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Attitudes and Knowledge about Irritable Bowel Syndrome (IBS) among Family Medicine Physicians and IBS Patients

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ATTITUDES AND KNOWLEDGE ABOUT IRRITABLE BOWEL SYNDROME (IBS) AMONG FAMILY MEDICINE PHYSICIANS AND IBS PATIENTS

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Dissertation Approval

This is to certify that the thesis presented to us by _____

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Abstract

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder (FGID), which is biopsychosocial in nature, with a gut-brain interaction. IBS has no biological marker and is often diagnosed through exclusion of other diagnostic possibilities, making it challenging to treat and often frustrating for individuals who suffer from it. Most IBS patients will first present at their family medicine physicians' offices, as it is the most common FGID. The purpose of this study was to determine whether there is a difference in knowledge about IBS and whether there were negative attitudes toward IBS among family medicine physicians and among patients diagnosed with IBS. Family medicine physicians, including family medicine residents, and IBS patients, completed surveys to study their attitudes toward and knowledge about IBS, including demographic questionnaires, an attitudes measure, and a 14-item knowledge questionnaire. This study found that IBS patients and family medicine physicians both lack knowledge about IBS. This study also found that family medicine physicians perceive more of a lack of control over IBS, perceive more negative emotions related to IBS, and perceive IBS to be more chronic, compared to IBS patients. Further, IBS patients perceive their IBS to be more puzzling and mysterious to them compared to family medicine physicians. Due to these results, more education and training is needed about IBS for family medicine physicians, who can then educate their patients appropriately about the condition.

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Chapter 1: Introduction

Statement of the Problem

Irritable bowel syndrome (IBS) is a recurring and chronic functional bowel disorder consisting of abdominal pain, cramping, bloating, gas, diarrhea, and constipation (Hungin et al., 2014). It affects the small and large intestines, causing these symptoms in the gut or bowel. It is a "syndrome" because it is a group of various symptoms that aggravate the gut; however, these symptoms may be expressed differently depending on the individual (Gucht, 2015). IBS is also considered a "gut-brain interaction" or disorder, because the brain influences the gut, for instance, through stress and anxiety (Drossman, 2016). Also, IBS is usually diagnosed by using symptom-based criteria because there are no specific biological markers for the diagnosis (Hungin et al., 2014).

IBS affects approximately 11% of adults worldwide (Ooi, Correa, & Pak, 2019) and 10% to 15% of adults in the United States (Hungin et al., 2014). It accounts for about 50% of referrals to gastroenterologists and is the most common functional bowel disorder worldwide (Pilgrim & Schub, 2016). It is the seventh most common diagnosis made by all physicians in the United States, accounting for about 12% to 14% of primary care visits (Inadomi, Fennerty, & Bjorkman, 2003). Therefore, IBS may be more common among patient visits to primary care settings compared to primary care visits for diabetes, hypertension, or asthma (Lacy et al., 2006), meaning most individuals suffering from IBS will first go to their primary care or family medicine physicians instead of other types of doctors (Hungin et al., 2014).

IBS also has a large economic impact, costing directly $1.6 billion and indirectly $19.2 billion yearly (Ladabaum et al., 2012). In one study, individuals with IBS missed

more work, spent more time in bed, and missed more daily activities compared to individuals without IBS. About one fourth of people with IBS in the study worked fewer hours, 67% believed they were less productive at work due to symptoms, and individuals with IBS were twice as likely to miss work compared to people without IBS (Hungin, Chang, Locke, Dennis, & Barghout, 2005). IBS has an economic effect in which yearly costs to manage and treat it are estimated to be $15 billion to $30 billion due to missed work or school, recurrent doctor visits, comorbid conditions, use of medication, and avoidable surgery (Lacy et al., 2006).

The patient and health care provider relationship plays a vital role in patients' experiences of the illness (Halpert & Godena, 2011). Moreover, many IBS patients reportedly believe their physicians do not sufficiently educate them about IBS and its associated symptomatology or provide enough support. Many IBS patients also believe physicians do not attempt to fully understand patients' experiences living with IBS (Lacy et al., 2007). Individuals with IBS often have a significant decrease in quality of life (Heitkemper, Carter, Ameen, Olden, & Cheng, 2002; Lacy et al., 2006). Conversely, many primary care and family medicine physicians are knowledgeable about comorbidities, such as depression, anxiety, and stress (Hungin et al., 2014), and that an estimated 50% of individuals with IBS experience a diagnosis of a psychological disorder in addition to IBS, often depression and/or anxiety (Dainty, Allcock, & Cooper, 2014).

Due to the common comorbidities with IBS, two evidenced-based psychological treatments include cognitive behavioral therapy (CBT; Craske et al., 2011; Laird, Tanner-Smith, Russell, Hollon, & Walker, 2016; Sugaya, Nomura, & Shimada, 2012; van Tilburg, Palsson, & Whitehead, 2013) and mindfulness based therapy (Zomorodi, Abdi,

& Tabatabaee, 2014). Pharmacological treatments are also common, including loperamide, fiber supplements, tricyclic antidepressants, selective serotonin reuptake inhibitors (SSRIs), antispasmodics, rifaximin, pregabalin, and probiotics, which are often guided by the specific symptoms (Trinkley & Nahata, 2011).

Literature Review

Medical training. Medical education in the United States can be from an osteopathic (doctor of osteopathic medicine [DO]) or allopathic (doctor of medicine [MD]) program (American Medical Association, 2016; American Osteopathic Association, 2017). There are many similarities between allopathic and osteopathic training, including utilization of the same Medical College Admission Test (MCAT), length of program (four years), matriculation after completing an undergraduate degree, certification to take and pass board exams, opportunity to study and practice any specialty, and three to seven years of residency after medical school. There are also various differences between allopathic and osteopathic schools. Allopathic applicants use the American Medical College Application Service (AMCAS) to apply and take the United States Medical Licensing Exam (USMLE); there are 141 allopathic schools in the United States and 17 in Canada. Osteopathic applicants use the American Association of Colleges of Osteopathic Medicine (AACOM) when applying, take the Comprehensive Osteopathic Medical Licensing Examination (COMLEX) and may choose to take the USMLE, and receive further training and education about the musculoskeletal system and osteopathic manipulative treatment (OMT); there are 35 osteopathic medical schools in the United States (AACOM, 2019).

According to the American Academy of Family Physicians (AAFP; 2017), a family medicine doctor is defined as a physician who has specific attitudes, skills, and knowledge through his or her education and residency training to "provide continuing and comprehensive medical care, health maintenance and preventative services to each member of the family regardless of sex, age, or type of problem, be it biological, behavioral, or social" (Family Physician, Definition section, para. 1). On the other hand, the AAFP has stated that primary care involves the primary care physician, other physicians who practice some primary care in their work, and providers who are not physicians. One definition of primary care states that it is provided by a physician who is trained to meet a patient at first contact (e.g., a patient who is undiagnosed or has symptoms of an unknown origin) and provide a continuation of services for any symptoms or health reasons (e.g., for chronic, acute, or preventative reasons). The AAFP has stated, "primary care includes health promotion, disease prevention, health maintenance, counseling, patient education, diagnosis and treatment of acute and chronic illnesses in a variety of health care settings" (Definition #1 – Primary Care section, para. 2). Examples of various health care settings include any office, inpatient or critical care facility, long-term facility, day care, and home care. Further, a primary care physician often serves as a personalized provider while working with other health care professionals, whether for referrals or consultation. (AAFP, 2017). According to the AAFP, a primary care physician specializes in family medicine, internal medicine, or pediatrics.

An important distinction the AAFP (2017) has made involves the difference between primary care and family medicine. Even though the AAFP has noted that

primary care and family medicine physicians both provide primary care services, AAFP has explained that these two terms do not hold the same meaning. Indeed, primary care does not include all of the roles of a family medicine physician (AAFP, 2017). For instance, a family physician is one who is qualified through his or her residency training and education to provide care to all patients from a family despite age, sex, or presenting problems (AAFP, 2017). Therefore, for the purpose of this study, the focus was specifically on family medicine physicians and not overall primary care.

When training to become a family medicine physician, one must graduate from a four-year allopathic (MD) or osteopathic (DO) medical school. After medical school, a family medicine physician must complete three years of residency, during which he or she receives training in labor and delivery, emergency medicine, surgery/procedures, pediatrics, hospital care, and geriatrics, in order to gain the skills to provide care to all patients across the life span. The first year of residency is often called internship year, and is when the resident must take the final part of the USMLE or COMLEX exam and rotate among various medical specialties and disciplines. The second and third years of a family medicine residency are spent practicing in a specific specialty or specialties, with much of the time spent in a family medicine setting. After residency, a family medicine physician can complete a one-year fellowship training program or become an attending family medicine physician, meaning he or she practices without the supervision of an attending physician (AAFP, 2017).

Functional gastrointestinal disorders. A common grouping of diagnoses encountered by residents and attending physicians is functional gastrointestinal disorders (FGIDs). FGIDs are considered the most common gastroenterology diagnoses. FGIDs

are considered biopsychosocial disorders, with a gut and brain interaction (Chang et al., 2006; Drossman, 2016), and include muscular contractions or spasms, "visceral hypersensitivity, altered mucosal and immune function, altered gut microbiota, and altered central nervous system processing" (Drossman, 2016, p. 1268). FGIDs are not explained by an identifiable abnormal structure within the body. Instead, FGIDs are considered bidirectional in nature, in which an individual's mental health affects his or her symptom expression of the FGID and vice versa (Dear et al., 2018). Only within the past few decades have FGIDs started to be considered from a biopsychosocial rather than dualistic perspective, the former of which involves integrating mental and physical health to conceptualize a person as a whole entity. By utilizing the biopsychosocial model with FGIDs, such as including neurogastroenterology and the brain-gut relationship, opportunities for new medication and treatments were established. It is understood that genetic, sociocultural, and environmental factors can influence an individual's development regarding personality, vulnerability to stress, and psychological health, including coping skills and ability to handle stressors. Nevertheless, it has been found that these various aspects of an individual also affect his or her risk for gastroenterological dysfunctions, showing that the brain and gut interaction also affects central nervous system (CNS) functioning, and can result in a FGID (Drossman, 2016; Drossman & Hasler, 2016).

There are eight categories of FGIDs: (a) esophageal disorders, (b) gastroduodenal disorders, (c) bowel disorders (e.g., IBS), (d) centrally mediated disorders of gastrointestinal (GI) pain, (e) gallbladder and sphincter of oddi (SO) disorders, (f) anorectal disorders, (g) childhood functional GI disorders: neonate/toddler subtype, and

(h) childhood functional GI disorders: child/adolescent subtype. Bowel disorders include IBS and functional constipation, functional diarrhea, functional abdominal bloating/distension, unspecified functional bowel disorder, and opioid-induced constipation (Drossman, 2016; Drossman & Hasler, 2016). In order to effectively treat an individual diagnosed with a FGID, a strong relationship between physician and patient is vital. A strong patient-physician relationship can increase the satisfaction of the patient, thereby increasing treatment adherence, decreasing symptoms, and improving health overall (Drossman, 2016).

Irritable bowel syndrome. IBS consists of abdominal pain, cramping, bloating, gas, diarrhea, and constipation (Drossman, 2016). It is a recurring and chronic condition affecting the small and large intestines, causing various symptoms in the gut or bowel (Drossman, 2016). More recent research has found that when an individual experiences IBS, the gut microbiome and changes in the diversity of the microbiota, or microorganisms in the gut, affects the individual's immune system, and causes gut inflammation that, in turn, affects the interaction between the gut and the brain (Ooi et al., 2019). IBS is referred to as a brain-gut disorder because the brain influences the symptoms in the gut, through stress and anxiety (Drossman, 2016). It is called a syndrome because it is a set of various symptoms; however, the symptoms may be expressed differently depending on the individual (Gucht, 2015). As such, there numerous subtypes of IBS have been used to classify differences in symptom presentation: IBS-constipation (IBS-C), IBS-diarrhea (IBS-D), IBS-mixed type (IBS-M), and IBS-unclassified (IBS-U). IBS-M is classified as alternating between diarrhea and constipation. IBS-U does not fit into exact criteria to meet symptoms of the other types

of IBS (Singh et al., 2015). One study conducted by Singh et al. (2015) compared indicators of quality of life—including food avoidance, relationships and social interactions, and daily activities—among patients with the four subtypes of IBS. Singh et al. found patients with IBS-D and IBS-M had a significantly lower quality of life compared to patients with IBS-C. IBS-D patients avoided more foods and were impacted more in their daily lives compared to IBS-C. Due to the negative impact on daily living, activities, and relationships, patients with IBS-M were found to have decreases in their social activities compared to patients with IBS-C. Overall, this study found IBS-D and IBS-M to be similar in quality of life effects. Moreover, patients with IBS-D or IBS-C may eventually meet criteria for the IBS-M subtype. Another contributor to decreased quality of life is that individuals with IBS often see various doctors and undergo many diagnostic tests before being officially diagnosed with IBS. Genetics and heredity, mucosal inflammation, and the interpretation of the sensory signals all play a role, depending on the individual (Talley & Spiller, 2002). Overall, individuals with IBS experience unpredictability with regards to pain and discomfort with various gut and bowel symptoms. In turn, this contributes to feelings of emotional difficulties and isolation, worry, stress, and a decrease in feeling in control (Chang et al., 2006).

IBS and culture. A person's culture can also affect how he or she experiences IBS and how he or she views IBS and its symptoms. Most studies about IBS focus more on Western, Caucasian individuals; however, there have been studies examining IBS in other cultures. For example, in one study comparing Hispanic and non-Hispanic Caucasians in the state of Texas, Hispanic individuals were seen to self-medicate more often than non-Hispanic Caucasians. For example, the Hispanic individuals in this study

utilized more culture-specific folk remedies and herbal teas for symptoms. The Hispanic individuals also indicated to have a more negative view of their conditions and reported worrying more about their health and conditions. This study found that Hispanics were less likely to seek out health care professionals for their IBS symptoms. Therefore, ethnicity may affect views of individuals' general health, which may, in turn, affect their health behaviors and adherence (Zuckerman, Guerra, Drossman, Foland, & Gregory, 1996).

