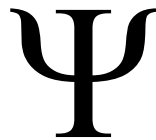




DET PSYKOLOGISKE FAKULTET



*The Role of Alexithymia in Treatment Outcome in Irritable Bowel
Syndrome (IBS) – a Review*

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Abstract

Alexithymia is a deficit in the cognitive processing of emotion. It is largely observed in a range of different medical and psychiatric disorders and is especially associated with psychosomatic disorders. The present review aims to investigate the role of alexithymia in the treatment of irritable bowel syndrome (IBS). IBS is a functional gastrointestinal disorder with a heterogenic etiology. Psychological treatment has been found generally beneficial for patients with IBS, but responses vary. High prevalence of alexithymia has been observed in individuals with IBS, suggesting it to be a factor of the etiology. The examined studies showed some inconsistency in the role of alexithymia in treatment outcome. Some studies found that alexithymia predicted poor treatment outcome, while others suggested that it did not have an influence. Findings indicate that the role of alexithymia depend on the specific treatment. Therapy that specifically targeted alexithymia and emotion awareness was effective in treating somatic symptoms of IBS, independent of alexithymia. Thus, findings in this review suggest that the negative effects of alexithymia can be overcome by targeting these mechanisms in therapy.

Sammendrag

Alexitymi kjennetegnes av vansker med kognitiv prosessering av emosjoner. Konstruktet er observert i ulike medisinske og psykiatriske tilstander, og er særlig forbundet med psykosomatiske tilstander. Hensikten med denne litteraturgjennomgangen er å undersøke alexitymi sin rolle i behandlingen av irritable tarm-syndrom (IBS). IBS er en funksjonell gastrointensinal lidelse med en heterogen etiologi. Psykologisk behandling har generelt vist seg å være effektiv for IBS pasienter, men responsen varierer. Høy prevalens av alexitymi er observert i individer med IBS. Dette kan indikere at alexitymi er en del av etiologien til IBS. Studiene som ble undersøkt viste inkonsekvens vedrørende alexitymi sin rolle i behandlingsutkomme. Noen studier fant at alexitymi predikerte dårligere behandlingutkomme, mens andre fant at alexitymi ikke hadde påvirkning. Funnene indikerer at rollen til alexitymi er avhengig av behandlingsform. Terapi som spesifikt rettet seg mot alexitymi og affektbevissthet var effektiv i behandling av somatiske symptomer i IBS, uavhengig av alexitymi. Funnene i denne litteraturgjennomgangen antyder dermed at negative konsekvenser av alexitymi kan påvirkes ved å rette behandlingen mot disse mekanismene.

Introduction

Irritable bowel syndrome (IBS) is a common functional gastrointestinal disorder that affect a lot of people globally. The primary symptoms are pain and discomfort associated with dysfunction of the bowel. The symptoms and severity seem to vary between patients and there is a lack of a clear etiology (Drossman, 2016). The biopsychosocial model has emerged as an important and comprehensive approach to understanding health. This approach is evidence-based and more patient-centered than former biomedical models of health (Engel, 1977) In IBS, it is now generally accepted from multiple disciplines that the pathogenesis result from a complex interplay of reciprocal factors (Van Oudenhove et al., 2016). These factors include biological, psychological and social factors. Still, the multifactorial aspect of IBS makes it difficult to target effective treatments. Several treatments have been proposed and include both pharmacologic and non-pharmacologic approaches. Drug treatment, lifestyle and dietary changes have shown varied degrees of effectiveness (Drossman, 2016).

A large body of literature has indicated that psychosocial distress is common among IBS patients (Bennett, Tennant, Piesse, Badcock, & Kellow, 1998). Hence, a growing interest in psychological treatment, especially cognitive behavioral treatment, has emerged. Research indicates that in addition to elevated levels of psychosocial distress, IBS patients also tend to have problems with emotion regulation (Heitkemper, Jarrett, & Jun, 2013). Alexithymia is a deficit in emotion regulation and cognitive processing. It is associated with a range of different illnesses, and especially psychosomatic illnesses (Taylor & Bagby, 2004).

Carrozzino and Porcelli (2018) found that individuals suffering from functional gastrointestinal disorders (FGID) also had higher prevalence of alexithymia than controls. Previous research has suggested alexithymia as a possible moderator of treatment outcome for different psychotherapy (Blaettler et al., 2019). It has been suggested as a stable trait, predicting poor treatment outcome (Porcelli, De Carne, & Leandro, 2017a). Other authors

have argued that alexithymia can be modified through certain forms of psychotherapy (Cameron, Ogrodniczuk, & Hadjipavlou, 2014). However, the exact role of alexithymia in several treatment outcomes remains an area of disagreement (Cameron et al., 2014).

As it has been difficult to identify successful treatments for IBS, knowledge about maintaining factors and how to target them can have useful clinical implications. In conclusion, not enough is known about how alexithymia might play a role in the course and treatment of IBS. The aim of this review is to investigate whether and how alexithymia can predict outcome for psychological treatments of IBS. This knowledge can give valuable insight into mechanisms accountable for maintenance and change, as well as future directions for treatment.

Alexithymia

Alexithymia is a broad term used to describe a deficit in emotion regulation and cognitive processing. It is multifaceted and is defined by the inability to identify, describe and express emotions, in addition to externally oriented thinking style and limited imagination. The term was first coined by Sifneos in the early 1970's and literally means "no words for emotion" (Sifneos, Apfel-Savitz, & Frankel, 1977). Sifneos linked the construct to a range of psychosomatic disorders and failure to respond to dynamic psychotherapy. The prevalence of alexithymia is reported to be approximately 8–10% in normal population (Taylor & Bagby, 2004). During the last decades there has been a growing interest in alexithymia as a topic for both empirical and clinical research. Alexithymia has been assessed using different measurements. Both self-reports, observer-rated and performance-based instruments exist as measures of alexithymic traits. Among these instruments, the most commonly applied is the Toronto Alexithymia Scale (TAS) and the revised 20-items version (TAS-20). TAS-20 uses self-report and has been shown as a valid and reliable measure of alexithymia (Taylor &

Bagby, 2004). The development of this scale has contributed to expansion of the research on the field through systematic collection of data. It has been translated into 18 languages and is currently employed in both clinical settings and research (Taylor & Bagby, 2004). TAS-20 includes three subscales of alexithymia. Difficulty to identify feelings (DIF) assesses the inability to distinguish between different emotions. It is also characterized by an inability to distinguish between feelings and the bodily sensations of emotional arousal. Difficulty describing feelings (DDF) assesses the inability to verbalize subjective emotions to others. Finally, externally oriented thinking (EOT) assesses the tendency of individuals to focus their attention externally and not on inner emotional experiences. This is often recognized as being concrete, stimulus-bound and oriented to practical aspects of their external environment (Nemiah, 1977).

