Integrating Psychosocial Interventions with Pediatric Patients with Gastrointestinal Disorders in Primary Care and Specialty Care Services

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Abstract

Emphasis on integrated physical and behavioral health care skyrocketed in recent years partially as a result of the Federal Health Care initiatives described in the Affordable Care Act, emergence of the biopsychosocial model, and the ongoing collaboration between medical providers and pediatric psychologists. Integrated models of care demonstrate significant advantages to patients as well as medical providers. Behavioral health problems arise in approximately 50 percent of well-child and pediatric outpatient visits and consume physician time that should be spent addressing medical concerns. Additionally, families who present with behavioral health concerns in primary care settings often utilize greater health care resources than those families that do not present with a behavioral health problem. Thus, integrated behavioral health care allows for better allocation of physician time and resources.

The current article aims to provide a framework for behavioral health integration in primary and specialty clinics, with specific emphasis on treating pediatric patients with gastrointestinal conditions. Chronic conditions such as Crohn's disease and Ulcerative Colitis are generally managed by a Gastroenterology Specialty Clinic. Patients with chronic medical conditions, like Inflammatory Bowel Disease, are at greater risk of disease distress and psychosocial challenges that would benefit from behavioral health consultation. Further, functional gastrointestinal disorders are believed to largely result from psychosocial distress, and typically respond to behavioral intervention. Pediatric psychologists are well-equipped to support primary and specialty clinics in managing psychosocial challenges that often present in patients with gastrointestinal distress. The current article describes the foundation of integrated care practices and how pediatric psychologists should be utilized in pediatric medical settings.

1. Introduction

The notion of integrated pediatric behavioral health care is gaining increased traction due to a variety of factors. The emergence of a biopsychosocial model[1] fuels integration efforts. The biopsychosocial paradigm emphasizes the interaction of biology, behavior, family functioning, and contextual variables as a way to conceptualize health as well as illness.[2] Asarnow and colleagues [2] remarked that Federal Health Care initiatives in the United States also spur the development of integrated practice models.

Pediatric practices are the gateway to health care for young people and their families. Ninety percent of children visit a pediatrician over the course of a year.[3] Further, pediatric primary care clinics are flooded with patients carrying behavioral health concerns.[4-6] In fact, nearly 50 percent of all pediatric outpatient visits included a behavioral health problem.[5] Finally, Saps [7] noted that pediatric primary care practices see nearly three-quarter of a million patients presenting with abdominal pain in one year. Not surprisingly, a growing number of pediatricians co-locate behavioral health care providers in their practices.[3]

Integrated physical and behavioral health care services create significant advantages for patients and providers.[2, 8-12] In particular, one-stop shopping experiences for health care consumers offers increased access, decreased stigma, and better patient satisfaction. Prevention, early intervention, and continua of services offered by integrated models may reduce mortality and morbidity rates. Finally, "a multi-disciplinary treatment approach which takes into account interactions between biological and psychological processes, as well as distinct contributions to presenting symptoms, is also most likely to be effective and well received."[13 (p. 101).]

Competence in applying low cost brief assessment and screening measures, skill in delivering effective evidence based psychosocial interventions, and expertise in consultation and liaison work are essential for integrated practice.[8-9] Integrating behavioral health care and primary health care requires therapists to coordinate services with pediatricians rather than acting as lone rangers.[9] Ideally, this article serves as a framework for behavioral health integration by providing clinicians with relevant information on different models of care for pediatric gastrointestinal (GI) disorders.

The article begins with a description of common GI conditions followed by a discussion of psychological factors associated with these conditions. A brief review of common assessment methods useful in clinical practice is represented in the third section. Next, psychosocial treatment options are presented and discussed. Finally, the article concludes with recommendations for integrated clinical practice in both primary and specialty care clinics.

2. Gastrointestinal Conditions

Gastrointestinal (GI) disorders are highly prevalent in pediatric populations and range from occasional discomfort to chronic disease management. These disorders often impact patients' physical health and emotional functioning; consequently, requiring high utilization of health care

resources.[14] Patients with GI disorders frequently experience pain from a variety of sources due to gastrointestinal symptoms, diagnostic testing, and intervention procedures. Additionally, disease sequelae including repeated vomiting, diarrhea, fecal soiling, or urgency to use the bathroom are quite impairing.[15]

2.1 Inflammatory Bowel Disease

Inflammatory Bowel Disease (IBD) is characterized by chronic inflammation in the GI tract and affects approximately 71 of 100,000 young people under the age of 20 years.[16] IBD is an umbrella term that encompasses three distinct diagnostic categories including Crohn's disease, ulcerative colitis, and indeterminate colitis. Youth with IBD experience a relapsing and remitting course of inflammation and disease activity. When a patient is in the midst of an IBD flare, they may develop abdominal pain, fatigue, weight loss, diarrhea, cramping, and joint pain.[15] These symptoms can greatly interfere with a young patients' daily functioning and lead to longer-term implications. Treatment for IBD depends on disease severity and response to intervention. Oral medications are generally sufficient in the maintenance of IBD symptoms. However, medications such as infliximab (Remicade) are becoming more common treatment options.

2.2 Crohn's Disease

Pediatric Crohn's disease is believed to affect approximately 58 per 100,000 young people in the United States.[17] Kappelman and colleagues [17] found a slight increase in the prevalence of Crohn's disease in boys than in girls. Crohn's disease causes inflammation and ulceration that extends through the thickness of the intestinal walls and thus, can affect any part of the GI tract.[15] Symptoms of Crohn's disease often resemble that of irritable bowel syndrome (IBS) such as growth failure, joint pain, or fevers, and can delay diagnosis. More severe symptoms of Crohn's disease may include frequent and urgent trips to the bathroom, bloody stool, diarrhea, abdominal pain, and weight loss.