Among Japanese individuals, the view of IBS is changing due to the country becoming more modernized. Traditionally, Japanese individuals believed in a strong mind and body connection. Modern views are replacing this belief though with a dichotomous view of IBS. Japanese physicians are viewing IBS as either psychogenic or organic, meaning the biopsychosocial model is not being utilized. Further, if IBS patients in Japan are viewed as having the syndrome due to solely psychological reasons, it is common for these patients to not adhere to psychological treatment because of the stigmatization of mental health concerns in Japan. Like in many countries, seeing a psychologist or psychotherapist is viewed as necessary only for severe psychological cases. Japan is said to be similar to the United States in regard to the conflict between the biopsychosocial view of IBS and the medical model view of IBS. Nevertheless, biopsychosocial practices are becoming more known and accepted both in Japan and in the United States (C. D. Gerson & M. Gerson, 2010).

In India, IBS is viewed differently depending on gender. Despite studies stating that the majority of IBS patients are female, in India, the majority of diagnosed IBS patients are male. This is due to Indian studies in the 1980s and 1990s focusing on male

IBS patients; however, this may be due to females, during this time in India, not seeking out health care, specifically in rural areas where females in India were in submissive roles and not allowed to seek out health care from professionals, nor allowed to participate in studies regarding IBS or other medical concerns. These results may change due to India changing and becoming more modern in its views and treatment of women. Another cultural aspect in India regarding IBS is that IBS is caused by an infection in the small intestine and that an individual with IBS needs to dispel flatulence to relieve symptoms. Additionally, even though IBS is often associated with depression and anxiety, seeking psychological treatment is still stigmatized in the Indian culture (C. D. Gerson & M. Gerson, 2010).

In Mexican culture, expressing one's emotions is viewed as normal. Therefore, IBS is viewed as being partially caused by stress in one's life, specifically familial stress. As a result, familial influences and familial relationships affect one's health significantly in the Mexican culture. In Mexico, one part of the treatment for IBS includes processing family relationships. Moreover, due to the significant cultural influence of "machismo," the belief that men should take pride in their masculinity, Mexican women are more likely to be open about and discuss their GI symptoms, whereas Mexican men are more likely to feel embarrassed and utilize humor regarding their IBS symptoms (C. D. Gerson & M. Gerson, 2010).

Similar to Mexican culture, in Italy, views about IBS are relationship-focused. There, IBS is viewed as being influenced by emotional distress and familial and relational stress. Due to the strong value of family in Italy, communication difficulties and family issues are considered significant influences on Italian IBS patients and having such

problems is viewed as a reduction in one's strength, as one's family is viewed as "a part of the self" (C. D. Gerson & M. Gerson, 2010, p. 711). In one study in southern Italy, 30% of IBS patients stated that their IBS symptoms are because physicians did not understand their health difficulties (C. D. Gerson & M. Gerson, 2010).

In Hong Kong, one's health is viewed as related to the environment. Therefore, if a person is ill, then that person is not in balance with his or her environment. This is illustrated by the concept of yin and yang in Chinese culture, which postulates that finding balance in one's life is necessary for health. Hence, IBS patients in Hong Kong may feel a personal responsibility for their symptoms and may attempt to restore balance to their lives. This may be implemented by eating cold and hot foods and also by meeting with Chinese traditional healers who would offer more Chinese belief-congruent treatments (C. D. Gerson & M. Gerson, 2010).

In Romania, due to the political history of being under communist rule for some time, there was no research conducted about IBS until the 1990s. Even though there are stress-related concerns seen with Romanian IBS patients, psychological treatments are still not fully accepted or used. Nevertheless, Romanian individuals are starting to meet with psychologists more, though these psychologists may continue to be influenced by the political suppression lingering from many years of communist rule (C. D. Gerson & M. Gerson, 2010).

IBS and gender. In the United States, FGIDs (including IBS) are diagnosed more in women than men (Chang et al., 2006; Payne, 2004). Further, living with IBS creates different experiences between men and women due to cultural and social gender normative expectations (Björkman, Dellenborg, Ringström, Simrén, & Jakobsson Ung,

2014; Smith, 2015). These different experiences mean men and women may express IBS differently, with different prevalent symptoms (Payne, 2004; Smith, 2015), different effects on daily life, and different perceptions of IBS (Payne, 2004). Therefore, living by the gender stereotypes and norms common in the culture creates different experiences of IBS for masculine or feminine individuals (Chang et al., 2006; Smith, 2015). Nevertheless, even though more women than men are diagnosed with IBS and symptom presentations and patterns may differ by gender, the symptoms and experiences of IBS seem to be overall similar between the two genders (Talley & Spiller, 2002)

One study by Toner and Akman (2000) stated that, generally, FGIDs might be found in more women than men because of a relationship with the female gender role instead of with the female sex. This study, which did not directly study men with IBS, examined women with IBS and the impact of the female gender role. Toner and Akman found that among women with IBS attending a CBT program, their major concerns were based on socially proper female behavioral norms, such as loss of control over bodily functions, a common symptom of IBS. Also, women reported more anxiety surrounding symptoms of IBS and the effects of these symptoms on their appearance, such as feeling bloated compared to feeling thin. Women reported feelings of shame surrounding bowel symptoms, possibly because of a culture in which girls are taught they should be clean, neat, and in control of these functions and boys being taught that they can be open, "dirty," and utilize bowel functions as a type of enjoyment. This can create more silence and embarrassment for women living with IBS (Toner & Akman, 2000). Conversely, as individuals with IBS are more likely to seek health care once symptoms affect their daily

lives, women's increased likelihood of seeking treatment and, therefore, being diagnosed may relate to these feelings of embarrassment and shame (Toner & Akman, 2000).

Björkman et al. (2014) found that health care professionals will, at times, stereotype patients with IBS based on gender. Male patients described feeling uncomfortable due to IBS being viewed as a female illness and, therefore, having their symptoms viewed as purely psychosomatic and as "emotional and weak" (Björkman et al., 2014, p. 1339). Further, female patients described wanting to be viewed as "good patients" (Björkman et al., 2014, p. 1339), which may relate to discomfort in reporting their symptoms to these professionals. Female patients also reported being told by health care professionals that the symptoms were purely psychological and the more symptoms they reported, the more often they were labeled as "whiny and neurotic" and it "being in their heads" (Björkman et al., 2014, p. 1339). This, in turn, caused some of these women to blame themselves for their IBS symptoms (Björkman et al., 2014). Again, gender creates different experiences for men and women (Björkman et al., 2014; Smith, 2015), even with health care professionals (Björkman et al., 2014).

IBS and mental health. Difficult life events and stress in general are recognized to negatively impact many physical illnesses and mental disorders. Specifically, amount of daily stress can worsen or improve IBS symptoms. In one study, individuals with IBS reported more life stress and experiencing more stressful events compared to a healthy control group. Also, the interaction between IBS and stress can be bidirectional; stressful life events can exacerbate IBS symptoms or IBS symptomatology can cause more stress. This portrays that life stress can significantly impact IBS and the symptomatology of it (van Tilburg et al., 2013). Due to the stress that is related to experiencing IBS symptoms,

the stress that can exacerbate symptoms, and other environmental and genetic factors, IBS is often comorbid with anxiety, depression, and/or other gastrointestinal disorders (Hungin et al., 2014; Lee et al., 2015; Sugaya et al., 2012; van Tilburg et al., 2013). If an individual has anxiety in addition to IBS, then the anxiety can be exacerbated from experiencing IBS symptoms or the IBS symptoms can worsen his or her anxiety.

One study conducted by Lee et al. (2015) found that psychological diagnoses, such as depression, anxiety disorders, sleep disorders, and bipolar disorder, were more diagnosed with individuals with IBS compared to a control group. The highest risk for being diagnosed with these psychological disorders is within one year of being diagnosed with IBS, and this high risk continues for more than five years after being diagnosed. In the same study, schizophrenia was not significantly found in individuals with IBS (Lee et al., 2015). Related to depression, anxiety, and sleep disorders often being comorbid with IBS, van Tilburg, Palsson, and Whitehead (2013) found that the factors that relate to a person's psychological well-being are often associated with the severity of IBS symptoms, including stress, personality and temperament, coping style, psychological distress, and somatization. Stress can directly affect IBS symptoms and the expression of these symptoms. Participants in this study stated that they experienced more lifetime stressful events compared to the healthy control group. This study found a correlation between life stressors, such as sexual abuse and marital separation, and IBS. Further, IBS sufferers portray more stress reactivity compared to the control group; thus, stress has a direct negative impact on the gut for an individual who has IBS (van Tilburg et al., 2013).

An individual's personality or temperament can also make him or her more vulnerable to stress. For example, neuroticism is a common characteristic portrayed with

IBS. Studies have found that people high in neuroticism have a higher degree of reactance to stress (van Tilburg et al., 2013). This also relates to people's coping styles and how they manage stress. The manner people cope with stress and pain affects the outcome of their health and expression of IBS symptoms. A major predictor of pain intensity is pain catastrophizing. Catastrophizing pain is amplifying the threat of the pain, thus causing the individual to feel helpless. This catastrophizing is related to greater pain and disability for people with IBS. Life stressors and one's pain catastrophizing can also cause more psychological distress, such as anxiety and depression (van Tilburg et al., 2013). Anxiety and depression are related to more gastrointestinal problems and decreases in quality of life for people with IBS (Lacy et al., 2006; van Tilburg et al., 2013). In about 30% to 90% of IBS sufferers, psychological symptoms, such as depression and anxiety, can be very severe and a diagnosis of a comorbid psychological disorder is probable (van Tilburg et al., 2013).

Anxiety disorders generally and panic disorder specifically are common among IBS sufferers. One study showed a higher level of anxiety sensitivity with IBS sufferers, which increases with the expression of IBS symptoms. Conversely, an individual's experience of GI symptomatology can increase his or her physical fears, which is a part of anxiety sensitivity (Sugaya et al., 2012). This anxiety sensitivity is also associated with pain catastrophizing and avoidant behavior, thus showing that anxiety can be linked with negative symptom-related cognitions for IBS sufferers. Anxiety sensitivity can be trait-like and lasting if fused with these symptom-related cognitions. The individual starts to believe that anxiety and anxiety-provoking symptoms are harmful to the body, which can exacerbate and provoke more anxiety and more IBS symptomatology. Also,

an individual experiencing more anxiety associated with IBS symptomatology has a higher probability of also developing avoidant behaviors with different activities, in order to try and avoid both IBS symptoms and anxious feelings. This can create a negative cycle of increased anxiety, isolation, and IBS symptoms. Nevertheless, it is difficult to -know the direct cause and effect with psychological and IBS symptoms because it is bidirectional, meaning psychological distress can precede IBS or IBS can precede psychological distress, due to the brain-gut connection (van Tilburg et al., 2013).

Somatization is also a common psychological concern associated with IBS, specifically when one catastrophizes pain and reports more life stressors. Somatization refers to the tendency to report numerous physical symptoms. Individuals who have an increased incidence of somatization tend to be hypervigilant and more likely to notice somatic symptoms, and then relate these symptoms directly to an illness, such as IBS. Many IBS patients eventually have another FGID with IBS or other symptomatology, such as chronic pain syndromes, chronic fatigue, frequent urination, bad breath, and heart palpitations (van Tilburg et al., 2013).

These common psychological factors seen with IBS patients are interconnected and function together. Life stressors, perceptions of these stressors, and the way an individual copes with these stressors are affected by his or her temperament and can relate to somatization, which can cause more anxiety and depression. This psychological distress is also directly related to coping style, personality, and the life stressors the individual is experiencing (van Tilburg et al., 2013). An individual's attitudes about his or her IBS condition also affects his or her psychological well-being and self-confidence. One study showed that one fourth of IBS patients stated their self-confidence decreased

because of IBS and its symptoms. Also, more than half of individuals with diagnosed IBS in the study told their partners, family members, and friends about their disorders, but only 22% told their colleagues and 16% told their employers, depicting possible feelings of embarrassment or fear related to others knowing about their conditions (Hungin et al., 2005).

Diagnosis of IBS. Physicians diagnose IBS using the Rome Criteria (Bai et al., 2016; Drossman, 2016), Manning Criteria (Bai et al., 2016; Manning, Thompson, Heaton, & Morris, 1978), or exclusion of other diagnoses due to no biological markers of IBS, meaning a physician uses a patient's set of symptoms to diagnose (Hungin et al., 2014). Despite these assessment options, according to Bai et al. (2016), the majority of physicians do not utilize the Rome or Manning Criteria to diagnose IBS.

The Manning Criteria assessment is a questionnaire inquiring about 15 specific gut functioning symptoms, such as whether the respondent has experienced looser stools at onset of pain, more frequent bowel movements at onset of pain, or urgency of defecation. Manning and colleagues developed this questionnaire by screening 15 common IBS symptoms among 109 patients (Manning et al., 1978). Manning et al. were the first to create criteria for IBS by first comparing individuals experiencing abdominal pain that did or did not meet full criteria for an IBS diagnosis. Since then, the Rome Criteria were established with more details and specifications (Spiller et al., 2007).