Research generally suggest TAS-20 as a reliable and valid measure of alexithymia . However, there are some controversy associated with the differential validity of constructs related to emotional processing. As alexithymia is a broad and multifaceted construct it has overlapping features with several other constructs. It has been associated to constructs such as dissociation and somatization (Lipsanen, Saarijärvi, & Lauerma, 2004). It has also been suggested as another measure of depression, as the constructs clearly have common characteristics (Lipsanen et al., 2004). Although moderate correlations have been found, depression and alexithymia still seem to be distinct and not just different measures for the same underlying construct (Müller, Bühner, & Ellgring, 2003). Several other concepts have been suggested as overlapping, such as defensive processes like suppression and denial. However, alexithymia is mainly considered a deficit and a dispositional factor rather than a defense mechanism, despite some controversy around this (Parker, Taylor, & Bagby, 1998). Viewing alexithymia as a dispositional factor suggests it to be a more stable trait, rather than solely a reaction to environmental inputs. This will be discussed later.

Another construct closely related to alexithymia is emotional awareness. Emotional awareness is a narrower term which does not entail externally oriented thinking style and limited imagination. This construct is often measured by the Level of Emotional Awareness Scale (LEAS) (Lane & Schwartz, 1987). Maroti, Lilliengren, and Bileviciute-Ljungar (2018) found that despite the conceptual overlap, the two constructs are not empirically overlapping. These results are somewhat confusing based on the conceptual overlap. However, Maroti et al. (2018) argue that the empirical difference may be due to the difference in measures. LEAS is an observer-rated test while TAS-20 rely on self-reports. Research has shown that correlations are usually low between these different measures (Lumley, Gustavson, Partridge, & Labouvie-Vief, 2005). Many authors still consider emotional awareness to be a facet of alexithymia (Maroti et al., 2018). Moreover, TAS-20 has been criticized for not capturing the imaginative abilities originally proposed by Sifneos. Hence, some argue that TAS-20 is solely assessing the cognitive processing of emotion in alexithymia, and missing the affective aspects (Goerlich, 2018). There are other scales attempting to capture the entire alexithymia construct, such as the Bermond-Vorst Alexithymia Questionnaire (Vorst & Bermond, 2001). However, this questionnaire is not commonly applied.

Taken together, there is some confusion about the conceptualization of alexithymia. What is assessed, how it should be measured, and how it differs from other related constructs lacks clarity. The present review will use the term alexithymia as intended by Sifneos, as a deficit in emotion regulation and cognitive processing. This will include a range of different terms and measures applied in the literature, such as emotional awareness, emotion processing and emotion regulation.

The role of alexithymia in different health issues

Through extensive research in the last decades, alexithymia associated with a vast array of both mental and physical health problems. This includes substance use disorders,

eating disorders, posttraumatic stress disorder, panic disorder, depression, anxiety, fibromyalgia and gastrointestinal disorders (Taylor, 2000). These associations demonstrate alexithymia as a severe risk factor for several health issues. However, the causal connection is difficult to determine. For example, alexithymia may be a relative trait secondary to stress and illness. This would suggest that alexithymia is a state phenomenon rather than an absolute and stable trait. On the contrary, several studies have supported the view of alexithymia as a more stable trait than simply a reaction to psychological distress (Taylor, 2000). In fact, studies suggest that alexithymia is a predictor of health changes. This predictive value of alexithymia has been shown to be greater than many other well-known risk factors. Bach and Bach (1995) found that high levels of alexithymia were a significant predictor of persistent somatization in psychosomatic disorders and anxiety disorders. This was independent of other measures of psychopathology, sociodemographic and illness severity. Similarly, in a prospective epidemiologic study, alexithymia predicted increased mortality in middle-aged men in Finland (Kauhanen, Kaplan, Cohen, Julkunen, & Salonen, 1996). The reasons for the risk of all-cause death for men high in alexithymia remains unclear, but there was little evidence of confounding variables such as well-known biological, behavioral and psychosocial risk factors (Kauhanen et al., 1996). There are several potential explanations on how difficulties in emotion regulation can impact bodily processes that cause illness and death. These will be discussed in further detail later in this paper.

Functional diseases, psychosomatic diseases and the biopsychosocial approach

The possibility of emotions leading to development of medical illness is not new. The observations of strong emotions causing diarrhea, chest pain, abdominal pain and even sudden death (Engel, 1978) has interested physicians for centuries. Historical tension between holism and dualism has been an ongoing debate through history and is still a subject of interest.

Claudius Galen was a strong believer that the mind and body could not be separated to different faculties. However, in the seventeenth century, Descartes influenced Western Europe with his ideas of disconnecting the mind from the body. This had profound effects on how medical illnesses were conceptualized (Drossman, 2016). The dualism between mind and body is evident in today's dichotomy in medicine between functional and organic diseases. Some clinicians and researchers argue that this dichotomy is misleading in order to properly understand health (Drossman et al., 1999). The term organic disease is used when one can detect a biomarker as an explanation for the symptoms. These biomarkers can be inflammation or biological changes in tissue, organs or cells within the body. Functional diseases, by contrast, do not have any such observable biomarkers that explain the symptoms. In functional diseases, the underlying factors of the symptoms are unknown or unable to be measured by current scientific instruments. Some diseases were earlier classified as functional but have later discovered measurable biomarkers. Examples are Alzheimer, migraine and epilepsy (Drossman et al., 1999). This emphasize the importance of continuous research and acknowledgment of our current knowledge about medicine as incomplete.

Nevertheless, it is widely recognized that individual health can only partly be explained by biomarkers and diagnosable conditions. Research has suggested a universal tendency for psychological distress to be expressed and experienced as physical symptoms (Macfarlane et al., 1999; Murphy et al., 1992). How this translation occurs is still not fully understood. Several authors have offered explanations for the complex relationship between illness and psychological factors. A large body of research suggest that individual health must be understood within a biopsychosocial approach (Engel, 1977; Van Oudenhove et al., 2016). Engel (1977) challenged the reductionistic view of the biomedical model of health. He argued that this model was insufficient in understanding health, resulting in health needs not being met. In most health issues there are several illness mechanisms involved (Van Oudenhove et

al., 2016). This includes biology, but also cognitive and emotional processes, behavioral- and social factors. The way behavioral, perceptual, cognitive and emotional processes are influencing health is conceptualized to some degree in a widely used framework called the Common Sense Model of Self-Regulation (Leventhal, Phillips, & Burns, 2016). The model emphasizes how perceptions and representations of health impact behavior in relation to the experienced health threat. These representations are described in the model as multi-level processes. They are generated from somatic perceptions, often based on previous illness experiences and perceptions of normal functioning. Representations are further influenced by environmental input, such as discussions of illness with others and mass media. These dynamics affect the cognitive and emotional components of the representations, which will again have an impact on how the threat is addressed, as well as the action plan (Leventhal et al., 2016). According to the model, a perception of the disease as dependent on uncontrollable factors will lead to less coping behavior and preventive measures (e.g., healthy lifestyle). This will again influence the course and outcome of the disease.