2.3 Ulcerative Colitis

According to Kappelman et al.,[17] the prevalence rates of ulcerative colitis is approximately 34 per 100,000 youth under the age of 20 years. Whereas Crohn's disease can affect any part of the GI tract, ulcerative colitis is specific to inflammation in the large intestine and restricted to the inner lining of the colon.[15] Patients with ulcerative colitis experience similar symptoms to those with Crohn's disease. In severe cases, surgical intervention, such as removal of the colon and rectum, can often eliminate ulcerative colitis. For patients whose presentations are not distinctly classifiable as Crohn's disease or ulcerative colitis, the designation of indeterminate colitis is used.

2.4 Irritable Bowel Syndrome

Irritable bowel syndrome (IBS) is considered a functional disorder and does not cause inflammation or anatomical changes in the body.[18] IBS and IBD are often confused given the similar presentation of symptoms. Patients with IBS experience recurrent abdominal pain/discomfort, cramping, feelings of urgency, diarrhea, and constipation. IBS continues to be viewed as a behavioral disorder that is strongly associated with

one's lifestyle and stress. According to one population-based study, 6% of middle school students and 14% of high school students met criteria for IBS.[19] Most individuals with IBS go undiagnosed unless their pain or symptoms impact daily functioning.

2.5 Functional Abdominal Pain

Abdominal pain that is not supported by visible or detectable abnormality is known as functional abdominal pain. According to the American College of Gastroenterology, "nerve signals or chemicals secreted by the gut or brain, may cause the gut to be more sensitive to triggers that normally do not cause significant pain (such as stretching or gas bloating)."[20] Abdominal pain is associated with many GI disorders, thus making diagnostic assessment and treatment an ever-moving target. However, once patients are diagnosed with functional abdominal pain, their symptoms are generally improved with the use of behavioral interventions.

2.6 Other Gastrointestinal Disorders

Gastrointestinal disorders refer to diseases that engage the gastrointestinal track at any juncture such as the esophagus, stomach, small intestine, large intestine and rectum, as well as key organs of digestion, the liver, gallbladder, and pancreas. Although a comprehensive summary of all GI conditions is out of the scope of the current review, other disorders that commonly present to pediatric GI clinics include rumination syndrome, cyclical vomiting syndrome, recurrent nausea, esophageal disorders, and defecation disorders.

3. Psychological Factors Commonly Associated with GI Conditions

Treatment for pediatric gastrointestinal disorders often varies depending on the disease course and severity of symptoms. Patients, especially with IBD, are commonly prescribed treatment regimens that are complex and burdensome to individuals and their families. An individual's regimen may include high risk medications, dietary restrictions, and even surgery. Many of the medications prescribed to patients with IBD, such as systemic corticosteroids and immunomodulators, are known to have associated side effects such as weight gain, facial swelling, and emotional lability.[21] Adolescents may experience significant repercussions both physically and psychologically. Demanding treatment regimens, unpredictable disease course, and the impact on psychosocial functioning can prompt poor treatment adherence and adjustment in young patients with IBD.

3.1 Depression

The potential challenges and impact of living with IBD can cause significant distress in young patients. The unpredictable nature of the disease may lead youth to withdraw from social interactions, feel embarrassed by unrelenting physical symptoms, and stigmatization of the disease. Additionally, one may experience rejection from peers, poor self-esteem and body image, increased stress and coping, and conflict with family dynamics.

Psychological factors, such as Major Depressive Disorders, play a crucial role in functioning for patients with IBD, as well as other GI conditions. Rates of depression in

this population range from 10% to as high as 20%.[22-23] Lifetime prevalence rates of depression in the IBD population are approximately 25%, which is significantly higher than some other chronic health conditions, such as cystic fibrosis where rates are approximately 12%.[23] Interestingly, patients with functional GI conditions were found to be less psychosocially adjusted than their peers with IBD.[24] While only 19% of patients with IBD endorsed their illness as causing a problem, 65% of children with functional GI conditions reported their illness as problematic.[24] Additionally, these youths described themselves as sicker than those with IBD. Higher rates of depression and psychosocial adjustment provides ample opportunity for psychological intervention in patients with IBD as well as functional GI conditions.

3.2 Anxiety and the Brain-Gut Interaction

Along with mood symptoms playing a critical role in functioning for patients with IBD and functional GI conditions, the brain-gut axis has extensive documentation in the GI literature. The impact of stress and emotion on physical symptoms in the gastrointestinal tract is apparent.[15] Wilhelmsen[25] conceptualized patients with functional GI conditions as resulting from a dysregulation between the brain-gut axis. The intricate system suggests that the transmission of neural pathways between the digestive tract (physical symptoms) and central nervous system (emotional reactions), and vice versa, cause the onset of GI tract dysfunction.[15] Thus, patients with a propensity for anxiety are more likely to experience ongoing gastrointestinal issues such as recurrent abdominal pain, diarrhea, and nausea. Addressing the physical manifestations of anxiety in patients with functional GI disorders can markedly reduce the impact on psychosocial functioning.

4. Behavioral Health Assessment and Screening Measures

Accurate and targeted assessment propels efficient and effective treatment. In the following section, a variety of measures are described for treatment target monitoring. These measures may be helpful in initially identifying treatment goals, designing interventions, and subsequently monitoring progress.