The Rome I Criteria were established in 1990. Following the realization that there needed to be more accuracy in the symptom criteria, the Rome II Criteria were published in 1999, and the Rome III Criteria were published in 2006. The Rome III Criteria became even more specific by stating a timeline of how long pain must be

experienced, and that the IBS symptoms must be experienced within the past three months to be considered a current IBS diagnosis (Spiller et al., 2007). The Rome Foundation is now well known as an influential foundation that develops diagnostic benchmarks from research, while delivering education about all FGIDs around the world. When developing the Rome IV Criteria in 2016, the Rome Foundation attempted to attend to various weaknesses, including the name "functional gastrointestinal disorders" sounding stigmatizing and not exactly fitting the diagnoses. Previous versions of the Rome Criteria were not considered useful in actual practice, as they did not specify the steps to take before using the Rome Criteria, they oversimplified the experiences of patients, and they used a Western medicine approach that made it more difficult to apply to other cultures. Therefore, in order to make the Rome Criteria more user-friendly in clinical practice, the Rome IV Criteria were developed to be more symptom-based (Drossman, 2016).

Treatment of IBS. There are few diagnostic tools to assess for IBS; however, there are many types of treatment methods used for the syndrome. One article written by a nurse practitioner, Harmon (2007), outlined IBS and its treatment options and discussed the importance of helping the IBS patient realize that improvement and decrease in IBS symptoms may be a slow and ongoing process. The article first outlines nonpharmacological treatments, such as lifestyle and dietary changes. IBS patients must identify their individualized food triggers, such as lactose, aspartame, caffeine, alcohol, beans, cabbage, and fatty and spicy foods (Harmon, 2007); however, negative reactions to lactose may be based on genetics, due to this intolerance being mainly seen in northwestern Europeans with IBS (Spiller et al., 2007). IBS is also associated with

difficult to digest foods in general, eating short-chain/hard to digest carbohydrates (fructans in wheat and bran), and insoluble fiber, but the ingestion of healthy, soluble fiber depends on the type of IBS being experienced (El-Salhy & Gundersen, 2015).

Harmon (2007) suggested keeping a food diary for one to two weeks in order to identify these possible food triggers, as well as keeping record of when the IBS patient feels stressed and types of bowel movements. Further, before utilizing more complicated treatments regarding food elimination, it is suggested to first change the amount of carbohydrates, fiber, and fat by eliminating each and then slowly reintroducing these types of foods into the individual's diet one by one, in order to figure out which food intolerances may exist (Spiller et al., 2007). Harmon also suggested identifying times of stress for an IBS patient and the use of relaxation tools, such as meditation, yoga, exercise, relaxation tapes, aromatherapy, hypnotherapy, and psychotherapy. Moreover, combining a healthy diet with exercise and probiotics are said to decrease IBS symptoms even more (El-Salhy & Gundersen, 2015).

Other specific treatments for IBS that are becoming more widely used are a low fermentable oligo-, di- and monosaccharides, and polyols (FODMAP) diet, prebiotics, and probiotics (Ooi et al., 2019). These treatments have the ability to alter the inflammation in the gut often found with IBS, which is caused by altered gut microbiome. Probiotics are healthy living bacteria that can have various health benefits when taken. Unlike probiotics, prebiotics are "non-viable dietary substances" that, instead, are nutrients for the microbiota or microorganisms in the gut (Ooi et al., 2019). FODMAPs are fermented, short-chain carbohydrates that, for more gut sensitive individuals, become fermented in the colon because of the small intestine not being able

to complete absorption of these foods. In other words, when foods containing FODMAPs are fermented in one's colon, it can potentially cause gas, pain, bloating, diarrhea and/or constipation, and other gut sensitivities, such as symptoms of IBS. This occurs when the individual is intolerant or sensitive to a FODMAP food or FODMAPs. Therefore, a low FODMAP diet consists of an individual first eliminating all FODMAPs from his or her diet, whether it be fructose, lactose, fructans, galactans, or polyols, which are found in specific foods and chewing gum. This person then reintroduces one FODMAP at a time back into his or her diet to gauge to which FODMAP(s) he or she is sensitive. Once that person starts to reexperience IBS symptoms, he or she would now know which FODMAP(s) his or her gut and digestive symptom is intolerant to, and therefore, which foods to avoid. Some common foods high in FODMAPs are beans, lentils, wheat, dairy, high fructose corn syrup, artificial sweeteners, chewing gum, garlic, onion, and fruits high in fructose. Recent research has found efficacy for the alleviation of IBS symptoms with a low FODMAP diet and probiotics, but a lack of efficacy for the effectiveness of prebiotics when treating IBS (Ooi et al., 2019).

Along with diet changes, patients with IBS are often prescribed medication for their symptoms. Pharmacological treatments are prescribed based on specific IBS symptoms. For IBS-C, laxatives are used, such as lactulose (brand name Cephulac), magnesium citrate, and magnesium hydroxide, to name a few. Unfortunately, common side effects from laxatives are abdominal pain, diarrhea, nausea, and distention. For IBS-D, loperamide (brand name Imodium) is usually the first medication prescribed. For bloating and gas symptoms of IBS, an antispasmodic is used, which helps relax the muscles. Typical side effects for antispasmodics include nausea, vomiting, altered taste,

dry mouth, blurred vision, dysphagia, palpitations, and urinary hesitancy and retention. If there are psychological diagnoses, the first-line medication is typically a selective serotonin reuptake inhibitor (SSRI). SSRIs are proposed to change an individual's threshold of pain for IBS symptoms; however, it is not known how they treat depression or anxiety for an IBS patient specifically. The second-line of pharmacological treatment includes tricyclic antidepressants, which have the potential for more negative side effects than SSRIs. Other treatment options for IBS that are not studied enough to be considered empirically based are peppermint, caraway oil, and artichoke leaf (Spiller et al., 2007).

A study conducted by Henrich, Gjelsvik, and Martin (2018) looked at IBS patients using the Implicit Attitudes Test (IAT) to gauge IBS patients' implicit identification with regard to health, being ill, and IBS. This study examined 83 IBS patients and 129 healthy controls. The healthy participants reported less fatigue, less IBS specific symptoms, and less somatic symptoms in general. Among the 83 participants with IBS, this study found that these patients displayed weaker identification with being healthy compared to healthy individuals without IBS. Therefore, these patients had more identification with being ill compared to healthy individuals. Because patients identify more with being ill and unhealthy, this can affect specific illness-related cognitions and, therefore, symptom severity. As such, CBT can be effective in treating IBS patients and these specific implicit attitudes (Henrich, Gjelsvik, & Martin, 2018).

In general, CBT is used to decrease catastrophizing, somatization, and stress, and to improve coping strategies. CBT helps replace maladaptive thought processes, such as catastrophizing, with positive cognitions and behaviors, which can help decrease symptoms of IBS (van Tilburg et al., 2013). CBT is also proven to reduce anxiety for

IBS patients by helping them redefine their IBS experiences and recognize the connection between thoughts, feelings, behaviors, environment, and IBS symptoms. CBT may empower the IBS patient as well, which will help shift from feeling helpless and hopeless to resourceful and optimistic. Also, by empowering people with IBS, this will help them develop more effective coping strategies to improve quality of life. CBT helps IBS patients recognize symptom-related cognitions and the interaction between anxiety, stress, and the severity of IBS symptoms (Sugaya et al., 2012).

Drossman et al. (2003) studied individuals with severe IBS participating in a 12-week one-hour treatment of CBT from the same psychologist or 12-week "attention control sessions" (Drossman et al., 2003). These attention control sessions included reviewing symptom journals in a group and reading from an educational text about IBS. The other participants in this study either received a tricyclic antidepressant for 12 weeks or a placebo for 12 weeks. The antidepressant medication was raised from 50 mg to 150 mg in three weeks, or by 50 mg per week, and the side effects were closely recorded and watched. The results of this study show that between the CBT and education treatment, CBT helped improve symptoms for IBS patients significantly more compared to the educational treatment. Further, the tricyclic antidepressant compared to the placebo also showed to be more beneficial for people with IBS, if they could endure the side effects of the medication. This study described the CBT treatment as altering attention, personal appraisals, cognitive schemas about sex, and attributions of IBS symptoms in order to help the individual with IBS form more helpful coping techniques (Drossman et al., 2003).

Another subtype of CBT is CBT for stress management, which includes education about symptoms of IBS and the relationship between IBS and stress, self-monitoring of IBS symptoms, progressive muscle relaxation, cognitive reconstruction to recognize negative or threatening interpretations of events, and in-vivo exposure through a fear hierarchy of stressful events. Another treatment approach utilized is CBT with interoceptive exposure, which helps lessen maladaptive beliefs and hypervigilance about IBS symptomatology, fear of the symptoms, and unhelpful behaviors associated with IBS symptoms. This consists of education about IBS symptoms and how symptoms can cause conditioned behavior to respond in a maladaptive manner, self-monitoring of IBS symptomatology, learning how to shift attention and gain control instead of ruminating on the symptoms, cognitive therapy to confront maladaptive thoughts regarding the threat of IBS symptoms, and interoceptive exposure to the feared sensations associated with the disorder. An attention control treatment was also used in this study, which consisted of education about IBS and its symptoms and self-monitoring the symptoms (Craske et al., 2011). All three of these options were studied by Craske et al. (2011) and were found to be effective in decreasing IBS symptoms by about 50% for the treatment groups.

More recently, research has been conducted utilizing an Internet-CBT (iCBT) course that was developed for various chronic health conditions. Dear et al. (2018) used this course with individuals with FGIDs. With the completion of this course, they saw a significant decrease in depression, anxiety, and FGID symptoms altogether, as well as a higher completion rate compared to typical psychotherapy completion rates with individuals with FGIDs. People with FGIDs typically do not have high completion rates of psychological treatment due to stigma, cost, availability of trained professionals in the

gastroenterology field, and travel time to treatment (Dear et al., 2018). Therefore, iCBT, a CBT treatment delivered through the Internet, was developed to lessen these various barriers for FGID patients. Another study conducted by M. G. Hunt, Moshier, and Milonova (2009) developed an iCBT treatment specifically for IBS patients, which showed a significant decrease in IBS symptoms and improvement in quality of life. M. G. Hunt et al. (2009) also showed that these patients maintained a significant decrease in IBS symptoms and overall improvement in quality of life at a three-month follow-up (M. G. Hunt, Moshier, & Milonova, 2009).

Another component of CBT treatment for IBS includes systematic exposure. This is similar to exposure for anxiety disorders. Therefore, the individual with IBS is exposed to bodily sensations and situations associated with IBS and IBS symptoms. This, in turn, helps break the negative cycle of hypervigilance to bodily sensations, pain and pain catastrophizing, and unhelpful coping responses, such as avoidance, control behaviors, and over monitoring of symptoms that intensify and maintain IBS symptoms (Hesser, Hedman-Lagerlöf, Andersson, Lindfors, & Ljótsson, 2018). A study by Hesser et al. (2018) looked at the effects of systematic exposure on IBS and associated GI anxiety symptoms. This study found that systematic exposure through iCBT treatment caused a decrease in behavioral avoidance, thereby causing a decrease in IBS symptoms. Specifically, the systematic exposure treatment in this study aimed to help IBS patients accept and let go of the short-term efforts to control symptoms, in order to decrease IBS symptoms in the long-term. This is due to a decrease in attention given to symptoms and decreases in emotional reactivity to symptoms of IBS, helping individuals with IBS gain a sense of mastery and a sense of control over IBS.

Another treatment for IBS is hypnosis. Hypnosis for IBS is not as researched; however, some hypnosis cases have proven to help people with IBS. Hypnosis may help decrease multiple IBS symptoms and reduce catastrophizing, anxiety, and stressful life events. Hypnosis may help an individual learn to relax and accept the symptoms of IBS by not catastrophizing about the symptomatology, but learning to be calm and not fight against the related anxiety. Learning to accept the anxiety and not catastrophize IBS symptoms can help reduce the severity of physical IBS symptoms. This is due to catastrophizing being the number one predictor of symptom severity (van Tilburg et al., 2013).

IBS and support. An important factor during treatment for IBS is social support. It has been found that it is not the quantity of social support, but the quality of social support that helps patients with IBS. Individuals who believe to have less social support are also likely to experience more life stress. Moreover, individuals whose social supports do not understand the difficulties and symptoms of IBS will be more likely to have more life stress and more anxiety surrounding IBS symptoms. This can easily exacerbate IBS. Therefore, communicating about IBS to social supports can help patients reduce life stress and accompanying anxiety (J. M. Lackner et al., 2010).

One helpful support person for an IBS patient may be his or her physician; however, the patient-physician relationship is often challenging and frustrating for both the patient and the physician (Bellini et al., 2005; Chang et al., 2006; Dixon-Woods & Critchley, 2000). It is challenging for patients because patients usually report feeling disappointed and not helped by physicians, due to no biological findings in medical tests and feeling as though physicians often communicate a lack of validation and acceptance

regarding their diagnoses and symptoms (Chang et al., 2006; Dixon-Woods & Critchley, 2000). Physicians usually experience difficulty because they report sharing in the patients' dissatisfaction in the unclear etiology of IBS and limited treatment options for their patients (Dixon-Woods & Critchley, 2000). Physicians are also frustrated with often not feeling successful when treating IBS (Bellini et al., 2005). In one study in Italy, these feelings of frustration related to unsuccessful treatment may explain why two thirds of the patients studied were referred for a consultation with a specialist, including many gynecological referrals for female patients, due to the difficulty of differentiating between IBS and pelvic pain among females (Bellini et al., 2005). Despite the challenges, in order to have more success with IBS treatment, patients and physicians must share trusting relationships that consist of clear explanations of the etiology and nature of IBS, options for treatment, and effects on daily lives, and provide opportunities for patients to discuss questions and concerns during patient-physician encounters (Chang et al., 2006).