Psychosomatic disease is another closely related term to functional disease. This term emphasizes the involvement of both psyche and soma in the onset and course of the different illnesses. Still, “psychosomatic” might imply that psychological factors do not play a role in other diseases that are not described in this way. Because of this, psychosomatic diseases are now conceptualized in ICD-10 as “somatoform diseases”. Although the heterogeneity of factors behind these diseases is increasingly acknowledged, it has been difficult to verify causal connections in psychosomatic or functional diseases (Taylor, 2000). This problem is evident in the continuing changes of these classifications in revisions of both ICD and DSM. Today, ICD-10 describes somatoform disorders as “repeated presentation of physical symptoms together with persistent requests for medical investigations, despite repeated negative findings and reassurances by doctors that the symptoms have no physical basis. If

any physical disorders are present, they do not explain the nature and extent of the symptoms or the distress and preoccupation of the patient” (F 45, ICD-10, 1999). In the DSM-5, psychosomatic disorders are conceptualized as “somatic symptom and related disorders”. The continuing revision of classifications and causal explanations of these conditions may be due to an increase in generating more precisely differential diagnostic research. Still, there are challenges with the different approaches to underlying explanations, based on basic differences in epistemology and theory (Taylor, 2000).

The role of alexithymia in the development and persistence of psychosomatic diseases

As mentioned previously, alexithymia is associated with several clinical conditions, and has been observed especially in psychosomatic disorders (Taylor & Bagby, 2004). Studies have shown consistent correlations of high scores on TAS and high degree of somatization (Taylor, 2003). Somatization is a somewhat diffuse term used to denote the underlying processes of somatic symptom formation (Kellner, 1990). The term has been confused with Freud’s concept of conversion, as well as psychosomatic disease. The distinction between these concepts is still not clear. However, modern views of the term tend to look at somatization as based on emotion processing (Taylor, 2003). Although the agreement of a definition is incomplete, many authors define somatization as bodily symptoms that arises as expressions of unconscious distress (Kellner, 1990). The translation of distress to somatic symptoms may be explained partly by the nervous system, the endocrine system, the immune system, and the HPA axis (Chang, 2011). Adaptive mechanisms of “fight or flight” causes these systems to be highly active during stress. These circuits are sometimes referred to as the emotional motor system (EMS). Alterations in the EMS causes physiological activity which can further lead to somatic pain (Chang, 2011). How stress and psychological factors are linked so closely to the gut will be described later in this paper.

The link between alexithymia, somatization and morbidity may have several explanations besides physiological activity from unconscious distress. One theory focuses on how alexithymic individuals are misinterpreting sensations and have elevated focus on bodily sensations. In normal subjects, somatic symptoms are more prevalent than psychological symptoms, even when no clear physical cause can be found (Kellner, 1990). In alexithymia this prevalence is even higher (Taylor, 2003). Research has shown that individuals with high levels of alexithymia were more emotionally aroused when presented with illness-related words than negative emotion words (Lundh & Simonsson-Sarnecki, 2002). Taylor and Bagby (2004) suggests that these findings support the view of alexithymic individuals as lacking mental representations of emotions and thereby focusing on the somatic sensations accompanied by emotional arousal. This may lead to difficulties in connecting the somatic experience to affective conditions. In other words, alexithymic individuals experience an inability to adequately identify physical sensations as somatic manifestations of emotions. This inability is making them susceptible to incorrectly interpreting their emotional arousal as signs of disease and hence leading them to seek medical care for symptoms where no clear medical explanations can be found (Di Tella & Castelli, 2016). Alexithymic individuals do tend to seek medical advice more often. Whether this is caused by increased susceptibility to health problems or an elevated sensitivity to pain is not known (Taylor, 2000).

Neurobiological studies have suggested a reduced coordination between the two hemispheres in alexithymic individuals, in addition to a dysfunction in the emotion processing areas of the right hemisphere (Taylor & Bagby, 2004). In order to account for the source of these neurobiological variations, one may look at genetic, developmental and attachment studies. Alexithymia is known as a common feature of autism spectrum disorder (ASD) (Kinnaird, Stewart, & Tchanturia, 2019), suggesting a biological and innate aspect of the construct. Although varieties in neurobiology could be genetic, research has also proposed

that alexithymia stems from childhood trauma which interferes with neuroanatomical development (Hoppe, 1990). There is evidence that support that stress hormones in early life can affect the developing brain. As an example, children with PTSD have shown smaller volume in cerebral and prefrontal cortex, in addition to underdevelopment in the corpus callosum (De Bellis et al., 2002). Aside from research on neglect and abuse, social factors have demonstrated effect on the etiology of alexithymia. Comprehensive data from the Finland Birth Cohort Project found that alexithymia was associated with being an unwanted child, having many siblings and being brought up in rural areas (Joukamaa et al., 2003). Attachment studies have further shown that emotional interaction between infant and caregiver significantly affect emotional schemas, imagination and cognitive processing of emotion regulation (Cassidy, 1994). Alexithymic individuals have also been associated with insecure attachment styles (Troisi, D'Argenio, Peracchio, & Petti, 2001). This may account for the poor social support often seen in individuals with high levels of alexithymia. Poor social support is further associated with poor health, and can thereby be another pathway to explaining the relationship between alexithymia and health issues (Taylor & Bagby, 2004).

Irritable bowel syndrome (IBS) and other functional gastrointestinal disorders (FGID)

Functional gastrointestinal disorder (FGID) includes more than 20 disorders which has been identified as symptoms in the gastrointestinal tract. The symptoms must be persistent and recurring. The symptoms do not have an evident organic cause, such as structural or biomedical abnormalities that are visible in x-rays, CT scans, endoscopic exams or blood tests. The lack of organic explanations has led FGID to be stigmatized for being less legitimate than organic or pathologically based diagnoses (Drossman, 2016). Although gastrointestinal symptoms have been apparent and a topic of medical interest for centuries, no

overarching operational definitions or classification existed before 1994 (Drossman, 2016). ROME I Diagnostic Criteria was developed in order to classify different gastrointestinal disorders that could not be explained by visible abnormalities in tissue or structure. Together with an expansion of research in the field, ROME diagnostic criteria has been updated to include more evidence-based data. In 2016, the latest update, ROME IV, was published. Definitions have changed over time and there is still a need for an agreed-upon working definition. Still, based on current scientific knowledge, FGID is now widely recognized as being disorders in the gastrointestinal tract caused by dysfunction in the brain-gut interaction (Drossman, 2016). This interaction will be further described later in this paper.

Irritable bowel syndrome (IBS) is the most common functional gastrointestinal disorder. It is defined by the presence of chronic abdominal pain and discomfort associated with a change in bowel function, such as diarrhea and constipation. Similar to all FGIDs, IBS is symptom-based and diagnosed when absence of any other disease can explain the symptoms. The prevalence of IBS is approximately 10% to 15%, but this seems to vary globally. Women are 1.5 to 2 times more likely to have the syndrome than men, and more often report pain and constipation while men more often report diarrhea (Quigley et al., 2016). IBS and other FGIDs have shown to significantly reduce health-related quality of life, daily functioning and work productivity (Drossman, 2016). Furthermore, FGID comprises a major portion of primary health care and is responsible for high healthcare costs in society (Drossman, 2016).

Even though IBS is the most commonly diagnosed gastrointestinal disorder it has many overlapping symptoms with other gastrointestinal disorders, such as gastroesophageal reflux disease and dyspepsia (Quigley et al., 2016). This calls for some differential diagnostic challenges. Some authors therefore choose to study the phenomenon in its broader term. Instead of differentiating between the narrower groups of disorders, much research study

functional gastrointestinal disorder (FGID) in one. The current paper will therefore review both FGID and IBS. For the purposes of this paper, the term IBS will be mostly used in describing both categories.