4.1 Anxiety and Depression Screening

As previously noted, symptoms of anxiety and depression frequently co-occur in children who experience chronic gastrointestinal distress. Assessing these symptoms becomes pivotal in developing a responsive treatment plan. In the following paragraphs, we describe several potentially useful assessment methods.

The Screen for Child Anxiety Related Emotional Disorders (SCARED)[26-27] is a widely used and researched instrument. The SCARED is a 41-item questionnaire that taps common symptoms of anxiety. The scale produces a total score as well as scores on five factors (panic/somatic, generalized anxiety disorder, social anxiety, separation anxiety, and school refusal). The SCARED offers both self and parent report forms. Its psychometric properties are sound making it a well-established evidence based measure.[28] The SCARED has been employed in recent work with pediatric

patients experiencing various health conditions and in primary care settings.[29-32]

The Multidimensional Anxiety Scale for Children-2 is a new generation instrument for assessing anxiety in children and adolescents.[33] Similar to the SCARED, the MASC-2 meets the threshold for a well-established evidence based procedure.[28] The MASC has been used in several studies with pediatric patients experiencing health conditions.[34-35]

The Children's Depression Inventory-2 is a measure of childhood depressive symptoms that is widely used and researched.[36] The CDI-2 includes 28 items and 4 sub-factor scores (negative mood/physical symptoms, negative self-esteem, interpersonal difficulties, and ineffectiveness). It is available in parent-, teacher- and self-report forms. Additionally, a short form version also exists. Recent research demonstrates the use of the CDI with various pediatric patients.[35,37-39] The CDI is another well-established assessment instrument.[28]

Beck Depression Inventory–II is a 21-item instrument useful for assessing depressive symptoms in adolescents.[40] The BDI-II is commonly employed and is considered a well-established assessment method.[28] The BDI-2 has been applied to assess depression in youth suffering from chronic pain.[41]

4.2 Pain Rating Forms

Young patients may also complete individualized pain ratings on a 1-10 or 1-100 scale.[42] Additionally, there are several formal measures which are traditionally employed for assessing pediatric pain. In particular, Williams and Zahka[42] recommended the Pain Coping Questionnaire[43] and the Pain Response Inventory.[44] The Pain Response Inventory is specifically used for evaluating abdominal pain in young patients.

4.3 Coping and Quality of Life Measures

Coping is a dimensional construct and includes primary and secondary control strategies.[45] Primary control tactics involve trying to change the objective conditions and circumstances that are distressing whereas secondary control maneuvers work to modify individuals' reactions to the circumstances.[46] Compas et al. [47] recommended the Response to Stress Questionnaire (RSQ)[48] to assess coping in pediatric medical conditions. The RSQ is a psychometrically sound instrument that targets primary and secondary control tactics as well as disengagement strategies. The measure has also been applied to adolescents experiencing abdominal pain.

Blount and colleagues[49] reviewed several self-report coping measures. A variety of assessment tools met criteria for well-established assessment procedures including the Adolescent Coping Orientation for Problem Experiences (A-Cope),[50] Ways of Coping-Revised,[51] Coping Strategies Inventory (CSI),[52] and the Pain Coping Questionnaire (PCQ).[43] All these measures have been used with pediatric medical populations.

The Adolescent Coping Orientation for Problem Experiences is a 54-item measure that assesses the frequency of different coping strategies. It is scored on a 1(never) to 5 (most of the time) scale. The Ways of Coping-Revised instrument contains 66 items rated on a four point

Likert scale. The CSI is based on the original Ways of Coping Questionnaire[53] and taps beliefs and behavioral responses to stress in children ages seven years and older in a 32-item format

The Pediatric Quality of Life (Peds-QL)[54] assesses functional impairment and quality of life in patients experiencing somatic complaints. The Peds-QL contains 23 items across 4 categories addressing physical, emotional, social, and school functioning. There are both self and parent-report formats. The PEDS-QL is commonly administered to children with both functional and organic abdominal pain.[55] It is considered a well-established instrument.[42]

In sum**,** there are multiple measures available for clinicians to employ with pediatric patients. A number of potential decision-making rubrics have been outlined.[28] First, the match between the instrument and the purpose of the assessment should be seriously considered. Additionally, the length of the measure and its psychometric properties is an important decision-making criterion.[56] Briefer measures can be used as screeners, are efficient in targeting at-risk populations, and do not pose a burden on patients. Further, reviewing the clinical and research literature buttressing the use of various assessment methods is a good strategy. In settings where cost issues are pivotal, evaluating the cost of administering and scoring any instrument is well-advised.

5. Behavioral Health Interventions for patients with GI distress

Treating comorbid psychological symptoms in patients with GI distress is critical to improving medical outcomes. Research has consistently shown that accompanying psychological factors, including disease distress, depression, and anxiety, interfere with medication adherence.[57] Poor treatment adherence is highly prevalent in the chronic health population. Some reports suggest that approximately 50-75% of youth do not adhere effectively to their treatment regimens.[58] More specifically, treatment non-adherence is the most commonly reported barrier to effectively combating GI disorders.[59-60] Non-adherent behaviors are believed to stem from forgetting, negative side effects, stigma around protocol, and poor parent-child relationships.[59]

Higher rates of volitional nonadherence is related to greater disease activity and poorer psychosocial quality of life.[61] Nonadherence accounts for increased morbidity symptoms, future complications, higher health care utilization, and poorer quality of life.[60] Moreover, patients with IBD may believe that even if they adhere to their treatment plan in its entirety, complications may still arise. According to learning theory principles, these patients do not receive appropriate reinforcement for engaging in their medical regimens. Thus, overtime patients and their families may experience disease burnout and distress related to managing their conditions.

