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Implementation of Depression Screening and Global Health Assessment in Pediatric Subspecialty Clinics

Esti Iturralde, Ph.D.^a, Rebecca N. Adams, Ph.D.^a, Regan C. Barley^a, Rachel Bensen, M.D., M.P.H.^b, Megan Christofferson^b, Sarah J. Hanes^a, David M. Maahs, M.D., Ph.D.^a, Carlos Milla, M.D.^c, Diana Naranjo, Ph.D.^d, Avni C. Shah, M.D.^a, Molly L. Tanenbaum, Ph.D.^a, Sruthi Veeravalli, M.S.W.^c, K. T. Park, M.D., M.S.^b, Korey K. Hood, Ph.D.^{a,d,*}

^aDivision of Endocrinology and Diabetes, Department of Pediatrics, Stanford University School of Medicine, Stanford, California

^bDivision of Gastroenterology, Department of Pediatrics, Stanford Children's Inflammatory Bowel Disease Center, Stanford University School of Medicine, Stanford, California

^cDivision of Pulmonary Medicine, Stanford Children's CysticFibrosis Center, Department of Pediatrics, Stanford University School of Medicine, Stanford, California

^dDepartment of Psychiatry and Behavioral Sciences, Stanford University School of Medicine, Stanford, California

Abstract

Purpose: Adolescents with chronic illness face greater risk of psychosocial difficulties, complicating disease management. Despite increased calls to screen for patient-reported outcomes, clinical implementation has lagged. Using quality improvement methods, this study aimed to investigate the feasibility of standardized screening for depression and assessment of global health and to determine recommended behavioral health follow-up, across three pediatric subspecialty clinics.

Methods: A total of 109 patients aged 12–22 years (median = 16.6) who were attending outpatient visits for treatment of diabetes (80% type 1), inflammatory bowel disease, or cystic fibrosis completed the 9-item Patient Health Questionnaire (PHQ-9) depression and Patient-Reported Outcomes Measurement Information System (PROMIS) Pediatric Global Health measures on electronic tablets. Patients screening positive on the PHQ-9 received same-day behavioral health assessment and regular phone check-ins to facilitate necessary follow-up care.

Results: Overall, 89% of 122 identified patients completed screening during a 6-month window. Patients completed measures in a timely manner (within 3 minutes) without disruption to clinic flow, and they rated the process as easy, comfortable, and valuable. Depression scores varied across disease type. Patients rated lower global health relative to a previously assessed validation cohort. Depression and global health related significantly to certain medical outcomes. Fifteen

* Address correspondence to: Korey K. Hood, Ph.D., Department of Pediatrics, Stanford University School of Medicine, 780 Welch Road, MC 5776, Palo Alto, CA 94304. kkhoo@stanford.edu (K.K. Hood).

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percent of patients screened positive on the PHQ-9, of whom 50% confirmed attending behavioral health appointments within 6 months of screening.

Conclusions: A standardized depression and global health assessment protocol implemented across pediatric subspecialties was feasible and effective. Universal behavioral health screening for adolescents and young adults living with chronic disease is necessary to meet programmatic needs in pediatric subspecialty clinics.

Keywords

Depression; Global health; Mental health; Screening; Pediatric; Diabetes; Inflammatory bowel disease; Cystic fibrosis

Chronic disease has become more common for adolescents as prevalence increases for many conditions and life expectancies improve [1–4]. To enhance subspecialty care and understand the whole-person impacts of chronic disease management, momentum has gathered behind evaluating patient-reported outcomes (PROs)—symptoms or health-related well-being assessed from youths’ own perspectives [5]. Although the science of obtaining PROs has progressed significantly [6], implementation barriers persist in many pediatric subspecialty settings [7,8]. This report describes an initiative to assess PROs—specifically depressive symptoms and global health—among adolescent and young adult patients across three distinct disease groups and subspecialty clinics.