In addition to overlapping symptoms among gastrointestinal disorders, multiple comorbidities are associated with IBS. This includes somatic pain syndromes such as fibromyalgia and chronic fatigue syndrome, and psychiatric disorders such as major depression, anxiety, and somatization (Drossman, 2016). This overlap raises the possibility of shared pathogenesis.

Pathogenesis of IBS

Even though there is no clear peripheral cause, the pathogenesis of IBS typically focuses on abnormalities in motility, visceral sensation, brain-gut interaction, and psychosocial distress (Drossman, 2016). Motility refers to the muscular activity in the gastrointestinal tract. Abnormal activity in the contractions in the gastrointestinal tract can cause pain and discomfort. Similarly, visceral sensation is a term describing pain originating from the internal organs of the body. Internal organs are contained within the thorax and the abdomen. Acute pain in this area is often associated with infection or tissue damage. Chronic pain in this area can sometimes be harder to explain and identify causation (Drossman, 2016). Visceral sensations can vary between individuals, and there has been recognized a hypersensitivity in the nerve pathways from the gastrointestinal tract in patients with IBS (Elsenbruch, 2011). However, a heightened sensitivity to both painful and non-painful stimuli has been observed in several medically unexplained disorders (Yunus, 2015). Yunus (2015) describes the phenomenon as central sensitization. He suggests that this condition causes the central nervous system to react excessively to peripheral input. Others suggest that increased pain reports is not due to neurosensory sensitivity, but rather a decreased threshold for reporting pain (Dorn et al., 2007). Dorn et al. (2007) argues that this urge to report pain is

based on hypervigilance to gastrointestinal sensations. He further suggests that this increased somatic focus is strongly influenced by psychological and cognitive factors. In summary, abnormal motility patterns and visceral hypersensitivity has been recognized in IBS, but the causes are not completely agreed-upon.

As a result of advanced neurobiological knowledge, much focus has changed from the painful body region to the brain. Recent research has given attention to a communication route called the brain-gut axis. There is an increasing amount of evidence suggesting a dysregulation in the brain-gut communication as a cause of IBS symptoms. The understanding of a connection between emotional processes and the gut is deeply rooted in our language. This is evident in sayings like “my gut feeling tells me”, “butterflies in my stomach”, and “I cannot stomach this”. Recently, this connection has emerged as an important topic of interest.

Brain-gut axis. The interaction between the brain and the digestive system is referred to as the brain-gut axis. This is a bidirectional system connecting the emotional and cognitive areas of the brain with the intestinal functions. This bidirectional link makes for a complex psychobiological process. Gut symptoms are modulated by bottom-up inputs from the digestive system as well as top-down processing from emotional and cognitive brain circuits (Mayer, 2011). Under normal conditions, this process would not be consciously perceived. However, visceral pain can be perceived when signals from the brain-gut communication indicate a potential threat to homeostasis. These signals are often referred to as stress. Stress is a reaction by the body to a physiological or psychological stimulus that disrupts homeostasis (Moloney et al., 2016). The perception of stress becomes conscious when the body requires a behavioral response. Research has shown that lifetime pain exposures, stress responses, cognitions, and emotions can modify the individual experience of perceived pain (Lumley et al., 2011). Thus, these stress factors influence visceral perceptions and make some individuals more susceptible to the subjective experience of pain. There is no linear relationship between

pain perception and peripheral input. Alterations in the axis can happen at different levels in the central nervous system and the enteric nervous system, or the interplay between these systems (Mayer, 2011). A substantial amount of literature indicates that psychological factors significantly influence sensations from the gut as well as other clinical aspects (Van Oudenhove et al., 2016). The involvement of the central nervous system on gut symptoms is supported by several evidence. For example, motility disturbances in IBS patients have been shown to disappear during sleep and progressively increase along with alertness and arousal (Drossman et al., 1999).

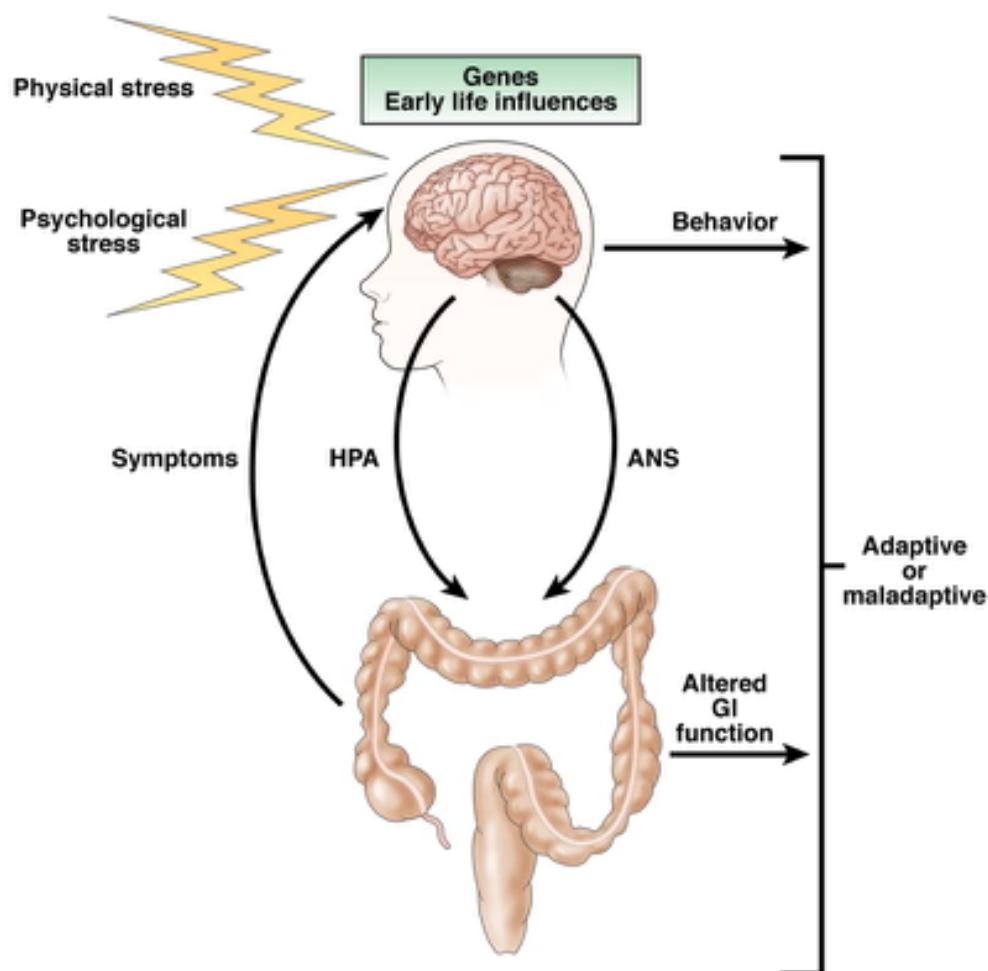
Even though research on the dysregulation in the brain-gut axis is still in its infancy, it has emerged as one of the major clinical factors regarding several health conditions. In fact, the brain-gut axis seems not only to be involved in the pathogenesis of functional diseases, but is believed to influence organic gastrointestinal diseases, as well as chronic pain disorders, psychiatric disorders, Parkinson's disease and autism spectrum disorders (Mayer, Tillisch, & Gupta, 2015). More recently, the role of the gut microbiota on the brain-gut communication has emerged. The gut microbiota is the microorganisms in the gut. Evidence suggest that alterations in the gut-microbiota further leads to stress responses, including pain sensitivity (Moloney et al., 2016).