One major difficulty within the patient-physician encounter is that a person with IBS experiences the diagnosis like many other chronic illnesses, meaning it is long-term, unpredictable, with limited treatment options, and, at times, with stigma attached to it, causing people living with FGIDs like IBS to isolate themselves (Chang et al., 2006). This perception of stigma often relates to an increase of depression and anxiety, and a reduction in self-esteem, self-efficacy, and quality of life. IBS patients view physicians as holding stigmatized views of their illness as well; however, this perception of existing stigma seems to decrease as age increases for the IBS patient (Taft, Keefer, Artz, Bratten, & Jones, 2011). Further, people with IBS and other chronic conditions experience unpredictable, painful, and uncomfortable symptoms that affect their mood and,

subsequently, feelings of lack of control over their lives (Chang et al., 2006).

Although an IBS patient's quality of life and daily functioning are affected, one study showed that IBS patients are more likely to adhere to health care behaviors and seek out health care treatment if experiencing a comorbidity when quality of life was affected, compared to seeking a health care professional solely for physical symptoms (Williams et al., 2006). When IBS patients were asked about knowledge of IBS and knowledge of treatments, most IBS patients in one study stated changes in diet, prescription medication, and over-the-counter medication help improve their IBS symptoms. When these same IBS patients were asked about who they go to for support, the majority stated they had someone in their lives with whom they could talk. Most of the patients specifically identified their support people as significant others or spouses, closely followed by primary care physicians, and then families and friends. Only 1.5% of the IBS patients in this study identified psychologists or psychiatrists support people (Lacy et al., 2007).

Individuals with IBS may also experience anxiety regarding not knowing the actual cause of the syndrome and treatment (Stenner, Dancey, & Watts, 2000). In two surveys of people with IBS, participants endorsed worry, frustration, isolation, and consistently anticipating when they would experience the next IBS symptom. The survey also showed these IBS patients seek health care treatment a great deal and that IBS affects their daily lives (Stenner et al., 2000). In one qualitative study, Bertram et al. (2001) found three main concerns among people with IBS. The first concern highlighted included feelings of frustration regarding loss of control and predictability; effects on their daily lives; and limited empathy from family members, physicians, and coworkers,

which caused feelings of anger and frustration. Another reason for their feelings of frustration included the lack of a sufficient medical explanation for IBS and not feeling believed or validated by their physicians. In turn, these feelings of frustration were viewed to cause IBS patients more severe symptoms, which increased anger and frustration, sending these individuals into never-ending cycles. The second overarching concern among patients with IBS was isolation, meaning no feelings of belongingness among coworkers, family, or friends, feeling as though they are experiencing IBS alone with a lack of support, and viewing their symptoms of IBS as embarrassing. This isolation was also perceived in the workplace due to having to go to the bathroom frequently and miss many days of work because of symptoms. The third concern was avoidance of social events due to these feelings of embarrassment, with recurrent use of the bathroom and the various symptoms of IBS, such as gas, bloating, abdominal pain, and diarrhea (Bertram, Kurland, Lydick, Locke, & Yawn, 2001).

Being that the IBS patient experiences many difficulties and stress related to his or her support system and daily activities, health care experiences with the physician is extremely important. Due to the first health care contact often being the general practitioner or family medicine physician, the general physician is a vital part of an IBS patient's experiences, whether a positive or negative. A patient's previous experiences can also affect how he or she perceives the health care process and treatment, and can influence how IBS is handled in the future (Dhaliwal & R. H. Hunt, 2004). Many individuals with IBS hold negative attitudes toward their physicians because of a perceived lack of understanding, limited confidence in their physicians, and feelings of frustration with their physicians (Bertram et al., 2001; Meadows, S. Lackner, & Belic,

1997; Stenner et al., 2000). Conversely, Stenner, Dancey, and Watts (2000) found that IBS patients trust their physicians and believe them to be knowledgeable about IBS. This is due to the patients in their study perceiving IBS as being caused by stress in their lives, as well as viewing that their physicians agree that IBS is also due to stress (Stenner et al., 2000).

Physician perspectives of IBS. Most research has targeted IBS patients seeing a gastroenterologist, even though the majority of IBS patients are provided care in family medicine and/or primary care settings (Bertram, Kurland, Lydick, Locke, & Yawn, 2001). In one study, there was limited knowledge among family practitioners about IBS regarding some important symptomatology, lowered satisfaction caring for IBS patients, a lack of confidence caring for IBS patients, and reported difficulty satisfying IBS patients. In this same study, after the physicians completed the measures and pretests, some of the physicians took a two-hour educational course, consisting of a 1.5-hour lecture about IBS and 30 minutes of discussion and questions. This study found that despite knowledge of IBS slightly increasing, attitudes toward IBS were unchanged, even after the two-hour educational course (Longstreth & Burchette, 2003).

Another FGID, inflammatory bowel disease (IBD), has been compared with IBS with regards to the perceptions of gastroenterologists and nurses. The gastroenterologists in the study perceived IBD to be more severe than IBS, and believed that IBD patients have a better comprehension of their condition compared to IBS patients. In this same study, the gastroenterologists were found to believe that treatment helped IBD more than IBS patients; however, these gastroenterologists also indicated believing that IBS patients have more control over their condition than IBD patients, possibly being due to IBS

being related to psychosomatic factors. Further, the nurses in this study believed that IBD patients understand their condition better than IBS patients, and endure more severe consequences than IBS patients (Dickman et al., 2011). Also, a study that compared gastroenterologists and IBS patients found that between patients with IBS and gastroenterologists, patients considered psychological contributing factors more than the gastroenterologists (S. Levy et al., 2014).

Despite the differing perceptions among physicians depending on which diagnosis each patient presents with, knowledge among physicians regarding IBS differs as well. Among 36 family practitioners in a study conducted by Longstreth and Burchette (2003), 35% of physicians were knowledgeable of the Manning and Rome Criteria and 49% of these physicians could name only the typical IBS symptoms and the Rome II Criteria (Longstreth & Burchette, 2003). Further, the majority of primary care physicians have been found to believe IBS is a "diagnosis of exclusion;" however, most also referred for additional testing in order to make an IBS diagnosis (Lacy et al., 2006). Further, the majority of these physicians did not know that CBT is an effective treatment regimen for IBS. In addition, family practitioners reported more difficulty deciding on treatment for IBS patients compared to making treatment recommendations for patients with other painful diagnoses, and these physicians reported needing more time to care for IBS patients. This limited knowledge about the typical IBS symptomatology and diagnostic criteria can hinder quality of care for IBS patients (Longstreth & Burchette, 2003). Another study found similar results regarding physicians' knowledge about utilizing the Rome II Criteria for diagnosing IBS. Among 28 general practitioners surveyed, 17 stated they believed that they did not have enough knowledge to diagnose IBS, but three of

those 17 stated that more education would be helpful. Ten of the 28 general practitioners surveyed did not know about the Rome II Criteria and three reported using the Rome II Criteria to diagnose IBS. Although many of these physicians reported unfamiliarity with the Rome II Criteria, they correctly identified the main criteria for diagnosing IBS (Bellini et al., 2005).

In the same Italian study, psychological causes were viewed as the second most important reason for IBS to develop; however, 11.4% of the 36,418 patients surveyed in the same study were referred to psychologists or psychiatrists. Many of these physicians prescribed large amounts of antidepressants and anxiolytic medications to their patients with IBS. Many of these physicians also discussed diet and lifestyle changes with their IBS patients and provided advice regarding how to cope with the diagnosis (Bellini et al., 2005). Nevertheless, due to IBS often being considered a diagnosis of exclusion, this can often cause a difference in treatment by health care professionals. In one study by Spiegel, Farid, Esrailian, Talley, and Chang (2010), they found that when comparing IBS expert health care professionals to gastroenterologists, primary care physicians, and nurse practitioners, the IBS experts were more likely to diagnose someone with IBS and used less diagnostic tests, whereas the "non-expert" health care professionals were more likely to consider IBS a diagnosis of exclusion. Therefore, health care professionals who were not considered IBS experts were more likely to order diagnostic tests for patients and, thus, spent more money on diagnosing patients with IBS. IBS experts seemed to follow the diagnostic guidelines more compared to the "non-expert" health care professionals (Spiegel, Farid, Esrailian, Talley, & Chang, 2010). Additionally, in another study that compared the perceptions of gastroenterologists, internal medicine physicians, and family

practice physicians, perceptions about IBS differed based on medical specialty. Gastroenterologists gave an IBS diagnosis more times a week compared to internal medicine and family practitioner physicians. Also, even though gastroenterologists responded to needing more appointment time for IBS patients compared to other physicians, gastroenterologists also viewed IBS patients as "less sick" compared to the views of internal medicine and family practitioner physicians. Family practitioner physicians believed nutrition and diet as the cause of IBS, whereas gastroenterologists indicated an abuse history and prior infection as the main causes of IBS. Further, gastroenterologists were less likely to refer patients for more diagnostic tests, and instead gave definite IBS diagnoses. On the other hand, internal medicine and family medicine physicians indicated that about one third of IBS patients should be referred to a gastroenterologist for further testing and care (Lacy et al., 2006).

Research Questions

Two questions were explored through the present study: (a) Do family medicine physicians and IBS patients hold negative attitudes about IBS? (b) Is there a lack of knowledge about IBS among family medicine physicians and IBS patients?

Purpose of the Study

Research has reported that physician attitudes about IBS tend to differ and can be more negative due to a lack of knowledge about IBS and evidenced-based treatments (Heitkemper et al., 2002; Lacy et al., 2007). The purpose of this study was to determine whether there is a lack of knowledge about IBS and whether there are negative attitudes toward IBS among family medicine physicians and among patients diagnosed with IBS. Results of this study may provide more information about whether more training and

education is needed within a medical school setting, as well as whether continuing medical education is needed for physicians. This study also aimed to provide information about differences in knowledge about IBS between family medicine physicians and IBS patients, and whether IBS patients need more education about IBS from their physicians and other medical professionals. This study examined whether IBS patients are also being educated about and offered specific evidence-based treatments. Finally, this study examined attitudes among family medicine physicians and patients diagnosed with IBS, as well as whether there are significant differences between both populations.

Chapter 2: Hypotheses

Two hypotheses were proposed based on a thorough review of the literature.

Hypothesis 1

It was hypothesized that IBS patients would have more positive attitudes toward IBS compared to family medicine physicians.

Hypothesis 2

It was hypothesized that family medicine physicians would display more general knowledge compared to IBS patients.

Chapter 3: Method

Design and Design Justification

This study was a cross-sectional survey design. There are costs and benefits to this research design. The costs of a cross-sectional survey design include selection bias, inability to infer a causal relationship between variables, and a lack of generalizability to from a specific population to other populations. The benefits of a cross-sectional survey design include its cost effectiveness and having more control. This design was chosen because the purpose of this study was to make inferences about the populations, family medicine physicians and IBS patients, by examining the sample at a specific point of time in order to gather data about whether attitudes and the amount of knowledge have changed compared to previous research. It utilized an online survey through the forum SurveyMonkey.

Participants

241 IBS patients and 87 physicians were recruited to participate in this study, and of these, 175 IBS patients and 41 family medicine physicians were eligible to participate and completed all of the questionnaires. Of the family medicine physician participants, 53.7% (n = 22) were allopathic (MD) family medicine physicians, 46.3% (n = 19) were osteopathic (DO) family medicine physicians, 43.9% (n = 18) were attendings, and 56.1% (n = 23) were residents. Of the adult patients who were diagnosed with IBS, 33 (18.9%) were male, 139 (79.4%) were female, 1 (0.6%) was gender fluid, and 1 (0.6%) was non-binary. Ages of the physicians ranged from 26 to 65 years old, with a mean age of 33.7, and ages of IBS patients ranged from 18 to 77 years old, with a mean age of 29.8.

Inclusion criteria. Eligible physician participants graduated from allopathic program (MD) or an osteopathic programs (DO) in the United States, were either currently in family medicine residency, fellowship, or working as attending physicians in family medicine settings (i.e., an office that provides the first point of contact for a patient and provides a personalized physician for each patient and family). Eligible non-physician participants included individuals with IBS diagnoses.

Exclusion criteria. Individuals were excluded if they did not hold medical degrees from allopathic program (MD) or osteopathic programs (DO) in the United States. This included exclusion of students in medical school who had not yet graduated at the time of the study. Additionally, individuals were excluded if they did not practice family medicine and in family medicine settings.

In addition to exclusions of individuals in the medical field, non-physician individuals were excluded if they were not diagnosed with IBS from family medicine physicians, gastroenterologists, or internal medicine physicians and if they were under the age of 18. If a patient was diagnosed with IBS from a physician who is not a family medicine physician, a gastroenterologist, or an internal medicine physician, then he or she was excluded from the study.

Recruitment

Participants were recruited by the distribution of the survey link through social media sites, such as Facebook and Reddit (see Appendix D). The survey was also e-mailed to the Philadelphia College of Osteopathic Medicine (PCOM) community through the PCOM Help Desk e-mail listserv. A chance to win a $50 Amazon gift card was offered through a raffle in exchange for completing the survey. At the end of the survey,

participants were provided with a separate e-mail address to e-mail in order to enter their names into the raffle. The participants' names entered into the raffle could not, therefore, be connected with their survey responses.

To ensure eligibility, screening procedures for family medicine physicians included a demographic form in the beginning of the survey measure inquiring about medical degree, graduation year from medical school, subfield of medicine, area of interest, job title, age, gender, general practice location, and inquiry regarding personal connections to IBS. Due to anonymity for participants in this study, specific places of work and specific medical schools attended were not asked.

Screening procedures to ensure eligibility for IBS patients included a demographic form in the beginning of the survey measure inquiring about age, race, gender, number of years diagnosed with IBS, type of physician who diagnosed the patient with IBS, symptoms experienced, subtype of diagnosed IBS if known, current medications, and whether each patient was participating in other types of IBS treatment, such as meeting with a nutritionist, psychotherapy, acupuncture, and/or massage therapy.