Additionally, long-term medication non-adherence results in worsening of medical symptoms and a larger economic burden for the families and health care system.[62] Gray and colleagues[57] found that anxiety and depressive symptoms moderated the relationship between barriers and

medication adherence. Medical interventions emphasizing the role of psychological symptoms may improve the young patients' overall symptomatic presentation and quality-of-life. Therefore, patients with disease burnout or accompanying depressive or anxiety symptoms should receive treatment interventions that explicitly address their psychological symptoms.

Since the sequelae of gastrointestinal disorders can lead to psychological distress, it is critical to intervene at the behavioral health care level. Health care providers should adopt a preventative framework and assess barriers in routine appointments.[63] By monitoring barriers from the beginning of treatment, clinicians can effectively intervene. While the current evidence based interventions for integrated behavioral health care remain scarce, there are a few sound treatment interventions shown to improve youth's overall symptomatology. When psychological factors persist or the youth does not follow through on medical recommendations, behavioral and multi-component interventions should be prioritized.[60, 63] A recent meta-analysis found that goal setting, behavioral contracts, and adherence monitoring led to good compliance among children and adolescents.[63] Additionally, the treatment literature for youth with IBS provides a helpful framework to adopt when working with youth who have a chronic GI condition.

The literature base on psychological treatment for IBS focuses on variations of Cognitive Behavioral Therapy (CBT), components from Stress Management CBT, Multicomponent CBT, and in vivo exposure. These transdiagnostic approaches provide patients with a strong foundation of psychoeducation. Specifically, young patients learn about triggers and barriers to adherence, relaxation training, cognitive restructuring about the meaning of their illness and appraisal of their gut sensations, as well as exposure to different gut and bodily sensations that may impede one's adherence.[64-66] This treatment approach was studied in patients with IBS and can be useful for those who have IBD. Slight adaptations may be useful depending upon the patient's symptomatic profile, cognitive capacity, and demographics. Patients with disease distress would benefit from interventions that help establish a sense of control over their environment and treatment regimen, normalize their specific routines, receive positive reinforcement for engaging in health behaviors, and improve social connectedness. These new skills will enable the patient to cope with the distress that often accompanies chronic medical conditions.

5.1 Brain-Gut Axis and Treatment

The brain-gut axis is believed to be a major factor in the pathophysiology of IBS and other functional GI conditions. The brain-gut axis is a bidirectional neural pathway between the cognitive and emotional centers of the brain and the nervous system in the gut.[67] This pathway provides a stream of constant information shared between the nervous system and brain. Thus, circuits often become activated by external factors (stimuli in the environment that cause fear or distress) and internal factors (automatic thoughts and interpretations), leading to a disruption in

the digestive tract. Consequently, the phrase "I've got butterflies in my stomach" speaks to this process, such that, when someone is nervous or under large amounts of stress the body responds with stomach discomfort, cramping, nausea, and urgency to defecate

In patients with IBS and other functional disorders, providing education on the brain-gut axis can draw awareness to the bodily sensations that accompany distress. Following psychoeducation, behavioral health providers can then assist the patient in recognizing and monitoring physical and emotional symptoms, provide coping skill development and relaxation training, and challenge cognitive distortions related to appraisals of their physical sensations.

5.2 Cognitive Behavioral Treatment

Cognitive behavioral interventions that involve reward systems, adherence monitoring, behavioral contracting, cognitive restructuring, and exposure can improve patients' psychosocial functioning. Coaching parents on behavioral techniques such as behavioral contracts and contingencies, effective limit setting, and positive reinforcement will ensure that the individual's home environment is conducive to treatment adherence. For example, the caregiver provides a sticker each time that the child takes his/her prescribed medication. The child can exchange these stickers for prizes at the end of each week. Both daily and weekly reinforcement strategies can motivate the child to adhere to medical recommendations. Behavior contracting can also be adapted for adolescents. Rather than providing stickers or points each day for compliance, the caregivers can offer monetary rewards or preferred activities at the end of each week.

CBT not only helps youth increase medication compliance, but also helps improve coping skills and decrease psychological distress. In a large study by Levy and colleagues,[68] 185 youth diagnosed with Ulcerative Colitis or Crohn's disease were randomized to one of two groups to improve psychosocial factors impacted by IBD. They were either assigned to three CBT sessions or an educational support condition. The CBT sessions emphasized promoting positive coping skills, discussions around wellness compared to illness, stress management, and parenting techniques to provide differential attention to positive health behaviors versus negative illness-related behaviors. Follow-up and post-treatment findings suggested that adolescents in the brief CBT condition demonstrated significant improvement in psychosocial functioning compared to the control condition. Further, the adolescents in the CBT group were significantly more likely to have better school attendance, effective coping skills, and reported an increase in quality of life.[68]

6. Recommendations for Integrated Practice

The United States is repeatedly ranked at the top on health care expenditures and near the bottom on indicators of health care access and quality of care.[69-70] Although integrated care practices are not a new phenomenon, the federal Patient Protection and Affordable Care Act (ACA) now provides incentives for integrated behavioral health and primary care in order to address whole-person needs. The ACA

considers behavioral health treatment as an "essential health benefit" that should be accessible to all patients and their families.[69] Furthermore, the Mental Health Parity and Addiction Equity Act (2008) promotes increased insurance coverage to further encourage innovative integrated behavioral health care programs.