Taken together, the pathogenesis behind IBS is heterogenic, and a biopsychosocial perspective is needed for better understanding (Van Oudenhove et al., 2016). Figure 1 demonstrates how different mechanisms connect psychological distress and the gut. Research often points to three pathways where psychological factors impact IBS symptoms; the brain-gut axis, behavioral factors, and early life events mediating the onset of symptoms. In other words, IBS is argued to be a consequence of a complex dysregulation where emotional, cognitive and neurophysiological functions are involved (Van Oudenhove et al., 2016). The biopsychosocial perspective is helpful in understanding the great variability in symptoms

across the patient group. Thought, emotion and life events each affect symptom severity and health outcome, and the importance of each factor may vary between individuals. This knowledge is essential as a basis for treating the symptoms. The brain-gut axis further helps explain the degree of overlap with psychiatric conditions and psychological distress in patients with IBS symptoms (Van Oudenhove et al., 2016).

Figure 1

Different mechanisms connecting stress and the gut



Adapted from (Lightman, 2008).

Psychosocial distress in IBS. A large body of research suggests that stressful life events are common in IBS patients. Patients with IBS have increased levels of psychiatric

distress, poorer quality of life, less interpersonal support, and greater reliance on passive coping strategies (Jones, Wessinger, & Crowell, 2006). The World Gastroenterology Organization claims that psychological factors do not cause or influence the onset of IBS but may play a role in the persistence of symptoms (Quigley et al., 2016). Still, high levels of distress have been associated with both the onset and maintenance of gastrointestinal symptoms. In fact, one study found severe life stress as an immediate factor before the onset of IBS symptoms (Creed, Craig, & Farmer, 1988). This study found that severe life stress, especially interpersonal stress, directly preceded abdominal pain. These symptoms had not previously been reported. Also, Bennett et al. (1998) found that stressors such as relationships difficulties, divorce, caring for family members and business failure predicted greater intensity and frequency in IBS symptoms. High prevalence of sexual and physical abuse has been observed in patients with IBS (Drossman et al., 1999). In fact, chronic life stress has been demonstrated as the main predictor of IBS symptom intensity after controlling for relevant confounders (Bennett et al., 1998).

However, some argue that it is not the stressors alone that influences the level of gut health. Rather, how individuals respond to different life events is the important factor in our physical and mental health (van Middendorp et al., 2008; Zautra, Johnson, & Davis, 2005). Beesley, Rhodes, and Salmon (2010) found that suppressed anger was greater in patients with IBS than patients with Crohn's disease, which is an organic bowel disease. In addition to lack of emotional expression, individuals with IBS have shown more interpersonal communication apprehension, and to a greater degree avoid topics with their closest relational partner than non-IBS individuals (Bevan, 2009). The lack of verbal communication of psychological distress may lead to a reduced ability of enlisting the comfort and aid of other people. Negative social relationships that are characterized by conflicts are strongly associated to IBS outcomes (Lackner et al., 2013). Failure to adaptively process and resolve stressors seems to

drive both physical and psychological symptoms (van Middendorp et al., 2008; Zautra et al., 2005). The combination of elevated life stress and lack of coping skills is not specific for IBS, but are evident in most chronic pain conditions, like fibromyalgia, back pain and headaches (Drossman et al., 1999). This may suggest a tendency to express emotional pain through bodily symptoms. In the case of IBS, psychological distress may influence gastrointestinal functioning through the brain-gut axis.

Current treatments

Emerging research consistently link psychosocial variables to IBS. This provides a preliminary basis for focusing on these variables in therapeutic settings. Knowledge about the biopsychosocial model that holds that behavior, cognitive processes and early life experiences interact with biology and influence IBS symptoms (Van Oudenhove et al., 2016) has resulted in a growing interest in different psychological interventions for IBS. As medical interventions and dietary advice have demonstrated shortcomings in treatment, psychological interventions have become increasingly common when treating gastrointestinal syndromes. The World Gastroenterology Organization (Quigley et al., 2016) recommend psychological therapy, including cognitive behavior therapy, hypnotherapy and psychodynamic therapy, for patients who do not respond to pharmacological treatments and develop refractory IBS. Bennett et al. (1998) suggested that IBS symptoms can improve substantially, and in some cases disappear when the life stress is dealt with, for instance when individuals effectively acquire life management skills.

The efficacy of psychological treatments on symptom severity, mental health and daily functioning in individuals with IBS patients has been established by several reviews and meta-analysis (Ford, Lacy, Harris, Quigley, & Moayyedi, 2019; Lackner, Morley, Dowzer, Mesmer, & Hamilton, 2004; Laird, Tanner-Smith, Russell, Hollon, & Walker, 2017; Windgassen et al., 2017). The most commonly utilized psychological treatment for IBS is to

date cognitive behavioral therapy (CBT). However, hypnotherapy, psychodynamic therapy, mindfulness-based therapy (MBT) and relaxation therapy are also being applied (Hetterich & Stengel, 2020; Windgassen et al., 2017). These treatments will now be discussed in terms of what we know of the mechanisms thought to impact IBS symptoms, and whether the treatments target alexithymia.

Cognitive behavioral therapy (CBT). CBT has strong empirically support demonstrating the effect on both gastrointestinal symptoms and psychological distress for IBS patients (Lackner et al., 2006). It is to date the most commonly used psychological treatment in IBS. However, despite the majority of interventions being CBT based, there is not one single agreed on CBT protocol for IBS. Different studies can therefore base their results on different techniques and models (Henrich et al., 2015). Although different approaches may share mechanisms of change, different interventions and models can also work in different ways across protocols. This challenge the ability to identify the mechanisms that are causing therapeutic change. Still, interventions in CBT often target negative cognitions. There are differences to whether interventions in CBT target general or more illness-specific behaviors and cognitions (Windgassen et al., 2017). In relation to IBS, illness-specific such as catastrophizing cognitions about pain have shown to reinforce illness behavior and decrease function (Van Oudenhove et al., 2016). Other protocols in CBT are more experiential and body-based. This includes mindfulness and exposure-based techniques. CBT for IBS has been criticized for focusing too heavily on symptom management, and lacking focus on the psychological distress that seems to underly the symptoms (Lumley & Schubiner, 2019). However, CBT might target these processes by increasing awareness and connecting thought and emotion.