Depression affects youth with chronic disease at higher rates than their peers, arising from the unique challenges of living with a chronic disease while also complicating and interfering with disease management itself [9–11]. Depressed adolescents fare worse in their clinical outcomes, due in part to difficulties adhering to their often-complex medication and treatment regimens [12–14]. Yet, most adolescents do not receive systematic screening for depressive symptoms or other psychological concerns [15,16], and only a small percentage of adolescents with depressive symptoms receive treatment [17]. Underdetection and inadequate treatment of depression represent missed opportunities to improve both well-being and clinical outcomes [18–20].

Assessment of patient-reported global health may also provide clinically valuable information. Global health encompasses physical, mental, and social health, and it correlates strongly with positive measures of health-related quality of life [21]. Measuring global health can highlight areas of difficulty and personal strength not captured by a depression measure or traditional medical outcomes. Youth with chronic disease report reduced health-related quality of life relative to peers [22], and these deficits in turn predict health deterioration [9,23,24]. Recently, researchers validated a brief global health measure for pediatrics as part of the PROMIS initiative [21,22], facilitating standardized global health assessment across medical settings.

Using a quality improvement (QI) framework, our initiative implemented a standardized screening program aimed to meet the needs of multiple pediatric subspecialty populations. The primary objectives were to (1) investigate the feasibility of standardized screening of depressive symptoms and assessment of global health among patients aged 12–

22 years in three subspecialty clinics (endocrinology/diabetes, gastroenterology/inflammatory bowel disease [IBD], and pulmonology/cystic fibrosis [CFI] and (2) to determine recommended behavioral health referrals for patients screening positive for depression based on systematic same-day and follow-up assessment.

Methods

Participating patients

Eligible patients were aged 12–22 years and attending an office visit for diabetes or IBD care in endocrinology or gastroenterology clinics from February 3, 2016 to August 3, 2016. Diabetes and IBD clinics conducted screening on Wednesdays. Beginning from May 2, 2016, additional eligible patients in the same age group were screened as part of their annual CF evaluation visit in pulmonology Monday through Friday. The minimum age of 12 years was selected in accordance with screening recommendations [25].

Interventions

Interdisciplinary planning process.—A workgroup of physicians, psychology and social work providers, and care coordinators representing the three target clinics met on a biweekly basis throughout the screening period. The workgroup used a Plan-Do-Study-Act methodology to implement interventions in small cycles and make adjustments in an iterative fashion using feasibility data (Figure 1) [26]. The Stanford University Institutional Review Board approved study procedures.

Stakeholder education.—Workgroup members met formally with clinic colleagues and patient advisory groups to explain screening procedures and elicit feedback to guide the planning process. Maintenance of certification credit was offered to physicians for involvement in this QI project.

Screening process.—A care coordinator or social worker distributed a list of identified patients to screening personnel several days before the upcoming screening period (Figure 2) PRO measures were delivered on an iPad electronic tablet via Research Electronic Data Capture (REDCap), a secure, web-based platform compatible with Health Insurance Portability and Accountability Act best practices [27]. During check-in and rooming, a medical assistant gave the tablet and an informational sheet to the patient and guardian (if applicable) and introduced the screening as “a quick survey to help the doctors understand you better.” The patient also received an illustrated handout with stress management suggestions and contact information for clinic behavioral health services. Patient and guardian indicated consent/assent on the survey and verbally. The informational sheet and survey described loss of confidentiality as a potential risk of participation. All materials and measures provided English and Spanish options, and a bilingual medical assistant could answer questions in both languages.

Screening measures

Depressive symptoms.—Patients completed the 9-item Patient Health Questionnaire (PHQ-9) [28]. Informed by past validation research with adolescents aged 13–17 years [29],

we chose a total score of ≥ 11 or item 9 (suicidal thoughts) > 0 as clinically significant cutoffs (positive screens). We also used these cutoffs with our 12- and 18- to 22-year-old participants due to the commonly recommended use of the PHQ-9 with adolescents as young as 12 years [30] and research with adults finding similar psychometric properties for cutoff scores from 8 to 11 [31].

Global health.—Patients completed the 7-item PROMIS Pediatric Global Health Scale (PGH-7), which measures physical, mental, and social health [21,22].