Measures

Demographic questionnaires. Questionnaires inquired about demographic information in order to determine whether eligibility criteria were met. A physician demographic questionnaire was provided to the physicians and a patient demographic questionnaire was provided to IBS patients. The physician demographic questionnaire consisted of 14 questions and the IBS patient demographic questionnaire consisted of 11 questions. The physician questionnaire inquired about gender, age range, ethnicity, religion, degree completed, type of physician, where the physician stands in his or her

training and profession, number of years practicing medicine, practice location type, past educational experiences about FGIDs, and if the physician or anyone else he or she knows has IBS. The patient demographic questionnaire inquired about gender, age range, ethnicity, religion, marital status, years of being diagnosed with IBS, type of physician that gave the diagnosis, type of IBS diagnosed, and past and current used treatments. The demographic questionnaires for patients and physicians can be found in Appendix A and Appendix B, respectively.

The Revised Illness Perception Questionnaire. The Revised Illness Perception Questionnaire (IPQ-R), which was adapted for family medicine physicians and IBS patients, is a 70-item questionnaire (Moss-Morris et al., 2002). The IPQ-R for physicians was obtained from a study by S. Levy et al. (2014), which was conducted in Israel. Therefore, the version of the IPQ-R used in this study was originally in Hebrew. The questionnaire was translated to English and back translated to Hebrew, to ensure accurate translation.

The questionnaire was originally adapted to assess a patient's perception of an illness. An individual's illness perception shows the emotional response and cognitive processes about an illness that can affect health adherence behaviors for that illness. Specifically, illness perceptions are "mental representations and personal ideas people have about their illness" (Broadbent et al., 2015, p. 1362). An individual's perception about an illness consists of five domains: (a) beliefs about identity of illness (name and symptoms), (b) causes, (c) illness consequences, (d) timeline of illness or how it progresses, and (e) how illness can be controlled or healed (Broadbent et al., 2015; Lau, Bernard, & Hartman, 1989; Petrie & Weinman, 2012). This conceptualization derives

from Leventhal's self-regulatory model (Leventhal, Nerenz, & Steele, 1984). Leventhal's self-regulatory model states that an individual attempts to form his or her "illness representation" or comprehension of his or her illness by trying to understand what the illness actually is, its meaning, its consequences, its cause(s), its length or course, and if it can be cured or managed (Leventhal et al., 1984). An individual's illness representation is not formed by scientific evidence, but derives from his or her experiences of the illness, including symptoms, emotions related to illness, social influences, and relationship with physicians and other health care providers. Therefore, adherence to health behaviors and how an individual copes with an illness is affected by his or her illness representation, views, and experiences of that illness (Leventhal et al., 1984).

The IPQ-R is divided into three sections. The first section asks to identify specific symptoms of the illness of interest and whether the participant experiences the specific symptoms. The second section uses a 5-point Likert scale and inquires about the respondent's views about the illness, which include emotional components, consequences, and whether the illness is cyclical, chronic, or acute. The third section of the measure also uses a 5-point Likert scale and asks about the participant's perceptions about the causes of his or her illness (Moss-Morris et al., 2002). For the purpose of this study, 38 items from the second and third sections, the Views About my Illness scale, were used. The first section inquiring about the specific symptoms experienced by the participant was excluded. Therefore, participants in this study were asked to respond to 38 items from the IPQ-R. The 38-items are divided into seven subscales: Timeline (Acute/Chronic), Consequences, Personal Control, Treatment Control, Illness Coherence,

Timeline-Cyclical, and Emotional Representations. The Timeline (Acute/Chronic) subscale asks about how long the individual thinks the illness will last (acute versus chronic), whereas the Timeline-Cyclical subscale asks about an individual's beliefs about the cyclical nature of the illness. The Consequences subscale looks at the expectations the person has and the effects the person believes the illness will have. The Personal Control and Treatment Control subscales ask about perceptions of control over the illness through treatment (treatment) and how the individual recovers from the illness and its symptoms (personal). The factor of control, whether treatment control or personal control, plays an important role. If the individual perceives that he or she can control or cure the illness, this is associated with a perception of the illness not lasting a long time and as causing more minor consequences. The Illness Coherence subscale was added to the revised version of the IPQ. This subscale explores whether an individual's perceptions provide a clear, accurate understanding of the illness. The Emotional Representations subscale looks at the emotional reactions and responses caused by the illness. This particular subscale was added to the revised version of the IPQ after Moss-Morris et al. (2002) found the original IPQ only studied the cognitive responses from an illness and not the emotional components of an illness (Moss-Morris et al., 2002).

The IPQ-R has been adapted for various illnesses, such as asthma, acute pain, chronic pain, autism, diabetes, fatigue, hemophilia, human immunodeficiency virus (HIV), hypertension, genetic predisposition, sexually transmitted disease (STD), and rheumatoid arthritis. The IPQ-R has been translated into 17 other languages. The IPQ-R subscales have good internal reliability, particularly on the Identity subscale, which has a Cronbach's alpha of .75. The test-retest reliability shows to be consistent over three

weeks and six months. The known group validity for the IPQ-R between chronic pain and acute pain patients is also effective, as the scale was able to differentiate between the two groups on all of the factors being studied (Moss-Morris et al., 2002). Tables 1 through 3 include sample items from each subscale of the IPQ-R.

Table 1

Personal Control and Treatment Control Subscale Items

Personal Control Items	Treatment Control Items
There is a lot an IBS patient can do to control IBS symptoms.	There is very little that can be done to improve IBS.
What an IBS patient does can determine whether IBS will get better or worse.	An IBS patent's treatment of IBS will be effective in curing IBS.
The course of IBS depends on the IBS patient.	The negative effects of IBS can be prevented (avoided) by treatment.

Table 2

Timeline (Acute/Chronic), Emotional Representation, and Illness Coherence Subscale Items

Timeline (Acute/Chronic) Items	Emotional Representation Items	Illness Coherence Items
IBS will last a short time.	IBS can cause an IBS patient to get depressed.	The symptoms of IBS are puzzling.
IBS is likely to be permanent rather than temporary.	IBS can cause an IBS patient to get upset.	IBS is a mystery to me.
IBS will last for a long time.	IBS can make an IBS patient feel angry.	I don't understand IBS.

Table 3

Timeline-Cyclical and Consequences Subscale Items

Timeline-Cyclical Items	Consequences Items
The symptoms of IBS change a great deal from day to day.	IBS is a serious condition.
IBS symptoms come and go in cycles.	IBS has major consequences on a person's life.
IBS is very unpredictable.	IBS does not have much effect on a person's life.

Knowledge questionnaire. A questionnaire testing participants' general knowledge of IBS was provided. It was designed using a true-false format. The knowledge questionnaire consisted of 14 items inquiring about IBS in general, IBS symptoms, treatment options, and diagnostic criteria. The knowledge questionnaire was created specifically for this study and based on the Rome IV diagnostic criteria. The same questionnaire was used with both IBS patients and family medicine physicians. The knowledge questionnaire utilized in this study can be found in Appendix C.

Procedure

The study took approximately 15 to 20 minutes for participants to complete. The questionnaires were uploaded into SurveyMonkey.com. Two separate surveys were created on SurveyMonkey, one survey and link for family medicine physicians and one survey and link for individuals with IBS. Potential participants received the SurveyMonkey.com link, which led to a page explaining the study, confidentiality, and informed consent to participate in the study. The survey was also posted on social media

through Facebook and Reddit, with an explanation of the study and indicating which link was aimed toward IBS patients and which was aimed toward physicians. Participants were notified before participating and completing the measures that the study was anonymous and they could withdraw from the study at any time. Participants were also offered to enter a drawing for a $50 gift card from Amazon. Participants first completed the required eligibility questions, aimed toward the inclusion criteria. If the participants were eligible for the study, they were then directed to complete the demographic form, followed by the IPQ-R and the knowledge questionnaires. At the end of the survey, after the participant completed the entire survey, he or she provided with a separate Gmail address (ibspcomstudy@gmail.com) to e-mail if interested in entering the raffle to win the gift card.

Chapter 4: Results

This study examined differences between family medicine physicians' and IBS patients' attitudes toward and knowledge of IBS. A depiction of physician participant (n = 41) demographic information is presented in Table 4. Demographic information for non-physician participants (n = 175) is shown in Table 5.

Table 4

Demographic Analysis – Family Medicine Physicians (n = 41)

		Frequency	**Percent**
Gender	Male	18	43.9
	Female	23	56.1
Ethnicity	African American	1	2.4
	Caucasian	36	87.8
	Asian & Pacific Islander	3	7.3
	Middle Eastern	1	2.4
Religion	Christian	18	43.9
	Jewish	6	14.6
	Hindu	1	2.4
	Agnostic	7	17.1
	Atheist	2	4.9
	None	7	17.1

Degree Type	Doctor of Osteopathic Medicine (DO)	19	46.3
	Doctor of Medicine (MD)	22	53.7
Level of Training	Resident	23	56.1
	Attending	18	43.9
Practice Location	Urban	12	29.3
	Rural	7	17.1
	Suburban	22	53.7
Typical Recommended Treatments for IBS	Medication based on symptoms	35	85.4
	Psychotropic Medication	13	31.7
	Psychotherapy	4	9.8
	Physical Exercise	14	34.1
Attendance of IBS/FGID conferences, seminars, trainings in last 5 years	Yes	8	19.5
	No	33	80.5
Do you have IBS?	Yes	11	26.8
	No	30	73.2

Personally know anyone (family member, close friend, etc.) with IBS	No	22	53.7
	Yes	19	46.3

Table 5

Demographic Analysis – IBS Patients (n = 175)

		Frequency	**Percent**
Gender	Male	33	18.9
	Female	139	79.4
	Non-Binary	1	0.6
	Gender Fluid	1	0.6
Ethnicity	African American	2	1.1
	Caucasian	154	88.0
	Asian or Pacific Islander	6	3.4
	Spanish, Latino, or Hispanic American	4	2.3
	Native American or Alaskan Native	1	0.6
	North African	2	1.1
	Biracial or Mixed Race	6	3.4

Religion	Christian	59	33.7
	Islam	2	1.1
	Jewish	17	9.7
	Hindu	1	0.6
	Agnostic	22	12.6
	Atheist	26	14.9
	None	44	25.1
	Other	3	1.7
Marital Status	Married	45	25.7
	Divorced	2	1.1
	Widowed	3	1.7
	Not married, in relationship	64	36.6
	Not married, nor in relationship	62	35.4
Type of physician that diagnosed you with IBS	Family Medicine	51	29.1
	Gastroenterologist	113	64.6
	Internal Medicine	11	6.3
IBS Type	IBS-Constipation	32	18.3
	IBS-Diarrhea	83	47.4
	IBS-Mixed	45	25.7
	IBS-Unspecified	12	6.9
	Unknown	3	1.7

Use medications or vitamins to treat IBS	Yes	120	68.6
	No	55	31.4
Use alternative treatments to treat IBS (exercise, yoga, relaxation, psychotherapy, etc.)	Yes	94	53.7
	No	81	46.3

Hypothesis 1

Hypothesis 1 stated that IBS patients would have more positive attitudes toward IBS compared to family medicine physicians. To compare the attitudes of IBS patients and family medicine physicians regarding IBS, a multivariate analysis of variance (MANOVA) was conducted. A MANOVA requires correlation between the dependent variables. To test this, an intercorrelation matrix of all of the dependent variables was created and it was determined that out of the seven variables, two of them were correlated with each other and five of the other variables were correlated with each other. This necessitated two separate MANOVA analyses. In the first analysis, a comparison was made between two levels of the independent variable (family medicine physicians and IBS patients) and two dependent variables: the subscales of Treatment Control and Personal Control. Box's test of equality of covariance matrices was conducted and found to not be significant, Box's M = 4.796, $F(3,71934) = 1.568$, $p = .195$. The Box's Test is designed to evaluate the hypothesis that the observed covariance matrices of the dependent variables are equal across groups. This analysis revealed that the observed covariance matrices of the dependent variables were equal across groups. The

multivariate test revealed a significant difference between groups, Wilks' Lambda = .912, $F(2,213) = 10.249$, $p = .000$. The Levene's test of equality of error variances revealed there were no significant differences in variances across the groups on the two dependent variables. The test of between-subjects effects revealed a significant difference on the Personal Control total score, $F(214) = 16.14$, $p = .000$, partial eta squared = .07. An examination of the means revealed that the IBS patients scored significantly higher than the family medicine physicians on Personal Control. Table 6 illustrates the descriptive statistics for these two groups on the dependent variable of Personal Control.