Hypnotherapy. Hypnotherapy especially developed for IBS symptoms is often called gut-directed hypnotherapy. There is a growing body of literature supporting the efficacy of

hypnotherapy on IBS (Peters, Muir, & Gibson, 2015). The mechanisms involved in symptom improvement is still unclear, but the effect seems to be mediated by alterations in cognition. Suggestions and imagery are used to promote calm, control and strength in regards of digestive processes. These techniques are further proposed to increase the perceived control of symptoms. Hypnotherapy is suggested to moderate signals from the body through areas in the brain associated with sensation processing (Krouwel, Greenfield, Farley, Ismail, & Jolly, 2018). The exact mechanisms behind these processes remains unclear. The connection between alexithymia and hypnotherapy is not known. However, Tastan (2019) define hypnotherapy as changing consciousness and awareness of emotions, memory and behavior through suggestions. Thus, hypnotherapy might target alexithymic traits.

Psychodynamic therapy. Psychodynamic therapy for IBS often focuses on intra- and interpersonal conflicts and difficulties. Still, there is a limited number of studies assessing the effect of psychodynamic therapies on IBS. However, Hyphantis, Guthrie, Tomenson, and Creed (2009) found that reducing psychological distress associated with interpersonal difficulties decreased chronic pain in IBS patients. Another study found that adding psychodynamic therapy to medical treatment of IBS, significantly improved both short term and long-term outcome (Svedlund, Sjödin, Ottosson, & Dotevall, 1983). A direction in short-term psychodynamic therapy (STDP) called affect phobia aims to prevent defense responses and expose emotional expressing (McCullough & Andrews, 2001). Affect phobia is viewed as a defensive functioning style, while alexithymia is argued mainly to be a deficit or trait. Nevertheless, the two constructs are strongly associated (Parker et al., 1998). This association implies that common strategies for therapy might be applied to both constructs.

Mindfulness-based therapy (MBT). MBT uses elements from CBT combined with stress-reduction. There are still a limited amount of studies investigating the effect on MBT on IBS, hence findings must be seen with caution. Still, a few studies show some reduction in

gastrointestinal symptoms following eight weeks of MBT compared to control groups (Hetterich & Stengel, 2020). Research suggests that the effect of MBT on treating IBS symptoms is caused by promoting nonreactivity to gut-sensations and catastrophic appraisals of symptoms (Garland et al., 2012). MBT has further been suggested as effective in reducing alexithymia (Norman, Marzano, Coulson, & Oskis, 2019).

Relaxation therapy. Similarly to MBT, relaxation therapy is based on stress-reducing techniques. Physiological arousal in connection to stress has negative effects on the brain-gut axis (Moloney et al., 2016) and can thereby cause symptoms. Some research show that different relaxation exercises cause a reduction in pain attacks and complaints for IBS patients (Shaw et al., 1991), while other studies suggest that the effect is targeted on anxiety rather than somatic symptoms (Bennett & Wilkinson, 1985). Relaxation therapy has been found to be particularly effective for individuals with IBS avoiding emotional disclosure and expression (Holmes et al., 2018).

Mechanisms of treatment effect for IBS

The use of psychotherapy has become an important direction for treatment of IBS and is very well evidence-based by now. The Global Gastroenterology Organization claims that CBT, hypnotherapy and psychodynamic therapy are more effective in treating symptoms than usual care (Quigley et al., 2016). By targeting the pathways presumably linking psychological factors to gut health (Figure 1), psychological treatment should be able to improve symptoms. However, identifying the mechanisms targeted in different treatments can be challenging. In addition to a vast array of different psychotherapies, different outcome parameters are often used when studying psychological treatment on IBS. This includes improvement in gastrointestinal symptoms, mental health, daily functioning, health care use and quality of life. The heterogeneity in parameters makes it difficult to gain a consistent picture of the mechanisms of psychological treatments that are causing change in IBS. Furthermore, it is

difficult to interpret whether the effects of the different psychotherapeutic methods are due to a direct effect on symptom reduction or if it is mediated through confounding variables or comorbidities. Laird et al. (2017) did a comparative review on the different psychological interventions' effectiveness in improving mental health and daily functioning in IBS patients. Their findings suggest that CBT, hypnotherapy, psychodynamic and relaxation therapies were all effective, with CBT producing the greatest improvement to daily functioning. CBT was also represented in the largest number of trials which could have impacted the results.

Acknowledging the high comorbidity of psychological disorders in IBS (Fond et al., 2014), it is a likely assumption that psychological interventions are most effective in addressing comorbid psychological distress in IBS patients rather than somatic symptoms. However, Lackner et al. (2004) found mixed support for this notion. They suggested that psychological treatments in some respect were more effective treating gastrointestinal symptoms than psychological symptoms. Although they discuss the validity of this conclusion as possibly biased by outcome measures in the studies investigated, it is still an interesting finding. Their review demonstrates an encouraging view on psychological treatment for IBS. However, they were not able to address the relative effect of different psychological treatments. They argued that a larger number of trials is necessary in order to disaggregate effects attributable to different treatments (Lackner et al., 2004).

While different psychological interventions are increasingly empirically supported as effective for IBS, the way these interventions work is still not clear. Mediation analysis can be helpful in order to elucidate the components involved in creating change in outcome (Baron & Kenny, 1986). A recent review aimed to investigate in what ways psychological treatment affected symptoms of IBS (Windgassen et al., 2017). They reviewed studies that had conducted mediation analyses on interventions to look at the components of therapy that significantly mediated treatment effect on symptom severity and quality of life. Their findings

suggested that illness-specific factors, such as gastrointestinal-specific anxiety, cognitions and behaviors should be the targets of treatments. Interventions on cognitions that were not related to IBS, such as general or state anxiety, would not mediate effect on symptom severity. As the majority of the studies included were based on CBT-protocols, they mainly assessed behaviors and cognitions as potential mediators. None of the nine studies included investigated alexithymia or emotion regulation in particular as possible pathways to symptom relief (Windgassen et al., 2017).

As many of the factors of IBS remains unclear, it is difficult to find successful pharmacological and psychological treatments (Drossman, 2016). No treatment is currently regarded as applicable to all IBS patients (Drossman, 2016). As a result, many patients are left with unsatisfying results. There is a clear need for alternative interventions that are possibly more effective. As mentioned, psychological interventions for IBS have traditionally focused on protocols from CBT. These interventions have been found helpful for some patients, and Windgassen et al. (2017) argued that targeting illness-specific cognition and behavior demonstrated improvement of symptoms. Still, the mechanisms that serves this purpose remains somewhat unclear (Henrich et al., 2015). As described earlier, CBT is a broad term that adopts multiple techniques within both behavioral and cognitive interventions. This makes it difficult to disaggregate interventions that are specifically effective. Furthermore, the main focus of CBT has often been symptom management rather than symptom reduction (Windgassen et al., 2017). The differences in focus for outcome makes identifying successful mechanisms even harder. Many interventions target mental health and quality of life as goals for treatment outcome (Laird et al., 2017), and to a lesser degree look at changes in somatic symptoms. It can however be difficult to study the effect on somatic symptoms in isolation as we know that a complex interplay of factors are interacting through the brain-gut communication (Mayer, 2011). Although evidence support that some psychological treatment

may be effective in treating IBS, there is still confusion about what mechanisms are targeted in the effective interventions, and how this influences the treatment outcome.