6.1 Integrated Pediatric Primary Care

Following the implementation of the ACA, new efforts for collaboration and integration of behavioral health in pediatric primary care emerged. Embedding psychologists, social workers, and psychiatrists into primary care offices is more widespread and accepted than ever before. However, integrated care models are continuing to develop and must be evaluated for efficiency, patient satisfaction, and cost effectiveness.

Integrated pediatric primary care offices have the opportunity to address and manage common GI problems such as constipation, IBS, abdominal pain, and encopresis. Currently, these functional GI conditions are managed by the patient's primary care provider or the family is referred to a specialty GI clinic and the issues are managed by a separate team. The literature generally describes these conditions as functional GI problems, meaning the symptoms are often caused by psychological factors[15] and are treated with behavioral health intervention. There is extensive literature on the brain-gut interaction and links between the automatic nervous system and the digestive tract.[13] Thus, psychologists are essential in the treatment of functional GI disorders.

Embedding behavioral health providers in pediatric primary care may negate the need for a referral to a specialty GI clinic, thus minimizing health care utilization. Moreover, behavioral health providers may act as a triage service before a referral is placed to a specialty clinic. By instituting an integrated primary care system, a patient is provided an opportunity for primary prevention and intervention first. However, if the family does not respond to initial intervention then a referral to a specialty care clinic is warranted. In this way, embedded behavioral health care professionals working a specialty clinic offer a continuum of care.

6.2 Interdisciplinary Specialty GI Clinics

Interdisciplinary specialty GI clinics afford patients with a "one stop shop" for their gastrointestinal needs. Patients with IBD, liver disease/transplants, rumination syndrome, chronic nausea, chronic abdominal pain, and other GI conditions that did not respond to primary intervention, are often referred for evaluation by a gastroenterologist. Patients with GI conditions often require consultation and follow up with a dietician, social worker, and specialized behavioral health provider. Specialty GI clinics provide a unique opportunity for integrated care practices.

The psychologist or behavioral health provider's role in a pediatric GI clinic is multidimensional. There are opportunities for mental health screening and brief assessment, warm handoffs and on-the-fly consultation, as well as ongoing behavioral health follow up. Patients with chronic GI conditions, such as IBD and liver transplants, require on-going, routine follow

up through a specialty GI clinic. Behavioral health screening should be embedded into routine clinical care for patients with IBD in order to provide whole person care. Psychologists are well-suited to provide behavioral health screening and interpretation. Routine screening not only provides information into how the patient is coping with and adjusting to chronic illness, results also capture those who might benefit from behavioral health prevention or immediate intervention.

Psychologists embedded in a specialty clinic can deliver warm hand offs and on-the-fly consultation when patients attend routine clinic appointments. If behavioral health screeners are elevated, the psychologist is introduced to the family to briefly assess psychosocial functioning as it relates to their GI diagnosis. In cases where on-going stressors are identified, the family is provided an opportunity for a same-day consultation (approximately 30-45 minutes) or schedule a follow up appointment at a later date. Integrated specialty clinics may institute systems in which all newly diagnosed patients with IBD, or other chronic illnesses, meet with the entire team including psychology, dieticians, and social work during follow up appointments. Physical proximity and accessible communication between providers is crucial for interdisciplinary care and therefore, should be a priority when developing integrated specialty clinics.

6.3 Inpatient Consultation/Liaison

Inpatient consultation and liaison services offer yet another point on the continuum of care and an opportunity for integrated behavioral health interventions. Hospital admissions for pediatric patients with IBD are common. Patients may be admitted for management, evaluation, and stabilization during IBD flares or initial diagnosis. The Crohn's and Colitis Foundation of America[72] estimated that the total annual financial burden of IBD in the United States is $14.6 to $31.6 billion in 2014. Patients with functional GI conditions may acquire additional costs associated with extensive testing to eliminate medical diagnoses. Psychologists who are integrated into inpatient units are well-equipped to assist physician colleagues in treating patients with IBD distress or functional GI conditions.

Patients with new IBD diagnoses or those who are admitted due to failing treatment regimens benefit from consultation/liaison (CL) services. Behavioral health psychologists are experts in behavior management and can assist patients in adjusting to chronic illness, problem solving barriers to adherence, and developing and refining coping skills. CL services afford patients and their families the opportunity to meet with a psychologist at the bedside when distress is often at its peak. This also allows for continuity of care once the patient is discharged from the hospital and is followed in outpatient specialty clinics.

7. Conclusion

Integrated care practices in primary care, specialty clinics, and inpatient consultation teams are gradually becoming common practice in pediatric medical settings. Recognition by the ACA on the importance of integrated models of care has heightened awareness of the utility and

functionality of behavioral health in primary and specialty care clinics. Pediatric psychologists are skilled in managing behavioral and emotional barriers that interfere with medical treatment and adherence. Further, pediatric psychologists' expertise in identifying and addressing psychosocial stressors not only help the patient and their family better adhere to their treatment regimen, behavioral health support decreases the burden on physicians to manage complex patient presentations.

Pediatric GI conditions are well-suited for integrated models of care. Patients with chronic diseases such as Crohn's disease and ulcerative colitis are at risk for disease distress and burnout and experience higher rates of anxiety and depression. Pediatric psychologists who are embedded in GI clinics can provide specialized intervention that address the distinct nuances of managing IBD. Furthermore, the first line approach for functional GI conditions are behavioral interventions. Therefore, instead of over utilizing medical resources and interventions, functional GI disorders are better managed in conjunction with a GI psychologist.

