes. In regard to managing mental health of IBD patients specifically, 2 prior studies reported that screening patients with IBD for anxiety and/or depression and providing referrals to psychological care were effective in improving patient mental health (including depression) [20, 28]. These studies also demonstrated that patients were more likely to pursue psychological treatment if it was directly associated with the referring provider group [20], highlighting the importance of incorporating an integrated model in this context. The promise of integrated care services may be best illustrated using the model of the IBD specialty medical “home,” where specialty care services are coordinated for patients through a physician “champion” [29]. This approach to care has been associated with significant reductions in healthcare utilization, disease activity, and improvements in patient quality of life and psychiatric metrics [30].

Interestingly, the cohort receiving care in the IPC also demonstrated improvements in at least 1 disease activity score (e.g., SCCAI). Previous studies have demonstrated that increased levels of psychological stress are associated with more severe IBD activity [31] and may induce flares [32]. It is not clear whether stress management, psychotherapy, and/or other psychiatric interventions are helpful in managing luminal disease activity in the setting of IBD [33, 34], but studies such as ours hint at their potential in this context. Finally, as a result of our collaboration, it is worth noting that the psychiatrist overseeing the IPC (S.Y.) has developed significant familiarity and expertise in the care of IBD patients. It is quite possible that this experience has helped to improve his ability to provide specialized management of IBD patients and that individuals seen in the IPC feel more assured of receiving appropriate (and tailored) care.

There were several limitations to this study. First, this was a relatively small study, and the findings described above will need to be verified in larger cohorts of patients. As a result of the small size, it was impossible to effectively evaluate for certain potential confounders, including disease location, medication, and substance use or surgical history. There were also potentially useful types

of data that were not collected in contemporaneous fashion, including endoscopically based disease activity assessments, laboratory values, and/or healthcare resource utilization. The mean interval follow-up time was also different between the control and study cohorts, and this may have influenced the outcomes. Additionally, we had a single psychiatrist providing care to patients. While we felt this might help reduce potential diagnostic and therapeutic biases that might exist among different providers, it is also possible that our results may be relatively unique to the work performed by our psychiatric care provider.

In spite of these limitations, our study evaluated data from very well-characterized cohorts. In addition, our findings demonstrated the efficacy of a dedicated clinic where patients can receive coordinated psychiatric and IBD care. Specifically, we showed that patients treated in this integrated psychiatry clinic had measurable improvements in depression, even without significant changes in measures of quality of life or certain measures of IBD activity severity. Further study of this intervention is certainly warranted. Future attempts to evaluate this topic should include larger cohorts of patients, in order to better investigate the potential role that medications, substance use, and a variety of disease-related factors have in this context. Nonetheless, this work already provides direct evidence for the value of integrating psychiatric specialty care in the context of IBD.

Statement of Ethics

Participants provided written consent to participate in this study. This study was approved by the Pennsylvania State University College of Medicine Institutional Review Board and carried out under protocol STUDY00013788.

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Conflict of Interest Statement

The authors have no conflicts of interest to report in relation to this manuscript.

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Author Contributions

All the authors had full access to the data in the study, reviewed and edited the manuscript, and gave permission to submit the manuscript in its present form. Additionally, K.B. contributed to conceptualization, data abstraction, data analysis, and writing of the manuscript. S.Y. contributed to the project conceptualization, data analysis, and writing of the manuscript. S.D. contributed to formatting and editing the manuscript. A.K. and A.S. contributed to the data abstraction and analyses associated with the study. N.B., E.W., A.T., and K.C. contributed to data provision and conceptualization of the study as well as editing the manuscript. M.C. provided primary conceptualization, study design, interpretation of the data, manuscript development, and critical review.

Data Availability Statement

All data generated or analyzed during this study are included in this article. Further inquiries can be directed to the corresponding author.

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