Same-day clinical response.—Upon PHQ-9 completion, the REDCap program transmitted an automatic email to designated screening responders (psychology and social work providers) informing them of positive screens. Located within or near the clinic, screening responders immediately approached that visit's primary medical provider to notify them of positive screening results and develop a same-day assessment plan. Screening responders were also notified of negative screening results; however, these did not necessarily trigger a targeted discussion with the patient during the visit.

Same-day brief assessment.—After the medical provider's visit with the patient, the screening responder approached the patient and family in the examination room explaining that she had additional questions related to the patient's experience with the iPad and requested to speak to the patient alone. In private, the responder reiterated the purpose of screening, explained confidentiality limits, and conducted a 15- to 25-minute assessment interview discussing family, peer, academic/occupational functioning, depressive symptoms, disease-related distress, and information about current coping. The responder tailored this assessment based on PHQ-9 and PGH-7 item endorsement and the earlier huddle with the medical provider.

Suicide risk.—The responder inquired about suicidal ideation and, if endorsed in person or on the PHQ-9, conducted a suicide risk assessment resulting in suicide prevention measures based on risk level (e.g., provision of crisis hotlines, safety plan creation, and voluntary or involuntary hospitalization). Imminent risk of self-harm would result in contacting emergency personnel to facilitate transport to the emergency department. The responder would provide additional consultation to the emergency care team.

Evaluation.—The responder synthesized information from the PRO measures and interview to provide feedback and recommendations. With the patient's permission, the responder then shared these impressions conjointly with family members. The responder helped identify appropriate next steps, such as referring the patient for further behavioral health services, or no referral if current coping resources appeared adequate. The responder obtained permission for the care coordinator to check in with the patient or family by phone within 2 weeks to inquire about referral status.

Documentation.—The screening responder documented PRO results, score interpretation information, and any same-day clinical response details in the electronic health record (EHR). PHQ-9 score and interpretation were recorded in the EHR for all screens regardless

of meeting the threshold, whereas the description of PGH-7 endorsements (both strengths and challenges) was documented only for positive screens.

Behavioral health follow-up tracking.—The screening responder provided a report to a care coordinator on patients who screened positive, including details regarding recommended referrals. The coordinator called to determine whether the patient successfully connected with the referral resource, attended appointments, or needed any other referrals. The care coordinator continued to contact the patient on a regular basis until achieving resolution (i.e., patient attended appointment, not interested, or not reached after three tries).

Outcomes

Feasibility was assessed via survey completion rates and timing measures captured automatically by REDCap. Participants provided acceptability data through an eight-item survey. Items measured perceived ease of use and discomfort with questions, provided a text box for comments, and assessed the perceived value and preferred frequency of screening. These metrics were captured for the diabetes and IBD groups only.

PHQ-9 and PGH-7 scores captured the degree of behavioral health need among patients. Patients in the diabetes and IBD groups also completed a single item regarding any past-year use of behavioral health treatment. For patients with positive screens, we tracked follow-through with behavioral health referrals, barriers encountered, and the care coordinator's process tracking outcomes and providing assistance.

Correlations were calculated between screening scores and disease-specific medical outcomes gathered from the EHR at the time of screening, specifically: for diabetes, glycemic control (hemoglobin A1C) and daily blood glucose checking frequency (averaged across 14 days of glucometer data); for IBD, the Pediatric Crohn Disease Activity Index (PCDAI) or the Pediatric Ulcerative Colitis Activity Index (PUCAI); and for CF, the forced expiratory volume in 1 second (FEV₁) percentage predicted. We calculated separate correlations for patients with recent onset (<6 months) of diabetes or IBD to account for possibly distinct symptom trajectories in newly diagnosed patients.

Results

Patient characteristics

In total, 109 patients completed PROs measures (Table 1). Patients with diabetes accounted for 46% of the sample. Half of patients identified as belonging to a racial or ethnic minority group and 41 % participated in a public health insurance program. Patients with diabetes varied in glycemic control from recommended to suboptimal ranges of A1C (Table 1). Most patients with IBD (91%) fit quiescent or mild categories of the Physician's Global Assessment. Patients with CF tended to have mild to moderate disease severity based on FEV₁% of predicted.