Given the propensity for psychosocial distress in patients with GI conditions, integrated behavioral health providers should utilize screening measures to guide prevention and targeted intervention. This article provided a brief overview of commonly used screening and assessment instruments in integrated care clinics. When treating patients with comorbid GI conditions, anxiety, depression, pain rating, and quality of life assessment measures should be implemented on a routine basis. Screening all patients with IBD for disease distress and burnout is crucial in identifying treatment targets and tailoring interventions.

Pediatric patients with GI conditions benefit from behavioral health intervention. Levy and colleagues[68] demonstrated significant improvement in the number of school absences, overall quality of life, and adaptive coping in children with IBD following a three-session behavioral health intervention. Thus, providing additional support for the benefits of integrated behavioral health in primary and specialty care clinics. Pediatric psychologists who are fully embedded in pediatric clinics are great assets to patients as well as their medical colleagues. The implementation of routine psychosocial screening and assessment protocols, warm handoffs, and on the fly behavioral health consultation and follow up in health care clinics should be the gold standard in providing whole-person care.

REFERENCES

1. Engel GT. A need for a new medical model: A challenge for biomedicine. Science. 1977 Apr 8;196:126-36.
2. Asarnow JR, Kolko DJ, Miranda J, Kazak AE. The pediatric-centered medical home: Innovative models for improved behavioral health. Am Psychol. 2017 Jan;72(1):13-27.
3. Stancin T, Perrin EC. Psychologists and pediatricians: Opportunities for collaboration in primary care. Am Psychol. 2014 May-June;69:332-42.
4. Campo JV, Shafer S, Strohm J, Lucas A, Gelacek-Cassesse C, Saheffer D, et al. Pediatric behavioral health in primary care: A collaborative approach. J Am Psychiatr Nurses Assoc. 2005 Oct 1;11:276-82.
5. Weitzman CC, Leventhal JM. Screening for behavioral health problems in primary care. Curr Opin Pediatr. 2006 Dec;18(6):641-8.
6. Friedberg RD, Thordarson MA, Paternostro J, Sullivan P, Tamas M. CBT with youth: Immodest proposals for training the next generation. J Ration Emot Cogn Behav Ther. 2014 March;32(1):110-19.
7. Saps M. Challenges of caring for children with functional gastrointestinal disorders. Pediatric Annals. 2014 Apr 1;43(4):141-42.
8. Asarnow JR, Hoagwood KE, Stancin T, Lochman J, Hughes JL, Miranda JM, et al. Psychological science and innovative strategies for informing health care redesign: A policy brief. J Clin Child Adoles Psychol. 2015;44(6):923-32.
9. Janicke DM, Fritz AM, Rozensky RH. Healthcare reform and preparing the future clinical child and adolescent psychology workforce. 2015;44(6):1030-9.
10. Aupont O, Doerfler L, Connor DF, Stille C, Tisminetzky M, McLaughlin TJ. A collaborative care model to improve access to pediatric mental health services. Adm Policy Ment Health. 2013 Jul;40(4):264-73.
11. Kelly JF, Coons HL. Integrated healthcare and professional psychology: Is the setting right for you? Prof Psychol Res Pr. 2012 Dec;43(6):586-95.
12. Ward-Zimmerman B, Cannata E. Partnering with pediatric primary care: Lessons learned through collaborative colocation. Prof Psychol Res Pr. 2012 Dec;43(6):596-605.
13. Reed-Knight B, Maddux MH, Deacy AD, Lamparyk K, Stone AL, Mackner L. Brain-gut interactions and maintenance factors in pediatric gastroenterological disorders: Recommendations for clinical care. Clin Pract Ped Psychol. 2017 Mar;5(1):93-105.
14. Guthery SL, Hutchings C, Dead JM, Hoff C. National estimates of hospital utilization by children with gastrointestinal disorders: Analysis of the 1997 KIDS' inpatient database. J Pediatr. 2004 May;144(5):589-594.
15. Cunningham CL, Banez GA. Pediatric gastrointestinal disorders: Biopsychosocial assessment and