Table 6

Personal Control Descriptive Statistics

Personal Control Total Score	Mean	Standard Deviation
IBS Patients	14.080	2.847
Family Medicine Physicians	12.146	2.424

A second MANOVA was conducted using group membership as the independent variable with two levels (IBS patients and family medicine physicians) and five dependent variables that were found to be correlated with each other, including the subscales of Timeline (Acute/Chronic), Consequences, Illness Coherence, Emotional Representation, and Timeline-Cyclical. In this instance, however, Box's test of equality of covariance matrices was significant, Box's M = 55.835, $F(15,20726.8) = 3.547$, $p = .000$. This analysis revealed a violation of the assumption of the equality of covariance

matrices. According to Field (2013), with a MANOVA, it is assumed that the variances in each group are roughly equal. This is tested by examining whether the population, or covariance matrices of the comparison groups, are equal. The effect of violating the assumption of equality of covariate matrices remains unclear, although, Field argued that Hotelling T-squared "is robust in the two sample situations when sample sizes are equal" (p. 194). In large samples, Box's test could be significant even when the covariance matrices are homogenous. As Field reported, "as a general rule, if sample sizes are equal then people tend to disregard Box's Test, because (1) it is unstable, and (2) in this situation we can assume that Hotelling's and Pillai's statistics are robust" (p. 643). In contrast, if group sizes are different, robustness cannot be assumed. In this instance, as Field noted, the more dependent variables measured, and the greater the differences in sample sizes, the more distorted the results may be. One alternative suggested by Field is to equalize the samples through randomly eliminating cases in the larger group. In any case, the results of the overall analysis should be made with caution. The results of the multivariate test revealed a significant difference between groups, Pillai's Trace = .234, $F(5,210) = 12.79$, $p = .000$. Similar results were found for Wilks' Lambda, Hotelling's Trace, and Roy's Largest Root. For example, Hotelling's Trace was found to be equal to .305, $F(5,210) = 12.79$, $p = .000$. In examining the Levene's test of the equality of error variances, there was heterogeneity of variance on the illness coherence total score only across the groups. This test evaluates the hypothesis that the variances of the set of variables are equal across groups. When evaluating Levene's test, Field noted "the test(s) of homogeneity of variance like Levene's tend to work very well when you have equal group sizes and large samples and don't work as well with unequal group sizes and

smaller samples" (p. 194). Therefore, due to the large sample size, the Levene's test is more likely to show significance, which is demonstrated with the Illness Coherence subscale. The test of between-subjects effects revealed significant differences between the groups on Illness Coherence ($F(1,214) = 26.62$, $p = .000$), Timeline (Acute/Chronic; $F(1,214) = 37.11$, $p = .000$), and Emotional Representation ($F(1,214) = 9.395$, $p = .002$). Comparison of the groups revealed that the physicians scored significantly higher on Timeline (Acute/Chronic) compared to the patients (patient mean = 11.177 vs. physician mean = 14.634). On Illness Coherence, the patients scored significantly higher than the physicians (patient mean = 16.491 vs. physician mean = 12.390) and on Emotional Representation, the physicians scored significantly higher than the patients (patient mean = 8.977 vs. physician mean = 10.561). Descriptive statistics can be found in Table 7.

Table 7

Timeline (Acute/Chronic), Illness Coherence, Emotional Representation Descriptive Statistics

Subscales	Participants	Mean	Standard Deviation
Timeline (Acute/Chronic)	Patients	11.177	3.299
	Physicians	14.634	3.145
Illness Coherence	Patients	16.491	4.842
	Physicians	12.390	3.208
Emotional Representation	Patients	8.977	2.986
	Physicians	10.561	2.942

Hypothesis 2

Hypothesis 2 stated that family medicine physicians would display more general knowledge compared to IBS patients. Findings suggest no significant difference between these groups. To evaluate this hypothesis, an independent groups *t*-test was conducted. A Levene's test for the equality of variances revealed that equal variances could not be assumed ($F = 6.218$, $p = .013$). To adjust for this, a *t*-test for equal variances not assumed was conducted, $t(85.91) = 1.409$, $p = .162$. Table 8 depicts the results of this *t*-test, and Table 9 illustrates the group statistics.

Table 8

Knowledge – Independent Samples Test

Knowledge Total Score	Df	Sig. (2-tailed)	Mean Difference
Equal variances assumed	214	.266	.305
Equal variances not assumed	85.913	.162	.305

Table 9

Knowledge – Group Statistics

Knowledge Total Score	N	Mean	Std. Deviation
IBS Patients	175	10.085	1.663
Family Medicine Physicians	41	9.780	1.129

Chapter 5: Discussion

This study examined differences between attitudes regarding IBS among family medicine physicians and individuals with IBS. Further, this study sought to identify differences in the amount of knowledge between family medicine physicians and IBS patients. This study can help explain the reported difficulties between family medicine physicians and IBS patients, as IBS patients often report feeling misunderstood and not heard by their physicians. Conversely, physicians report feeling frustrated with their IBS patients due to the difficulty of treating IBS and IBS having an unclear etiology (Chang et al., 2006; Lacy et al., 2007). If all of the hypotheses had been accepted, it would suggest that IBS patients would have more positive attitudes toward IBS compared to family medicine physicians and family medicine physicians would have more general knowledge about IBS compared to IBS patients. This study found that Hypothesis 1, that IBS patients would demonstrate more positive attitudes toward IBS compared to family medicine physicians, was accepted, based on five of the seven attitudes subscales being significant, with four of those five subscales showing overall more negative attitudes among family medicine physicians. Regarding Hypothesis 2, stating that family medicine physicians would display more knowledge about IBS compared to IBS patients, the null was retained based on no significant differences found between the two groups' responses on the knowledge measure.

Attitudes

Personal control and treatment control. According to the results of this study, patients perceive more personal control over their IBS compared to what family medicine physicians perceive. In regard to the factor of control, the more control an individual

perceives, the more that individual believes he or she can cure or control the illness to the extent that it does not have major effects on his or her life. The fact that IBS patients often feel misunderstood by their physicians (Taft et al., 2011) suggests that physicians may feel less control over IBS, possibly because IBS is difficult to treat due to its unclear etiology (Bellini et al., 2005; Dixon-Woods & Critchley, 2000). Due to the Treatment Control subscale showing no significance in this study, the fact that Personal Control demonstrated significance may also suggest that physicians feel more pessimistic regarding IBS and may, therefore, be more influenced by their own emotions when treating their IBS patients. In contrast, previous research suggests that IBS patients feel a lack of control over their lives, due to the unpredictability of IBS and its symptoms (Chang et al., 2006). An explanation for this discrepancy may be that IBS patients reported a perception of more control over IBS compared to the family medicine physicians because, typically, IBS patients will present to their physicians during flare ups of their IBS symptoms. This means that physicians are more likely to see IBS patients when they are not doing well, causing the perception of IBS for physicians to be more pessimistic and more out of control.

Emotional representation. The Emotional Representation variable studies the emotional reactions and responses caused by IBS. This study found that the family medicine physicians rated the emotional effects and reactions from IBS as higher compared to the IBS patients. This shows that family medicine physicians tend to believe that IBS will cause more negative emotions—including depression and anxiety—than IBS patients believe. This result displays a more negative attitude among family medicine physicians due to the physicians believing that IBS will cause more negative

emotions for a patient, even though IBS patients seem to disagree and did not rate this scale as highly. This difference in belief between family medicine physicians and IBS patients supports the research that physician attitudes tend to differ and be more negative, due in part to a lack of knowledge about IBS (Heitkemper et al., 2002; Lacy et al., 2007). A possible solution to family medicine physicians perceiving more negative emotions associated with IBS is to have more integration of behavioral health in family medicine. For example, psychologists and/or behavioral health consultants on staff in medical practices would not only help IBS patients receive more evidenced-based treatment, such as CBT for IBS, but also help lessen physicians' frustration and stress related to treating IBS. This can also help improve the patient-physician relationship, thus improving patients' adherence to treatment and physicians' attitudes toward IBS (Chang et al., 2006). Keefer, Palsson, and Pandolfino (2018) outlined the benefits of incorporating psychogastroenterology into practice, such as having a behavioral health consultant and/or psychologist on staff trained on brain-gut therapies to provide evidenced-based treatments to patients with brain-gut disorders such as IBS. This is shown to significantly improve an IBS patient's quality of life (Keefer, Palsson, & Pandolfino, 2018).

Timeline (acute/chronic). The Timeline (Acute/Chronic) subscale of whether the participants believe IBS is acute or chronic and if it will last a long time or short time showed significant differences between the two groups. Family medicine physicians rated this subscale higher than the IBS patients, showing that family medicine physicians perceive IBS to be more chronic compared to the IBS patients' perceptions. Conversely, the IBS patients did not rate IBS as long-lasting. This may be due to IBS being considered a chronic condition within the medical field; however, there are known

alternative treatments that align more with the biopsychosocial model of care rather than the medical model of care that may provide hope to IBS patients that the course of the illness may not be chronic. IBS patients in this study (n = 175) responded on the demographic questionnaire that for alternative IBS treatments, they use yoga, meditation, mindfulness/relaxation techniques, deep breathing/progressive muscle relaxation, nutrition (practicing good nutrition in general, or making more specific changes in diet, including FODMAP, vegan, plant-based, and/or gluten-free diets), physical exercise, biofeedback, peppermint and detox teas, CBD/peppermint/fish oils, psychotherapy/CBT, grapefruit seed extract, and aloe vera juice. These specific responses demonstrate that IBS patients report utilizing more biopsychosocial treatments compared to the traditional medical model treatments, such as solely using medication to treat IBS symptoms.

Illness coherence. Despite family medicine physicians scoring higher on perceptions of more negative emotions, more chronicity, and perceiving less control over IBS, family medicine physicians also demonstrated more understanding of IBS compared to IBS patients. Therefore, IBS patients rated the Illness Coherence variable higher; thus, they feel more confused and more puzzled by their own conditions. IBS can be an unpredictable condition with no biological marker (Chang et al., 2006), while being bidirectional with one's emotional/mental health and gut health (Drossman, 2016). These factors, which play a major role with IBS and the expression of IBS symptoms, can often make IBS a mystery to individuals suffering with it. This was an interesting finding due to IBS patients perceiving more control over their condition even though they perceive IBS to be more of a mystery. This may be due to the fact that IBS has an unclear etiology, and patients have to go through various diagnostic tests to exclude other

possible conditions before being diagnosed officially with IBS. This makes the syndrome more of a mystery in regard to why it develops, where it derives from, and how to treat it effectively. Notably, the sample of IBS patients who were surveyed in this study were recruited from social media outlets and various support groups on these social media outlets, meaning this sample may be involved in finding alternative effective treatments by communicating with other individuals with IBS. This relates then to a perception of more control over the illness, due to feeling more support from these various social media groups and utilizing these alternative treatments for the various symptoms.

Consequences and timeline-cyclical. The subscale Consequences, which studies the expectations and effects the individual believes IBS will have on him or her, presented no significant differences between IBS patients and family medicine physicians. The Timeline-Cyclical subscale, which measures the perceptions of the cyclical nature of IBS, also showed no significant differences between family medicine physicians and IBS patients.

Attitudes conclusions. Patients feel more in control of their IBS, perceive less negative emotions associated with their conditions, and perceive IBS to not be as long-lasting compared to family medicine physicians. Further, family medicine physicians believed that they have a clearer and more accurate understanding of IBS compared to IBS patients. These results can have significant implications regarding overall attitudes of IBS and, therefore, can affect the patient-physician relationship, perception of stigma and feeling understood, and confidence in oneself or confidence in ability to treat IBS.

Knowledge

It was found that family medicine physicians and IBS patients did not differ on their amount of knowledge, according to the 14-item knowledge questionnaire results. This means that family medicine physicians displayed the same amount of knowledge as IBS patients in this study. This may mean that family medicine physicians and medical school students specializing in family medicine need more training and education about IBS and FGIDs in general, due to the expectation that physicians should have more knowledge about IBS in order to treat their patients effectively. These results also may explain physician frustration and perceived stigma often felt by IBS patients (Bellini et al., 2005). The family medicine physicians and IBS patients in this sample may have the same amount of knowledge due to the IBS patients being recruited from social media outlets and various support groups on these social media websites, meaning these patients are more likely to be doing their own research about IBS and possible alternative treatments. Therefore, this patient sample may be more knowledgeable than if the IBS patients were recruited from other outlets. Another explanation for the two groups having similar scores on the knowledge questionnaire is the true/false format of the measure.

Limitations

Power. This study has a small sample size of family medicine physicians (n = 41); thus, it has underpowered results. Nevertheless, despite the small sample size of the family medicine physicians, some significance was still found, showing that there may have been more significant results found with a larger sample size. The sample size of family medicine physicians and IBS patients was also distributed unevenly (41 family

medicine physicians vs. 175 IBS patients), which is a major limitation when comparing these two groups.

Culture. It will be difficult to generalize the results to family medicine physicians and IBS patients outside of the United States. Further, various cultural aspects were not included in the current study, though an individual's culture can influence how he or she treats or views IBS (C. D. Gerson & M. Gerson, 2010; Zuckerman et al., 1996). The fact that there was a lack of multicultural representation due to the majority of the family medicine physician participants identifying as Christian and Caucasian, it is a limitation of the study because of the importance of cultural views about IBS. Further, In the United States, more females than males are diagnosed with IBS (Chang et al., 2006; Payne, 2004), which was also seen with the 175 IBS patients who participated in this study (patient participants included 139 females, 33 males, 1 gender fluid person, and 1 non-binary person). As such, this study represents the attitudes and knowledge about IBS among mainly female IBS patients. In contrast, the gender of the family medicine physician sample was more evenly distributed (23 females and 18 males).

Measures. The length of the measures may have hindered the study. Family medicine physicians, specifically, have busy schedules and, therefore, likely did not have much time to fill out the measures. This may explain the difficulty of obtaining a larger sample size of family medicine physician participants to respond to the survey.

Another limitation of this study was its reliance on self-report from participants, particularly in regard to stating they have IBS, as no confirmatory evidence that they actually have IBS diagnoses and/or were diagnosed by family medicine physicians, internal medicine physicians, or gastroenterologists, was required. Therefore, it is not

definite that the IBS patients all have IBS according to the diagnostic guidelines. Also, there may have been confusion between IBS and IBD due to similarities between the symptoms (Dickman et al., 2011). Overall, because of the use of self-report measures, there was potential for bias within the responses for both physicians and IBS patients.

Another limitation is the fact that a new measure was created for the study: the 14-item knowledge questionnaire. This measure has not been tested with a larger sample and has not been validated in a randomized clinical trial. Therefore, it cannot be assumed that this measures knowledge comprehensively due to not being psychometrically tested. Further, the lower scores on this measure may be explained by respondents missing key words in some of the items, such as "never" and "always." This may have confused some of the respondents when completing this measure.