Feasibility

Before project initiation, screening in the three participating clinics consisted of nonstandardized interviewing about psychological concerns during the medical examination. During designated screening dates in the testing period, 89% of identified patients in diabetes, 86% in IBD, and 93% in CF completed the PHQ-9 measure. Across clinics, 11% of identified patients did not complete screening due to the following reasons: patient or guardian refused ($n = 7$), not enough time during visit ($n = 3$), unable due to intellectual disability ($n = 2$), and unknown ($n = 1$). Diabetes and IBD subspecialty services saw additional patients during nonscreening dates and at other clinic locations; thus, screened patients accounted for 14% of diabetes and 17% of IBD patients aged 12–22 years seen by these services overall during the 6-month testing period.

Timing data indicated that screening occurred soon after patients arrived for their visits. A total of 53% started the survey within 5 minutes of rooming. For the 19% who started the survey more than 10 minutes after rooming, the main reasons were that the medical assistant was delayed by another task or another provider arrived to see the patient before the survey could be started. Patients completed the PHQ-9 and PGH-7 surveys quickly (PHQ-9 = 1.9 ± 6.9 minutes; PGH-7 = 1.7 ± 3.6 minutes). In the three clinics, time allowed for the psychology or social work provider to meet in person with all patients who screened positive.

Acceptability

Patients rated the screening procedure favorably in terms of understandability, brevity, ease of use, and comfort in answering the questions (Table 2). The majority of participants found it “somewhat” to “extremely” important for doctors to know about their emotions and how they feel about their health. Regarding screening frequency, the largest proportion of patients recommended every 3 months (26%). A handful of participants wrote in comments noting the value of screening.

Behavioral health need and follow-up

Across clinics, 16 (15%) participants had positive screens (Table 3 and Figure 2). PHQ-9 scores differed across disease groups. Participants from CF reported fewer depressive symptoms than those in the diabetes ($t(75) = 2.3$, $p < .05$) and IBD groups ($t(52) = 3.4$, $p < .01$). PGH-7 scores did not significantly differ across disease categories ($F(2, 104) = 2.3$, $p = .11$). Overall PGH-7 scores (mean = 25.5 ± 5.0) were lower than those reported for a previous, nonclinical sample of 1,065 adolescents aged 11–17 years surveyed as part of a validation study (mean = 28.0 ± 4.9 ; $t(1, 170) = 5.02$, $p < .001$) [21].

Most patients reported receiving no behavioral health services in the past year (82% for diabetes and IBD). Even among the 13 diabetes and IBD patients with positive screens, only 6 (46%) reported past-year services (CF not available). During same-day in-person assessment, 15 of 16 overall patients with positive screens received a recommendation to continue or pursue a new referral for behavioral health services. Of these, 8 (or 50% of overall positive screens) met with a provider to receive psychotherapy or antidepressant medication during the 6 months after screening. An additional one patient declined services

and six patients could not be reached to determine the outcome. The majority of patients who sought behavioral health services ($n = 6$) met with a local provider in their community; two patients met with a psychology or social work provider located within the subspecialty service.

A care coordinator attempted to contact all 16 patients with positive screens to ascertain follow-up status. On average, she made 3.9 ± 2.6 contacts per patient, usually by phone (71%) or during later patient visits (16%). Other tracking methods included determining the outcome from progress notes, making contact through an electronic patient portal, or through consultation with a provider. Patients who had difficulty following up with referral recommendations largely reported being too busy, difficulty scheduling with a provider, problems finding a provider covered through their insurance plan, or seeing behavioral health as a low priority. For these patients, the care coordinator attempted to resolve barriers by providing contact information for community providers or helping to schedule appointments with behavioral health providers within our subspecialty clinics.

Associations between screening scores and medical outcomes

PHQ-9 and PGH-7 scores were inversely correlated ($r(107) = -.66, p < .001$). For patients in the diabetes group, average daily blood glucose checking frequency was positively correlated with PGH-7 scores regardless of diagnosis timing ($r(47) .34, p .02$) but not correlated with PHQ-9 scores. Neither the PHQ-9 nor the PGH-7 related to A1C. For the IBD group, more severe PCDAI or PUCAI was correlated with higher PHQ-9 scores for the earlier diagnosis group only ($r(27) = .43, p = .03$), but not with PGH-7. For CF, FEV₁% predicted did not relate to PHQ-9 or PGH-7.