treatment. New York, NY: Springer Science+Business Media; 2006.
16. Kappelman MD, Rifas-Shiman SL, Kleinman K, Ollendorf D, Bousvaros A, Grand RJ, et al. The prevalence and geographic distribution of Crohn's disease and ulcerative colitis in the United States. Clin Gastroenterol Hepatol. 2007 Dec;5(12):1424-9.
17. Kappelman MD, Moore KR, Allen JK, Cook SF. Recent trends in the prevalence of Crohn's disease and ulcerative colitis in a commercially insured US population. Dig Dis Sci. 2013 Feb;58(2):519-25.
18. Hyams JS, Di Lorenzo C, Saps M, Shulman RJ, Staiano A, van Tilburg M. Functional disorders: Children and adolescents. Gastroenterology. 2016 Feb 15. pii: S0016-5085(16)00181-5.
19. Hyams JS, Burke G, Davis PM, Rzepski B, Andrulonis PA. Abdominal pain and irritable bowel syndrome in adolescents: A community-based study. 1996 Aug;129(2):220-6.
20. Khan S. Children's National Medical Center. Functional abdominal pain in children [Internet]. American College of Gastroenterology; 2006 [updated 2012 Dec]. Available from: http://patients.gi.org/topics/functional-abdominal-pain-in-children/
21. Mackner LM, Crandall WV. Brief report: Psychosocial adjustment in adolescents with inflammatory bowel disease. J Pediatr Psychol. 2006 Apr;31(3):281-5.
22. Burke P, Meyer V, Kocoshis S, Orenstein DM, Chandra R, Nord DJ, et al. Depression and anxiety in pediatric inflammatory bowel disease and cystic fibrosis. J Am Acad Child Adolesc Psychiatry. 1989 Nov;28(6):948-51.
23. Szigethy E, Levy-Warren A, Whitton S, Bousvaros A, Gauvreau K, Leichtner AM, et al. Depressive symptoms and inflammatory bowel disease in children and adolescents: A cross-sectional study. J Pediatr Gastroenterol Nutr. 2004 Oct;39(4):395-403.
24. Gold N, Issenman R, Roberts J, Watt S. Well-adjusted children: An alternate view of children with inflammatory bowel disease and functional gastrointestinal complaints. Inflamm Bowel Dis. 2000 Feb 1;6(1):1-7.
25. Wilhelmsen I. Brain-gut axis as an example of the bio-psycho-social model. Gut. 2000 Dec;47(Suppl 4):iv5-iv7.
26. Birmaher B, Kheterpal S, Brent DA, Cully M, Balach L, Kaufman J, et al. The screen for child anxiety related emotional disorders (SCARED): Scale construction and psychometric properties. J Am Acad Child Adolesc Psychiatry. 1997 Apr;36(4):545-53.
27. Birmaher B, Brent DA, Chiapetta L, Bridge J, Manga S, Baugher M. Psychometric properties of the SCARED: A replication study. J Am Acad Child Adolesc Psychiatry. 1999 Oct;38(10):1230-6.
28. Holmbeck GN, Thrill AW, Pachanas P, Garber J, Miller KB, Abad M, et al. Evidence based assessment in pediatric psychology: Measures of psychosocial adjustment and psychopathology. J Pediatr Psychol. 2008 Oct;33(9):958-80.
29. Weersing VR, Gonzalez A, Campo JV, Lucas AN. Brief behavioral therapy for

pediatric anxiety and depression: Piloting an integrated approach. Cogn Behav Pract. 2008 May;15(2):126-39.
30. Weersing VR, Rozenman MS, Maher-Bridge M, Campo J. Anxiety, depression, and somatic distress: Developing a transdiagnostic internalizing toolbox for pediatric practice. Cogn Behav Pract. 2012 Feb 1;19(1):66-82.
31. Cunningham NR, Lynch-Jordan A, Mezoff AG, Farrell MK, Cohen MB, Kashikar-Zuck S. Importance of addressing anxiety in youth with functional abdominal pain: Suggested guidelines for physicians. J Pediatr Gastroenterol Nutr. 2013 May;56(5):469-74.
32. Mano KEJ, Evan JR, Tran ST, Khan KA, Weisman SJ, Hainsworth KR. The psychometric properties of the SCARED in pediatric chronic pain. J Pedaitr Psychol. 2012 Oct;37(9):999-1011.
33. March JS. The Multidimensional Anxiety Scale for Children [2nd Edition; MASC-2]. Tonawanda, NY: Multi-Health Systems; 2013.
34. Kalapurkel S, Carpino EA, Lebel A, Simons L. "Pain can't stop me": Examining pain self-efficacy and acceptance as resilience processes among youth with chronic headache. J Pediatr Psychol. 2015 Oct;40(9):926-33.
35. Chan SF, Connelly M, Wallace DP. The relationship between pain characteristics, peer difficulties, and emotional functioning among adolescents seeking treatment for chronic pain: A test of mediational models. J Pediatr Psychol. 2017 Oct 1;42(9):941-51.
36. Kovacs M. The Children's Depression Inventory-2 manual. North Tonawanda, NY: Multi-Health Systems; 2010.
37. Horst S, Shelby G, Anderson J, Acra S, Polk DB, Saville BR, et al. Predicting persistence of functional abdominal pain from childhood into young adulthood. Clin Gastroenterol Hepatol. 2014 Dec;12(12):2026-32.
38. Laird KT, Sherman AL, Smith CA, Walker LS. Validation of the abdominal pain index using a revised scoring method. J Pediatr Psychol. 2015 June 1;40(5):517-25.
39. Allgaier AK, Fruhe B, Pietsch K, Saravo B, Baethmann M, Schulte-Korne G. Is the children's depression inventory short version a valid screening tool in pediatric care? A comparison to its full-length version. J Psychosom Res. 2012 Nov;73(5):369-74.
40. Beck AT. Beck Depression Inventory-II. San Antonio, TX: Psychological Corporation; 1996.
41. Pinquart M, Shen Y. Depressive symptoms in children and adolescents with chronic physical illness: An updated meta-analysis. J Pediatr Psychol. 2011 May;36(4):375-84.
42. Williams SE, Zahka NE. Treating somatic symptoms in children and adolescents. New York: Guilford; 2017.
43. Reid GJ, Gilbert CA, McGrath PJ. The pain coping questionnaire: Preliminary validation. Pain. 1998 May;75(1-2):83-96.
44. Walker LS, Smith CA, Garber J, van Slyke DA. Development and validation of the pain response inventory for