IBS and Alexithymia

Lack of emotion regulation skills is associated with a range of health issues, especially in chronic pain conditions (Di Tella & Castelli, 2016). Due to the consistent findings of alexithymia being involved in a variety of chronic medical disorders Carrozzino and Porcelli (2018) did a systematic review of alexithymia in gastroenterology. They compared the prevalence of alexithymia in FGID with alexithymia in inflammatory bowel diseases (IBD) and healthy individuals. Their results showed that alexithymia was more common in both FGID and IBD, although the highest prevalence was found in FGID. The most significant finding in this review was regarding the DIF and DDF factors of the TAS-20. These factors include the difficulties in identifying and communicating feelings. Different explanations can be offered for the association between difficulties in emotion awareness and expression and FGID. As mentioned earlier, several pathways seem to link psychosocial distress to gastrointestinal symptoms, respectively the brain-gut axis, behavioral factors and early life events. One can imagine alexithymia possibly being involved in all of these processes. Interestingly, despite the knowledge of high prevalence of alexithymia in IBS and FGID (Carrozzino & Porcelli, 2018), very few studies seem to focus on alexithymia as a target for interventions.

Identifying the factors influencing IBS is important in the choice of therapeutic approaches. This relates to both biological and psychosocial factors. To date, most interventions aim to improve symptom management and do not target dysfunction in emotion processing (Windgassen et al., 2017). Regarding the high prevalence of alexithymia in IBS patients (Carrozzino & Porcelli, 2018), targeting alexithymia as a specific aspect of treatment

may possibly have important implications for symptom reduction. Clinicians often assume that patients with alexithymic traits tend to avoid psychotherapy due to their deficits in cognitive processing of emotions (Cameron et al., 2014). However, this has not been empirically supported (Leweke, Bausch, Leichsenring, Walter, & Stingl, 2009). Furthermore, alexithymia in general has been considered a negative prognostic factor in different medical conditions (Cleland, Magura, Foote, Rosenblum, & Kosanke, 2005; Porcelli, Leoci, Guerra, Taylor, & Bagby, 1996; Rufer et al., 2010). Nonetheless, there are limited evidence available on how individuals high in alexithymia respond to therapy. Several studies seem to suggest a disability for alexithymic individuals to benefit from therapy (Blaettler et al., 2019; Gramaglia, Gambaro, & Zeppegno, 2020), while other argue that alexithymia has no clinical relevance in treatment outcome (de Vroege, Emons, Sijtsma, & van der Feltz-Cornelis, 2018).

Modifiability of alexithymia in treatment

The role of alexithymia in different psychological treatments brings up the question of whether the trait is stable or modifiable. The question of stability is a constant topic of controversy in the research on alexithymia (Cameron et al., 2014). This debate draws parallels to the controversy around stability of personality in general (Taylor & Bagby, 2004). The topic is often discussed in terms of absolute and relative stability. Absolute stability refers to how the trait changes over time. Relative stability refers to the relative difference between individuals over time. In other words, relative stability suggest that alexithymia can change over time, for instance as a result of psychotherapy. Still, with relative stability, comparing individuals before and after treatment the difference in alexithymia between them would remain the same. Research on the subject has pointed in both directions. Taylor (2000) claims that it is well-known that alexithymia is difficult to modify. Still, Porcelli, Tulipani, Di Micco, Spedicato, and Maiello (2011) concludes that alexithymia shows high relative stability and low absolute stability. This suggest that alexithymia can be influenced by psychotherapy.

Cameron et al. (2014) reviewed studies that examined the effect of psychological interventions with alexithymic individuals. Their findings concluded that alexithymia was partly modifiable. The effect of psychological treatments on alexithymia depended on whether the interventions targeted alexithymic symptoms directly or if the interventions were less specific. Those studies assessing interventions intending to treat alexithymia reported reductions in alexithymia following treatment, while the less specific interventions had more inconsistent results. Effectiveness of reducing alexithymia in treatment typically involved psychoeducational interventions with skill training (Cameron et al., 2014). The approaches emphasized increasing affect awareness through connecting emotional states to bodily sensations. Exposing patients to emotional arousal while guiding them in describing and identifying what they feel has been associated with increased regulation skills (Greenberg & Bolger, 2001; McCullough & Andrews, 2001). The value of adaptively experience and express primary emotions is the framework of several therapeutic approaches, such as short-term psychodynamic therapy for affect phobia and emotion-focused therapy (Greenberg & Bolger, 2001; McCullough & Andrews, 2001).

We know that IBS is associated with higher prevalence of alexithymia (Carrozzino & Porcelli, 2018). However, it is not known how this trait influence treatment of IBS patients. Lackner et al. (2004) suggest that different psychotherapies display similar treatment outcome for IBS patients. Cameron et al. (2014) suggest that there is a difference in what type of therapy is beneficial for alexithymic individuals. The present review aims to investigate the current research on the role of alexithymia in treatment outcome in IBS patients. To my knowledge, no previous report has reviewed this issue before. Knowledge of this subject will illuminate the clinical relevance of alexithymia in treating gastrointestinal disorders. The inclusion of studies is limited to those investigating the role of alexithymia in treatment outcome on somatic symptoms. Research studying the effect on quality of life, daily

functioning and mental health as outcome measures are not included in this review. Since much is known about psychological interventions on these outcomes, I wanted to investigate the effect on physical symptoms of IBS.