Finally, with regards to the attitudes measure, the IPQ-R, the seven subscales studied within this measure are clustered together by question, causing the subscales to not be randomized within the measure. This means that each item in the measure was grouped with the other items that correlate with the same subscale, increasing face validity within the measure.

Strengths

Participants. A strength of this study is the inclusion of medical residents, as 56.1% of the family medicine participants identified as such. There is a lack of research about family medicine physicians and treating IBS, even though family medicine physicians are the type of medical professionals who often have first contact with IBS patients (Hungin et al., 2014). Moreover, medical residents' overall knowledge base

about IBS is unclear. Therefore, including family medicine physicians and residents is a major benefit to the literature about IBS.

Rome IV criteria. This study was conducted after the most recent establishment of the Rome IV criteria in 2016, a diagnostic tool that includes a list of symptoms one should meet to be diagnosed with IBS (Drossman, 2016). This most recent diagnostic criteria for IBS was included in the knowledge questionnaire to examine whether the family medicine physicians in the sample were aware of the newest IBS diagnostic criteria. It was found that the sample of family medicine physicians are not as knowledgeable as expected with regards to the newest Rome IV diagnostic criteria, scoring a 69.8% on the knowledge questionnaire that inquired about the Rome IV criteria.

Future Directions

The current study did not survey IBS patients and physicians outside of the United States, and culture affects views about IBS and treatment choices (C. D. Gerson & M. Gerson, 2010). Therefore, it would be interesting to conduct a similar study with family medicine physicians and IBS patients in other countries, to study whether there are differences in findings depending on culture. Additionally, more females than males are diagnosed with IBS in the United States, and many females struggle with being open about their IBS symptoms because of stereotypical gender roles such as feelings of shame and embarrassment about IBS symptoms (Chang et al., 2006). Therefore, a study comparing attitudes among men and women diagnosed with IBS in the United States would be beneficial.

It would also be beneficial to do a similar study with other FGIDs that also present in family medicine settings. There is research conducted with gastroenterologists and internal medicine physicians with regards to IBS; however, it would be useful to do a study with uncommon FGIDs, such as esophageal disorders, gastroduodenal disorders, centrally mediated disorders of gastrointestinal pain, gallbladder and SO disorders, and anorectal disorders (Drossman, 2016). Further, comparing IBS knowledge and/or attitudes of first-year and third- or fourth- year medical school students would be another possible study, in order to gauge whether there are differences depending on level of training. Due to the small sample size in this study of family medicine physicians, it would be helpful to conduct another study to collect a larger sample size of family medicine physicians. Finally, it would be beneficial to determine whether here are differences in attitudes between DOs and MDs, and whether there are differences that depend on the age and years in practice for physicians.

Conclusion

Attitudes towards and the amount of knowledge about IBS can affect the patient-physician relationship when physicians are treating IBS patients (Chang et al., 2006). Therefore, this study sought to specifically find whether there are differences in attitudes among family medicine physicians and IBS patients, considering family medicine physicians are often the first point of contact for IBS patients (Hungin et al., 2014). If IBS patients hold negative attitudes toward IBS, a condition they are experiencing, this can have implications on their mental health and levels of stress related to the condition, which are two factors that easily affect the expression of one's IBS symptoms (Hungin et al., 2005; van Tilburg et al., 2013). This study found that the sample of family medicine

physicians and IBS patients demonstrated the same amount of knowledge, according to the 14-item knowledge measure. Further, it was found that IBS patients feel more in control of IBS, perceive less negative emotions such as depression and anxiety, and perceive IBS to be more short-term compared to the family medicine physicians. Also, IBS patients perceive the condition to be more of a mystery and puzzling compared to the family medicine physicians. This study presents a need for more training and medical education regarding IBS within the medical field, specifically within the family medicine specialty. If family medicine physicians are more educated about IBS and more educated about common experiences of IBS patients, then this will help these physicians educate their own patients about the condition and possibly improve patient-physician relationships. Further, this study shows a need for integrative care, such as having behavioral health consultants and/or psychologists integrated within medical settings to help physicians and IBS patients treat IBS with evidenced-based treatment, while lessening the frustration associated with IBS. In turn, this would also help improve patient-physician relationships. The patient-physician relationship is valuable and can help make treatment more effective and increase adherence and, consequently, positive more outcomes for IBS patients.

References

American Academy of Family Physicians. (2017). *Primary care*. Retrieved from http://www.aafp.org/about/policies/all/primary-care.html

American Association of Colleges of Osteopathic Medicine. (2019). *U.S. colleges of osteopathic medicine.* Retrieved from http://www.aacom.org/become-a-doctor/us-coms

American Medical Association. (2016). *Becoming a physician*. Retrieved from https://www.amaassn.org/education/becoming-physician

American Osteopathic Association. (2017). *Doctors of osteopathic medicine: Becoming a DO*. Retrieved from http://doctorsthatdo.org/difference/become-a-do

Bai, T., Xia, J., Jiang, Y., Cao, H., Zhao, Y., Zhang, L., . . . Hou, X. (2016). Comparison of the Rome IV and Rome III criteria for IBS diagnosis: A cross-sectional survey. *Journal of Gastroenterology and Hepatology*, *32*(5), 1018-1025. doi:10.1111/jgh.13642

Bellini, M., Tosetti, C., Costa, F., Biagi, S., Stasi, C., Del Punta, A., . . . Marchi, S. (2005). Alimentary Tract: The general practitioner's approach to irritable bowel syndrome: From intention to practice. *Digestive and Liver Disease, 37*(12), 934-939. doi:10.1016/j.dld.2005.06.011

Bertram, S., Kurland, M., Lydick, E., Locke III, G. R., & Yawn, B. P. (2001). The patient’s perspective of irritable bowel syndrome. *Journal of Family Practice*, *50*(6), 521-525.

Björkman, I., Dellenborg, L., Ringström, G., Simrén, M., & Jakobsson Ung, E. (2014). The gendered impact of irritable bowel syndrome: A qualitative study of patients' experiences. *Journal of Advanced Nursing, 70*(6), 1334-1343. doi:10.1111/jan.12294

Broadbent, E., Wilkes, C., Koschwanez, H., Weinman, J., Norton, S., & Petrie, K. J. (2015). A systematic review and meta-analysis of the Brief Illness Perception Questionnaire. *Psychology and Health, 30*(11), 1361-1385.

Chang, L., Toner, B. B., Fukudo, S., Guthrie, E., Locke, G. R., Norton, N. J., & Sperber, A. D. (2006). Gender, age, society, culture, and the patient's perspective in the functional gastrointestinal disorders. *Gastroenterology, 130*(5), 1435-1446.

Craske, M. G., Wolitzky-Taylor, K. B., Labus, J., Wu, S., Frese, M., Mayer, E. A., & Naliboff, B. D. (2011). A cognitive-behavioral treatment for irritable bowel syndrome using interoceptive exposure to visceral sensations. *Behaviour Research and Therapy, 49,* 413-421. doi:10.1016/j.brat.2011.04.001

Dainty, A.D., Allcock, N., & Cooper, J. (2014). Study of irritable bowel syndrome and co-existing psychological illness. *Nurse Researcher*, *21*(4), 27-31.

Dear, B. F., Fogliati, V. J., Fogliati, R., Gandy, M., McDonald, S., Talley, N., . . . Jones, M. (2018). Transdiagnostic internet-delivered cognitive-behaviour therapy (CBT) for adults with functional gastrointestinal disorders (FGID): A feasibility open trial. *Journal of Psychosomatic Research, 108,* 61-69. doi:10.1016/j.jpsychores.2018.02.015

Dhaliwal, S. K., & Hunt, R. H. (2004). Doctor-patient interaction for irritable bowel syndrome in primary care: a systematic perspective. *European Journal of Gastroenterology and Hepatology*, *16*(11), 1161-1166.

Dickman, R., Segev, M., Levi, S., Reicher-Atir, R., Steinmetz, A., Horev, N., & Niv, Y. (2011). Perceptions of gastroenterologists and nurses regarding irritable bowel syndrome and inflammatory bowel disease. *European Journal of Gastroenterology and Hepatology*, *23*(9), 813-817. doi:10.1097/MEG.0b013e328348a552

Dixon-Woods, M., & Critchley, S. (2000). Medical and lay views of irritable bowel syndrome. *Family Practice, 17*(2), 108-113.

Drossman, D. A. (2016). Functional gastrointestinal disorders: History, pathophysiology, clinical features, and Rome IV. *Gastroenterology*, *150*(6), 1262-1279. doi:10.1053/j.gastro.2016.02.032

Drossman, D. A., & Hasler, W. L. (2016). Introduction: Rome IV—Functional GI disorders: Disorders of gut-brain interaction. *Gastroenterology*, *150*, 1257-1261. doi:10.1053/j.gastro.2016.03.035

Drossman, D. A., Toner, B. B., Whitehead, W. E., Diamant, N. E., Dalton, C. B., Duncan, S., . . . Bangdiwala, S. I. (2003). Cognitive-behavioral therapy versus education and desipramine versus placebo for moderate to severe functional bowel disorders. *Gastroenterology*, *125*(1), 19-31.

El-Salhy, M., & Gundersen, D. (2015). Diet in irritable bowel syndrome. *Nutrition Journal*, *14*(1), 36-46. doi:10.1186/s12937-015-0022-3

Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). London, UK: SAGE Publications Inc.

Gerson, C. D., & Gerson, M. (2010). A cross-cultural perspective on irritable bowel syndrome. *Mount Sinai Journal of Medicine*, *77*(6), 707-712. doi:10.1002/msj.20218

Gucht, V. (2015). Illness perceptions mediate the relationship between bowel symptom Severity and health-related quality of life in IBS patients. *Quality of Life Research*, *24*(8), 1845-1856.

Halpert, A., & Godena, E. (2011). Irritable bowel syndrome patients' perspectives on their relationships with health care providers. *Scandinavian Journal of Gastroenterology, 46*(7/8), 823-830. doi:10.3109/00365521.2011.574729

Harmon, H. W. (2007). Treatment options for irritable bowel syndrome. *Nurse Practitioner*, *32*(7), 39-43. doi:10.1097/01.NPR.0000279571.93570.cb

Heitkemper, M., Carter, E., Ameen, V., Olden, K., & Cheng, L. (2002). Women with irritable bowel syndrome: Differences in patients' and physicians' perceptions. *Gastroenterology Nursing, 25*(5), 192-200.

Henrich, J. F., Gjelsvik, B., & Martin, M. (2018). Implicit identification with illness in patients with irritable bowel syndrome (IBS). *Cognitive Therapy and Research*, *42*(3), 328-339. doi:10.1007/s10608-017-9888-z

Hesser, H., Hedman-Lagerlöf, E., Andersson, E., Lindfors, P., & Ljótsson, B. (2018). How does exposure therapy work? A comparison between generic and gastrointestinal anxiety-specific mediators in a dismantling study of exposure therapy for irritable bowel syndrome. *Journal of Consulting and Clinical Psychology*, *86*(3), 254-267. doi:10.1037/ccp0000273

Hungin, A. S., Chang, L., Locke, G., Dennis, E., & Barghout, V. (2005). Irritable bowel syndrome in the United States: Prevalence, symptom patterns and impact. *Alimentary Pharmacology and Therapeutics*, *21*(11), 1365-1375. doi:10.1111/j.1365-2036.2005.02463.x

Hungin, A. S., Molloy-Bland, M., Claes, R., Heidelbaugh, J., Cayley, W. E., Muris, J., & de Wit, N. (2014). Systematic review: the perceptions, diagnosis and management of irritable bowel syndrome in primary care: A Rome Foundation working team report. *Alimentary Pharmacology and Therapeutics*, *40*(10), 1133-1145. doi:10.1111/apt.12957

Hunt, M. G., Moshier, S., & Milonova, M. (2009). Brief cognitive-behavioral internet Therapy for irritable bowel syndrome. *Behaviour Research and Therapy, 47*(9), 797-802. doi:10.1016/j.brat.2009.05.002

Inadomi, J., Fennerty, M., & Bjorkman, D. (2003). The economic impact of irritable bowel syndrome. *Alimentary Pharmacology and Therapeutics*, *18*(7), 671. doi:10.1046/j.1365-2036.2003.t01-1-01736.x

Keefer, L., Palsson, O. S., & Pandolfino, J. E. (2018). Best practice update: Incorporating psychogastroenterology into management of digestive disorders. *Gastroenterology, 154*(5), 1249-1257. doi:10.1053/j.gastro.2018.01.045

Lackner, J. M., Brasel, A. M., Quigley, B. M., Keefer, L. L., Krasner, S. S., Powell, C. C., . . . Sitrin, M. D. (2010). The ties that bind: Perceived social support, stress, and IBS in severely affected patients. *Neurogastroenterology and Motility*, *22*(8), 893-900. doi:10.1111/j.1365-2982.2010.01516.x

Lacy, B. E., Rosemore, J., Robertson, D., Corbin, D. A., Grau, M., & Crowell, M. D. (2006). Physicians' attitudes and practices in the evaluation and treatment of irritable bowel syndrome. *Scandinavian Journal of Gastroenterology*, *41*(8), 892-902. doi:10.1080/00365520600554451

Lacy, B. E., Weiser, K., Noddin, L., Robertson, D. J., Crowell, M. D., Parratt-Engstrom, C., & Grau, M. V. (2007). Irritable bowel syndrome: patients' attitudes, concerns and level of knowledge. *Alimentary Pharmacology and Therapeutics*, *25*(11), 1329-1341. doi:10.1111/j.1365-2036.2007.03328.x

Ladabaum, U., Boyd, E., Zhao, W. K., Mannalithara, A., Sharabidze, A., Singh, G., . . . Levin, T. R. (2012). Alimentary tract: Diagnosis, comorbidities, and management of irritable bowel syndrome in patients in a large health maintenance organization. *Clinical Gastroenterology and Hepatology*, *10*37-45. doi:10.1016/j.cgh.2011.08.015

Laird, K. T., Tanner-Smith, E. E., Russell, A. C., Hollon, S. D., & Walker, L. S. (2016). Short-term and long-term efficacy of psychological therapies for irritable bowel syndrome: A systematic review and meta-analysis. *Clinical Gastroenterology and Hepatology*, *14*, 937-947. doi:10.1016/j.cgh.2015.11.020

Lau, R. R., Bernard, T. M., & Hartman, K. A. (1989). Further explorations of common-sense representations of common illnesses. *Health Psychology, 8*(2), 195-219. doi:10.1037/0278-6133.8.2.195

Lee, Y., Hu, L., Shen, C., Huang, M., Tsai, S., Yang, A. C., . . . Hung, J. (2015). Risk of psychiatric disorders following irritable bowel syndrome: A nationwide population-based cohort study. *Public Library of Science (PLOS ONE), 10*(7), 1-12. doi:10.1371/journal.pone.0133283

Leventhal, H., Nerenz, D.R. and Steele, D.S. (1984). Illness representations and coping with health threats. In A. Baum, S. E. Taylor, & J. E. Singer (Eds.), *Handbook of psychology and health* (Vol. IV), pp. 219-252. Hillsdale, NJ: Erlbaum.