children. Psychol Assess. 1997;9(4):392-405.
45. Weisz JR, McCabe MA, Dennig MD. Primary and secondary control among children undergoing medical procedures: Adjustment as a function of coping style. J Consult Clin Psychol. 1994 Apr;62(2):324-32.
46. Weisz JR. Psychotherapy for children and adolescents: Evidence-based treatments and case examples. New York, NY: Cambridge University Press; 2004.
47. Compas BE, Jaser SS, Dunn M, Rodriguez EM. Coping with chronic illness in childhood and adolescence. Annu Rev Clin Psychol. 2012 Apr 27;8:445-80.
48. Connor-Smith JK, Compas BE, Wadsworth ME, Thomsen AH, Saltzman H. Responses to stress in adolescence: Measurement of coping and involuntary stress responses. J Consult Clin Psychol. 2000 Dec;68(6):976-92.
49. Blount RL, Simons LE, Devine KA, Jaaniste T, Cohen LL, Chambers CT, et al. Evidence-based assessment of coping and stress in pediatric psychology. J Pediatr Psychol. 2008 Oct;33(9):1021-45.
50. Patterson JM, McCubbin HI. Adolescent coping style and behaviors: Conceptualization and measurement. J Adolesc. 1987 Jun;10(2):163-86.
51. Vitaliano PP, Russo J, Carr JE, Maiuro RD, Becker J. The ways of coping checklist: Revision and psychometric properties. Multivariate Behav Res. 1985 Jan 1;20(1):3-26.
52. Tobin DL. User's manual for the Coping Strategies Inventory. Ohio University: Athens Unpublished manuscript; 1991.
53. Folkman S, Lazarus RS. An analysis of coping in middle-aged community sample. J Health Soc. Behav. 1980 Sep;21(3):219-39.
54. Varni JW, Seid M, Kurtin PS. PedsQL 4.0: Reliability and validity of the Pediatric Quality of Life Inventory version 4.0 generic core scales in healthy and patient populations. Med Care. 2001 Aug;39(8):800-12.
55. Varni JW, Bendo CB, Shulman RJ, Self MM, Nurko S, Franciosi JP, et al. Interpretability of the PedsQL™ gastrointestinal symptoms scales and gastrointestinal worry scales in pediatric patients with functional and organic gastrointestinal diseases. J Pediatr Psychol. 2015 Jul;40(6):591-601.
56. Beidas RS, Stewart RE, Walsh L, Lucas S, Downey MM, Jackson K, et al. Free, brief, and validated: Standardized instruments for low-resource mental health settings. Cogn Behav Pract. 2015 Feb 1;22(1):5-19.
57. Gray WN, Denson LA, Baldassano RN, Hommel KA. Treatment adherence in adolescents with inflammatory bowel disease: The collective impact of barriers to adherence and anxiety/depressive symptoms. J Pediatr Psychol. 2012 Apr;37(3):282-91.
58. Logan D, Zelikovsky N, Labay L, Spergel J. The illness management survey: Identifying adolescents' perceptions of barriers to adherence. J Pediatr Psychol. 2003 Sep;28(6):383-92.

59. Hommel KA, Baldassano RN. Brief report: Barriers to treatment adherence in pediatric inflammatory bowel disease. J Pediatr Psychol. 2010 Oct;35(9):1005-10.
60. Kahana S, Drotar D, Frazier T. Meta-analysis of psychological interventions to promote adherence to treatment in pediatric chronic health conditions. J Pediatr Psychol. 2008 Jul;33(6):590-611.
61. Schurman JV, Cushing CC, Carpenter E, Christenson K. Volitional and accidental nonadherence to pediatric inflammatory bowel disease treatment plans: Initial investigation of associations with quality of life and disease activity. J Pediatr Psychol. 2011 Jan;36(1):116-25.
62. Hanghoj S, Boisen KA. Self-reported barriers to medication adherence among chronically ill adolescents: A systematic review. J Adolesc Health. 2014 Feb;54(2):121-38.
63. Hommel KA, Greenley RN, Maddux MH, Gray WN, Mackner LM. Self-management in pediatric inflammatory bowel disease: A clinical report of the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition. J Pediatr Gastroenterol Nutr. 2013 Aug;57(2):250-7.
64. Blanchard EB, Schwarz SP, Suls JM, Gerardi MA, Scharff L, Greene B, et al. Two controlled evaluations of multicomponent psychological treatment of irritable bowel syndrome. Behav Res Ther. 1992 Mar;30(2):175-89.
65. Hunt MG, Ertel E, Coello JA, Rodriguez L. Empirical support for a self-help treatment for IBS. Cognit Ther Res. 2015 Apr;39(2):215-27.
66. Radziwon CD, Lackner JM. Cognitive behavioral therapy for IBS: How useful, how often, and how does it work? Curr Gastroenterol Rep. 2017 Aug 17;19(10):1-8.
67. Lackner JM. The role of psychosocial factors in functional gastrointestinal disorders. Front Gastrointest Res. 2014;33:104-16.
68. Levy RL, van Tilburg MA, Langer SL, Romano JM, Walker LS, Mancl LA, et al. Effects of a cognitive behavioral therapy intervention trail to improve disease outcomes in children with inflammatory bowel disease. Inflamm Bowel Dis. 2016 Sep;22(9):2134-48.
69. Asarnow JR, Rozenman M, Wiblin J, Zeltzer L. Integrated medical-behavioral care compared with usual primary care for child and adolescent behavioral health: A meta-analysis. JAMA Pediatr. 2015 Oct;169(10):929-37.
70. Davis K, Stremikis K, Squires D, Schoen D. Mirror, Mirror on the Wall, 2014 Update: How the US Health Care System Compares Internationally. New York, NY: The Commonwealth Fund; 2014.
71. Campo JV. Annual research review: Functional somatic symptoms and associated anxiety and depression – developmental psychopathology in pediatric practice. J Child Psychol Psychiatry. 2012 May;53(5):575-92.
72. The Crohn's and Colitis Foundation of America. The facts about inflammatory bowel diseases [internet]. The Crohn's and Colitis Foundation of America [published 2014 Nov]. Available from:

http://www.crohnscolitisfoundation.org/assets/pdfs/updatedibdfactbook.pdf