Discussion

Clinical guidelines across specialty and primary care settings recommend screening adolescents for depressive symptoms [19,25,32,33]; yet, concerns persist regarding feasibility, adolescents' willingness to disclose symptoms to medical providers, and the expertise needed to assess psychological symptoms among adolescents with medical illness [7,34,35]. Our investigation describes the implementation of a standardized assessment of two PRO measures (PHQ-9 and PGH-7) to screen for depressive symptoms and assess global health among adolescents across three pediatric subspecialty clinics. We found that an electronic screening tool was efficient and highly acceptable to patients, yielded meaningful data, and did not disrupt clinic flow.

Endorsement of depressive symptoms broadly aligned with past studies of patients with these diagnoses [10,36–38]. Differences seen here among groups in depression level (with CF patients being the lowest) indicate that when implementing common screening measures in multiple clinics, disease-specific considerations may be necessary. Time and personnel allocation will depend on the particular symptom rates in the given population. Adjustment may also be needed to conform to disease-specific standards of care. For example, shortly after the present study, the CF clinic lowered the PHQ-9 cutoff score to 10 based on current recommendations; guidelines also recommend psychoeducation for mild depression levels, which would place greater strains on clinic resources [19,30]. For the IBD group, depressive

symptoms correlated positively with disease indices (PUCAI or PCDAI) for patients with earlier diagnosis, supporting previous findings that depressive symptoms correspond with disease status in this population. Diagnosis timing may be an important consideration, possibly necessitating a more preventive screening approach for patients with recent onset to identify an area of need.

Our study is the first to our knowledge to describe use of the PROMIS Pediatric Global Health scale in a clinical setting. This brief scale offered several clinical benefits. It efficiently gathered information about strengths and challenges across multiple health and social domains, which helped guide the in-person assessment approach of screening responders after a positive depression screening result. Patients appeared to welcome assessment of global health, as the majority reported value in having their doctors understand “how they feel about their health. “ This finding is consistent with past research showing the potential of quality of life assessment to improve the patient-doctor relationship [39]. Global health also related meaningfully to other clinical indicators (average daily blood glucose checks and depressive symptoms). We are currently exploring how to best integrate these data into clinical care not only for patients without positive PHQ-9 screens as well.

An interdisciplinary planning process and stakeholder engagement enhanced acceptance of screening and identified areas for improvement. For example, providers worried that they might not notice in time if patients endorsed suicidal ideation on the PHQ-9 and would let patients leave the clinic without undergoing risk assessment. We therefore configured the REDCap system to send an alert to multiple possible screening responders who would shoulder the responsibility of evaluating patients at the point of care. This response process also allowed medical providers to give their own impressions to the screening responder before conducting an in-person assessment. Sharing screening and assessment results with providers through the EHR further facilitated communication to better inform patient care.

In the early stages of this QI initiative, we observed that relatively few patients with positive screening results were receiving behavioral health services and that many reported barriers to pursuing referrals, a difficulty observed by others implementing screening in subspecialty care [8]. Therefore, we established the follow-up role of the care coordinator, who checked in with the patient after screening to provide additional referral ideas and problem-solving guidance. Although not all patients who screened positive followed through on referral recommendations, 50% did attend a behavioral health appointment shortly after screening, usually with a provider in the local community. Several other patients were in the process of pursuing a referral but could not be reached within the follow-up window to confirm success. This follow-through rate compared favorably with past studies [35], including one providing colocated behavioral health services within the subspecialty service [8]. Our care coordinator was able to check in with most patients regarding their needs after screening. This process required few, brief contacts with patients, who sometimes needed additional support in problem-solving referral issues. Although our sub-sample of patients with positive screens is small, these data suggest the value of dedicating screening resources to checking in with patients and linking them to robust referral networks in addition to integration of behavioral health services within the subspecialty itself. Of note, reaching patients by phone proved challenging in some cases. For young adult patients who may be

transitioning out of the family home, other tracking solutions such as contact via text message may prove necessary.