Levy, S., Segev, M., Reicher-Atir, R., Steinmetz, A., Horev, N., Niv, Y., & Dickman, R. (2014). Perceptions of gastroenterologists and patients regarding irritable bowel syndrome and inflammatory bowel disease. *European Journal of Gastroenterology and Hepatology*, *26*(1), 40-46. doi:10.1097/MEG.0b013e328365ac70

Longstreth, G., & Burchette, R. (2003). Family practitioners' attitudes and knowledge about irritable bowel syndrome: Effect of a trial of physician education. *Family Practice, 20*(6), 670-674. doi:10.1093/fampra/cmg608

Manning, A., Thompson, W., Heaton, K., & Morris, A. (1978). Towards positive diagnosis of the irritable bowel. *British Medical Journal, 2*, 653-654.

Meadows, L., Lackner, S., & Belic, M. (1997). Irritable bowel syndrome: An exploration of the patient perspective. *Clinical Nursing Research, 6*(2), 156-170.

Moss-Morris, R., Weinman, J., Petrie, K. J., Horne, R., Cameron, L. D., & Buick, D. (2002). The Revised Illness Perception Questionnaire (IPQ-R). *Psychology and Health*, *17*(1), 1-16. doi:10.1080/08870440290001494

Ooi, S. L., Correa, D., & Pak, S. C. (2019). Probiotics, prebiotics, and low FODMAP diet for irritable bowel syndrome: What is the current evidence? *Complementary Therapies in Medicine, 43,* 73-80. doi:10.1016/j.ctim.2019.01.010

Payne, S. (2004). Sex, gender, and irritable bowel syndrome: making the connections. *Gender Medicine*, *1*(1), 18-28.

Petrie, K. J., & Weinman, J. (2012). Patients' perceptions of their illness: The dynamo of volition in health care. *Current Directions in Psychological Science, 21*(1), 60-65. doi:10.1177/0963721411429456

Pilgrim, J., & Schub, T. (2016). Irritable bowel syndrome. *CINAHL Nursing Guide*.

Singh, P., Staller, K., Barshop, K., Dai, E., Newman, J., Yoon, S., . . . Kuo, B. (2015). Patients with irritable bowel syndrome-diarrhea have lower disease-specific quality of life than irritable bowel syndrome-constipation. *World Journal of Gastroenterology, 21*(26), 8103-8109. doi:10.3748/wjg.v21.i26.8103

Smith, G. D. (2015). Uncovering male and female experiences of irritable bowel syndrome. *Evidence-Based Nursing*, *18*(3), 75. doi:10.1136/eb-2014-101936

Spiegel, B. R., Farid, M., Esrailian, E., Talley, J., & Chang, L. (2010). Is irritable bowel syndrome a diagnosis of exclusion?: A survey of primary care providers, gastroenterologists, and IBS experts. *The American Journal of Gastroenterology, 105*(4), 848-858. doi:10.1038/ajg.2010.47

Spiller, R., Aziz, Q., Creed, F., Emmanuel, A., Houghton, L., Hungin, P., . . . Whorwell, P. (2007). Guidelines on the irritable bowel syndrome: mechanisms and practical management. *Gut*, *56*(12), 1770-1798.

Stenner, P., Dancey, C., & Watts, S. (2000). The understanding of their illness amongst People with irritable bowel syndrome: A Q methodological study. *Social Science and Medicine*, *51,* 439-452. doi:10.1016/S0277-9536(99)00475-X

Sugaya, N., Nomura, S., & Shimada, H. (2012). Relationship between cognitive factors and anxiety in individuals with irritable bowel syndrome. *International Journal of Behavioral Medicine*, *19*(3), 308-315. doi:10.1007/s12529-011-9195-0

Taft, T., Keefer, L., Artz, C., Bratten, J., & Jones, M. (2011). Perceptions of illness stigma in patients with inflammatory bowel disease and irritable bowel syndrome. *Quality of Life Research*, *20*(9), 1391-1399. doi:10.1007/s11136-011-9883-x

Talley, N. J., & Spiller, R. (2002). Seminar: Irritable bowel syndrome: a little understood organic bowel disease? *The Lancet*, *360*555-564. doi:10.1016/S01406736(02)09712-X

Toner, B. B., & Akman, D. (2000). Gender role and irritable bowel syndrome: literature Review and hypothesis. *The American Journal of Gastroenterology*, *95*(1), 11-16.

Trinkley, K. E., & Nahata, M. C. (2011). Treatment of irritable bowel syndrome. *Journal of Clinical Pharmacy & Therapeutics*, *36*(3), 275-282. doi:10.1111/j.1365-2710.2010.01177.x

Van Tilburg, M. L., Palsson, O. S., & Whitehead, W. E. (2013). Which psychological actors exacerbate irritable bowel syndrome? Development of a comprehensive model. *Journal of Psychosomatic Research, 74,* 486-492. doi:10.1016/j.jpsychores.2013.03.004

Williams, R. E., Black, C. L., Kim, H., Andrews, E. B., Mangel, A. W., Buda, J. J., & Cook, S. F. (2006). Determinants of health care-seeking behaviour among subjects with irritable bowel syndrome. *Alimentary Pharmacology and Therapeutics*, *23*(11), 1667-1675. doi:10.1111/j.1365-2036.2006.02928.x

Zomorodi, S., Abdi, S., & Tabatabaee, S. R. (2014). Comparison of long-term effects of cognitive-behavioral therapy versus mindfulness-based therapy on reduction of symptoms among patients suffering from irritable bowel syndrome. *Gastroenterology and Hepatology From Bed To Bench*, *7*(2), 118-124.

Zuckerman, M. J., Guerra, L. G., Drossman, D. A., Foland, J. A., & Gregory, G. G. (1996). Health-care-seeking behaviors related to bowel complaints: Hispanics versus non-Hispanic whites. *Digestive Diseases and Sciences, 41*(1), 77-82.

Appendix A

Patient Demographic Information

Please complete the following demographic information. Thank you for your participation.

1. Which gender do you identify with?
    a. Female
    b. Male
    c. Other – Please Specify

2. What is your age? _____

3. What is your ethnicity?
    a. African American
    b. Caucasian
    c. Spanish, Latino or Hispanic-American
    d. Native American or Alaska Native
    e. Asian or Pacific Islander
    f. Other – Please Specify

4. What is your religious preference?
    a. Christian
    b. Islam
    c. Jewish
    d. Hindu
    e. Buddhist
    f. Agnostic
    g. Atheist
    h. None
    i. Other _____

5. What is your marital status?
    a. Married
    b. Divorced
    c. Widowed
    d. Not married, in relationship
    e. Not married, not in relationship
    f. Other _____

6. How many years have you been diagnosed with Irritable Bowel Syndrome (IBS)?
    a. _____

7. What type of physician or medical professional diagnosed you with Irritable Bowel Syndrome (IBS)?
    a. Family medicine physician
    b. Gastroenterologist
    c. Other _____

8. What type of Irritable Bowel Syndrome (IBS), if known, were you diagnosed with?
    a. IBS with mainly constipation
    b. IBS with mainly diarrhea
    c. IBS with both diarrhea and constipation alternating
    d. IBS that does not fit into a category with a chief symptom like constipation or diarrhea
    e. Unknown

9. Do you currently use medications or vitamins to treat your IBS?
    a. Yes
    b. No

10. Do you currently use alternative treatments, such as exercise, yoga, relaxation training, or psychotherapy, to treat your IBS?
    a. Yes
    b. No

11. Based on your answers to the above questions, please list any prescribed or unprescribed medications, vitamins, or alternative treatments that you currently use to treat your IBS. IF YOUR ANSWER IS “NONE” PLEASE WRITE IN “NONE” IN THE SPACE BELOW.

Appendix B

Physician Demographic Information

Please complete the following demographic information. Thank you for your participation.

1. Which gender do you identify with?
    a. Female
    b. Male
    c. Other – Please Specify

2. What is your age? _____

3. What is your ethnicity?
    a. African American
    b. Caucasian
    c. Spanish, Latino or Hispanic-American
    d. Native American or Alaska Native
    e. Asian or Pacific Islander
    f. Other – Please Specify

4. What is your religious preference?
    a. Christian
    b. Islam
    c. Jewish
    d. Hindu
    e. Buddhist
    f. Agnostic
    g. Atheist
    h. None
    i. Other _____

5. Which degree did you complete?
    a. Doctor of Osteopathic Medicine (DO)
    b. Doctor of Medicine (MD)

6. Where did you complete your degree?
    a. United States
    b. Country outside of the United States

7. What's your current level of training at a family medicine setting?
    a. Resident
    b. Fellow
    c. Attending
    d. Other _____

8. How many years have you been practicing? _____

9. What is your practice location?
    a. Urban
    b. Rural
    c. Suburban

10. Which treatment(s) do you typically recommend for an IBS patient? Please check only two responses by checking the two most common recommended treatments.
    a. Medication based on symptoms (i.e., for constipation, diarrhea, bloating, pain, etc.)
    b. Psychotropic Medication
    c. Psychotherapy
    d. Physical Exercise
    e. Acupuncture
    f. Other _____

11. Have you attended any conferences, seminars, in-service trainings/presentations, or taken formal coursework specifically about Functional Gastrointestinal Disorders (FGIDs) and/or Irritable Bowel Syndrome (IBS) in the last five years?
    a. Yes
    b. No

12. If yes to above question, please indicate below the number of trainings, conferences, seminars, in-service presentations you have attended in the past about FGIDs or IBS and subject of trainings (FGIDs or specifically IBS) – (for example, 2 trainings – IBS and IBD).

13. Do you have Irritable Bowel Syndrome (IBS)?
    a. Yes
    b. No

14. Do you personally know anyone (family member, close friend, etc.) with Irritable Bowel Syndrome (IBS)?
    a. Yes
    b. No
        i. If yes, specify relationship below

Appendix C

Knowledge Questionnaire

Correct responses are in bold.

1. There are 3 main types of IBS.
    - **a. True**
    - b. False

2. IBS involves a brain and gut interaction.
    - **a. True**
    - b. False

3. Men and women are equally bothered by their IBS symptoms.
    - a. True
    - **b. False**

4. IBS is at least partly psychosomatic (mind affecting the body).
    - a. True
    - **b. False**

5. To get the best treatment, it is important to know which subtype of IBS is occurring.
    - **a. True**
    - b. False

6. Vomiting is a symptom of IBS.
    - a. True
    - **b. False**

7. People with IBS have a greater risk for colon cancer.
    - a. True
    - **b. False**

8. Physicians can use the Rome IV Criteria and conduct various tests to exclude other conditions.
    - **a. True**
    - b. False

9. The cardinal and main identifying symptom of IBS is abdominal pain.
    - **a. True**
    - b. False

10. People with IBS will ***always*** have depression and/or anxiety.
    a. True
    b. False

11. Stress can make IBS symptoms worse.
    a. True
    b. False

12. Abdominal pain, on average, should be experienced at least one day per week in the last 3 months to be diagnosed with IBS.
    a. True
    b. False

13. Psychotherapy, such as Cognitive Behavioral Therapy (CBT) and mindfulness, are supported by research and proven to work for IBS.
    a. True
    b. False

14. IBS does not lower a person's quality of life and does not negatively affect a person's general life satisfaction and overall happiness.
    a. True
    b. False

Appendix D

Solicitation for Study

Shana Brown-Lieberson, M.S. Psychology Doctoral student at the Philadelphia College of Osteopathic Medicine (PCOM), is currently seeking Irritable Bowel Syndrome (IBS) patients and family medicine physicians (residents, fellows, and attending physicians) to participate in a brief (15-20 minute) online survey for her Doctoral dissertation. The research project is investigating the attitudes and knowledge about IBS. Eligible patient participants must have been diagnosed with IBS by a family medicine physician, gastroenterologist, or internal medicine physician, be 18 years old or older, and be fluent in English. Eligible physician participants must have graduated from an allopathic or osteopathic medical school in the United States and be working as a medical resident, fellow, or attending physician in a family medicine setting. This study will be anonymous and confidential and participants may withdraw from the study at any time. Following the study, if interested, participants will be given the opportunity to enter their name for a $50 gift card from Amazon that will be raffled upon completion of the study. This raffle is separate from the survey and participants will not be able to be identified. This raffle will not be linked to survey data. This study has been reviewed and approved by the PCOM Institutional Review Board, protocol # H18030X. Please follow the link to be directed to the online research study. Questions can be directed to Dr. Barbara Golden at barbarago@pcom.edu.

Thank you!