The screening described here was carried out in a limited fashion in two clinics (diabetes and IBD) to assess initial feasibility and acceptability before expanding to more clinic times and locations. Screening on a small scale per clinic allows for better understanding of clinic-specific flow and practical barriers, which can be addressed in a systematic way as screening expands. During this testing phase, research personnel were used for tasks that would ideally be turned over to clinic personnel (such as identifying eligible patients and making follow-up calls after positive screens). On the strengths of the current findings, we are establishing buy-in across clinics to pool resources for dedicated personnel to handle these tasks. This institutional support is necessary for creating a sustainable infrastructure for comprehensive PROs screening. However, fuller implementation may mean unexpected disruptions in clinic flow, depending on numerous factors driven by practice differences at the institution and subspecialty levels. A further limitation of the present study is potential bias in terms of the patients approached for screening. As two subspecialties conducted screening on a specific day of the week, these patients may have differed from patients attending clinic on other days.

In conclusion, our investigation strengthens the evidence that screening for PROs can be achieved in subspecialty care settings with a high degree of feasibility and acceptability. Targeting subspecialty care for screening has particular merits because of the higher risk of psychological distress among adolescents with chronic disease and the unique role of the subspecialty provider in youths' lives [40]. Patients in this study largely welcomed their providers' interest in their emotional and health-related wellbeing, underscoring the potential for PRO screening to enhance patient-centered care. The standardized approach piloted here appears promising to address existing behavioral health gaps among at-risk adolescents and young adults living with chronic disease. Furthermore, we provided a reproducible process using a QI framework that may be used in other settings to implement universal screening to address undiagnosed or inadequately treated depressive symptoms, which threaten patients' quality of life and ability to optimally manage their health.

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IMPLICATIONS AND CONTRIBUTION

Standardized screening for depression and assessment of global health within multiple pediatric subspecialty clinics was feasible and effective. Youth with chronic medical illness and unmet mental health needs were identified and successfully connected to behavioral health services. In-clinic screening links patients with needed treatment to improve quality of life and health outcomes.

Figure 1.
Quality improvement timeline.

Figure 2.
Flow of PROs screening process.

Table 1

Patient demographics and disease-specific indices

	Diabetes (n = 50)	IBD (n = 32)	CF (n = 27)	Total (N = 109)
Female, n (%)	30 (60)	18 (56)	14 (52)	62 (57)
Age, years, mean $\pm$ SD	16.3 $\pm$ 2.1	17.5 $\pm$ 2.8	16.1 $\pm$ 2.9	16.6 $\pm$ 2.6
Race/ethnicity				
White, non-Hispanic, n (%)	19 (38)	15 (47)	19 (70)	53 (49)
Hispanic, n (%)	17 (34)	3 (9)	4 (15)	24 (22)
Asian or Pacific Islander, n (%)	6 (12)	6 (19)	1 (4)	13 (12)
Other, n (%)	3 (6)	2 (6)	1 (4)	6 (6)
Multiple, n (%)	5 (10)	6 (19)	2 (7)	13 (12)
Public insurance, n (%)	25 (50)	7 (22)	13 (48)	45 (41)
Disease duration years, mean $\pm$ SD	5.5 $\pm$ 4.3	3.7 $\pm$ 3.1	—	—
Type 1 diabetes, n (%)	40 (80)	—	—	—
Type 2 diabetes, n (%)	10 (20)	—	—	—
Hemoglobin A1C %, mean $\pm$ SD	8.4 $\pm$ 1.8	—	—	—
7.5, n (%)	16 (32)	—	—	—
> 7.5 and < 9.0, n (%)	21 (42)	—	—	—
9.0, n (%)	13 (26)	—	—	—
Average daily blood glucose checking frequency, mean $\pm$ SD	3.3 $\pm$ 2.0	—	—	—
Prescribed insulin, n (%)	44 (88)	—	—	—
Multiple daily injections, n (%)	22 (44)	—	—	—
Insulin pump, n (%)	22 (44)	—	—	—
Continuous glucose monitoring system, n (%)	8 (16)	—	—	—
Crohn's, n (%)	—	13 (41)	—	—
Ulcerative colitis, n (%)	—	16 (50)	—	—
Indeterminate colitis, n (%)	—	3 (9)	—	—
PUCAI or PCDAI, mean $\pm$ SD	—	10.6 $\pm$ 16.2	—	—
Physician's global assessment				
Quiescent, n (%)	—	16 (50)	—	—
Mild, n (%)	—	13 (41)	—	—

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	Diabetes (n = 50)	IBD (n = 32)	CF (n = 27)	Total (N = 109)
Moderate, n (%)	—	2 (6)	—	—
Severe, n (%)	—	1 (3)	—	—
Biologics, n (%)	—	19 (59)	—	—
Immunomodulators, n (%)	—	11 (34)	—	—
Current systemic corticosteroids, n (%)	—	3 (9)	—	—
Past 6-month systemic corticosteroids, n (%)	—	5 (16)	—	—
FEV ₁ % of predicted, mean $\pm$ SD	—	—	81.4 $\pm$ 19.9	—
Mild, 70, n (%)	—	—	19 (70)	—
Moderate, 40 and < 70, n (%)	—	—	7 (26)	—
Severe, < 40, n (%)	—	—	1 (4)	—

CF = cystic fibrosis; IBD = inflammatory bowel disease; FEV₁ = forced expiratory volume in 1 second; PCDAI = Pediatric Crohn Disease Activity Index; PUCAI = Pediatric Ulcerative Colitis Activity Index; SD = standard deviation.

Table 2

Participants' acceptability and importance ratings

Selected responses	Endorsement among participants from diabetes and IBD clinics, n (%)
Was the survey hard to understand?	
Not at all	70 (85)
Did the questions make you feel uncomfortable?	
Not at all	53 (65)
A little	17 (21)
Was the survey too long?	
Not at all	71 (87)
Was the iPad hard to use?	
Not at all	76 (93)
How important is it for your doctors to know about your emotions?	
Somewhat	22 (27)
Very	21 (26)
Extremely	18 (22)
How important is it for your doctors to know how you feel about your health?	
Somewhat	13 (16)
Very	21 (26)
Extremely	34 (42)
How often should doctors give their patients surveys about their emotions and how they feel about their health?	
Once a year	16 (20)
Every 6 months	14 (17)
Every 3 months	21 (26)
Once a month	6 (7)
Every time I come in	15 (18)
Patients' write-in comments	
"I love my life even though I may not feel perfect all the time." (diabetes)	
"Good idea Doc" (IBD)	
"It's pretty good for the doctors to know about you more." (diabetes)	
"Makes me wonder if mental health has to do with IBD" (IBD)	

IBD = inflammatory bowel disease.

Table 3

Screening responses

	Diabetes (n = 50)	Inflammatory bowel disease (n = 32)	Cystic fibrosis (n = 27)	Total (N = 109)
PHQ-9				
PHQ-9, mean $\pm$ SD ^{a,b}	4.6 $\pm$ 5.0	6.0 $\pm$ 5.3	2.2 $\pm$ 3.2	4.4 $\pm$ 4.9
PHQ-9 11, n (%) ^c	7 (14)	4 (13)	2 (7)	13 (12)
PHQ-9 item 9 > 0, n (%) ^c	3 (6)	5 (16)	1 (4)	9 (8)
Positive screens, n (%) ^c	8 (16)	5 (16)	3 (11)	16 (15)
PGH-7				
PGH-7, mean $\pm$ SD ^c	26.0 $\pm$ 5.1	23.9 $\pm$ 5.7	26.4 $\pm$ 3.6	25.5 $\pm$ 5.0
Past-year history of mental health services				
Yes, n (%) ^c	6 (12)	9 (28)	—	—
Yes among those with positive screens on PHQ-9, n (% of positive screens) ^c	3 (38)	3 (60)	—	—

PGH-7 = 7-item PROMIS Pediatric Global Health Scale; PHQ-9 = 9-item Patient Health Questionnaire; SD = standard deviation.

^aSignificant difference between diabetes and CF ($p < .05$).^bSignificant difference between IBD and CF ($p < .05$).^cNo significant differences among groups.