Methods

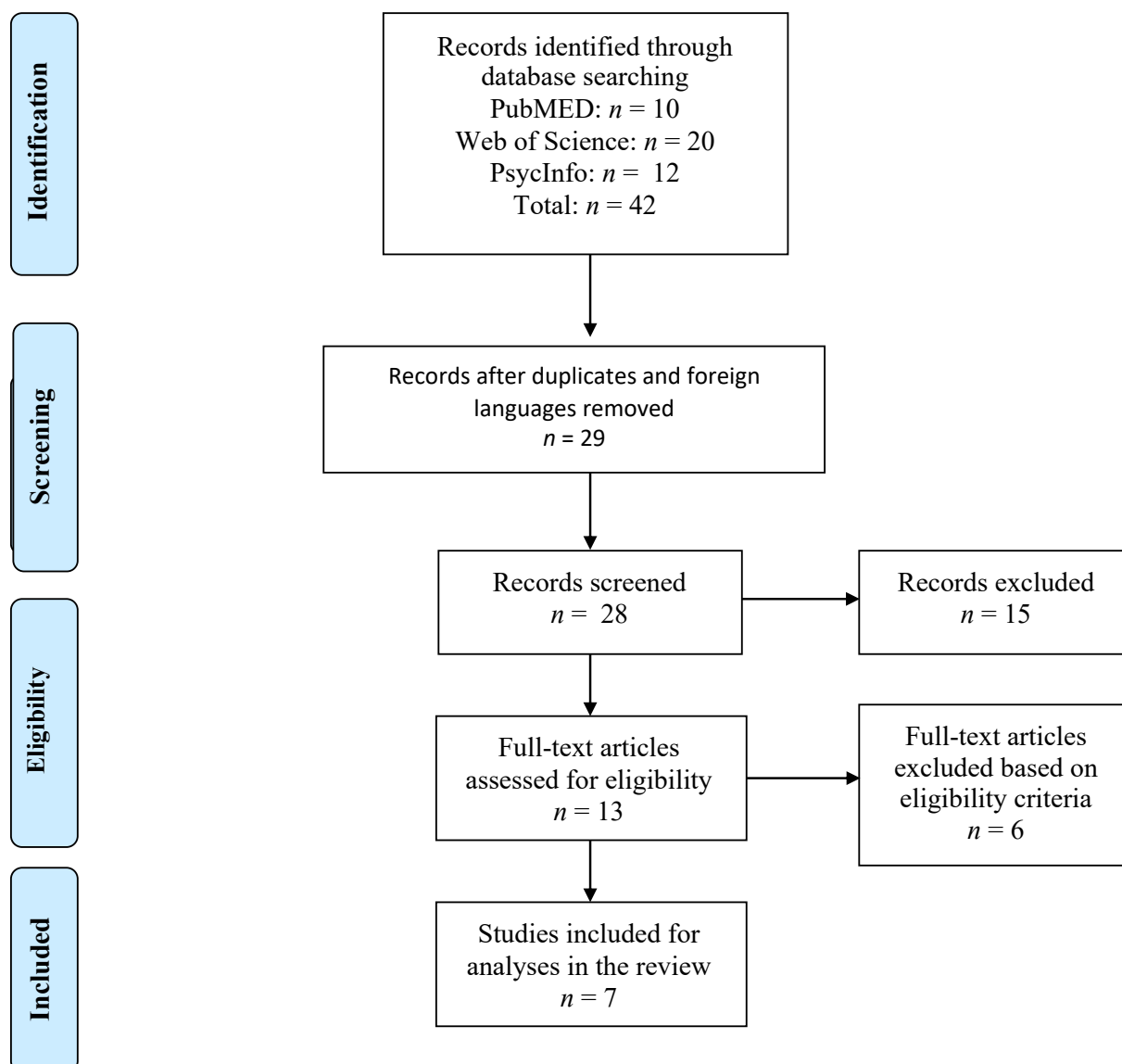
Several preliminary searches were done before deciding the appropriate search terms. The final search was eventually expanded, and the criteria widened to get a broader picture of the existing literature. Systematic searches in Psycinfo, PubMed and Web of Science was done on October 23, 2020. Search terms were (“alexithymia” OR “emotion* reg*” OR “emotion* aware*”) AND (“IBS” OR “FGID”) AND (“therapy” OR “treatment outcome”). The search terms had to appear in title or abstract. Search of the literature was also performed on Google. Eligible articles included only research articles that were published in peer-reviewed journals and were written in English. Books, book chapters, and qualitative studies were excluded.

Studies had to investigate how alexithymia or other measures of emotional processing play a role in treatment outcome in IBS or FGID patients. Based on the limited studies available, a decision was made to include both IBS and the broader definition FGID in order to gain a fuller view. Some useful articles studied this broad group instead of the narrower IBS definition. I found this relevant due to the high overlap of symptoms and considering the limited studies available. Furthermore, different measures of alexithymia were included. Inclusion of other measures of emotion regulation, awareness and expression was also based on the limited research available on the subject. Broader definitions seemed appropriate in the present review for a fuller understanding of the subject. Treatment outcome had to be measured in terms of gastrointestinal symptoms. Data extraction was performed by removing duplicates and papers appearing clearly irrelevant after reading the abstract. The full-text of

the remaining studies were then assessed for eligibility. The studies that did not reach the inclusion criteria were excluded. Figure 2. presents the details of the search.

Figure 2.

Flow chart of the search



Results

Included studies

As presented in the flow chart (Figure 2), a total of 42 studies were identified by the final search. After removing 13 duplicates, plus one that was not written in English, the remaining 28 abstracts were evaluated for eligibility. Of these studies, 15 was further discarded because of clearly irrelevance. The remaining 13 studies were assessed in full-text. At the end, I was left with 7 studies that reached the inclusion criteria. All the included studies were intervention studies. The time frame for the selected studies was 2003 to 2018. In total, the included studies investigated 620 individuals with IBS or FGID diagnosed by Rome I or Rome III diagnostic criteria (Drossman, 2016). Different measures of alexithymia or emotion processing were applied in the studies. This includes TAS-20, Diagnostic Criteria for Psychosomatic Research (DCPR), Ambivalence over Emotional Expressiveness Questionnaire (AEQ), General social constraints scale (GSC), and Emotional Regulation Questionnaire (ERQ). One study did not do a baseline measure of alexithymia or emotional expression, but still investigated treatment targeting this skill, based on assumptions of the dysfunction in emotion regulation and expression being present. Table 1. summarizes the main findings of studies investigating the role of alexithymia on treatment outcome in IBS patients.

Table 1. Study characteristics

Authors	Aim	Clinical sample	Baseline measures of alexithymia	Treatment conditions	Outcome measures	Main results
Porcelli et al., 2003	Investigate alexithymia as a predictor of treatment outcome	112 FGID patients	20-item Toronto alexithymia scale (TAS-20)	Unspecified sessions of psychological counseling or brief psychotherapy	Gastrointestinal symptom rating scale (GIRS)	Alexithymia was a reliable and stable predictor of poor treatment outcome
Porcelli et al., 2004	Evaluate clinical utility of the diagnostic criteria for psychosomatic research (DCPR) in predicting treatment outcome in FGID patients	118 FGID patients	Diagnostic Criteria for Psychosomatic Research (DCPR)	Unspecified sessions of psychological counseling or brief psychotherapy	Gastrointestinal symptom rating scale (GIRS)	Higher prevalence of the CDPR categories of alexithymia predicted poor treatment outcome
Farnam et al., 2014	Evaluation of therapeutic effect of emotional awareness training (EMT)	70 IBS patients	Toronto alexithymia scale (TAS)	Medical treatment (MT) or MT and emotional awareness training (EMT)	Pain severity, pain frequency	Adding EMT to MT resulted in better treatment outcome. Alexithymia did however not affect the
Porcelli et al., 2017	Investigation of the independent prediction of treatment outcome of alexithymia and gastrointestinal-specific anxiety	150 IBS patients	Toronto alexithymia scale (TAS-20)	Unspecified sessions of psychological counseling or brief psychotherapy	IBS-Symptom Scoring System	Alexithymia was found to be a stable trait and a predictor of poor treatment outcome
Thakur et al., 2017	Compare therapeutic effect of emotional awareness and expression training (E.AET) with relaxation training (RT) and waitlist control condition	106 IBS patients	None	Relaxation training (RT), Emotional awareness and expression training (E.AET), waitlist controls (WLC)	IBS Symptom Severity Scale (IBS-SSS)	E.AET was effective in treatment of IBS symptoms
Holmes et al., 2018	Examine potential moderators of treatment outcome	106 IBS patients	Ambivalence over emotional expressiveness questionnaire (AEO), General social constraints scale (GSC)	Relaxation training (RT), Emotional awareness and expression training (E.AET), waitlist controls (WLC)	IBS symptom severity scale (IBS-SSS)	E.AET was effective. Higher AEO or GSC did not predict outcome from E.AET
Mohsenbadi et al., 2018	Evaluate efficacy of Unified Protocol (UP) for Transdiagnostic treatment of emotional and gastrointestinal symptoms in IBS, and investigate whether emotion regulation mediates the effect of UP	64 IBS patients	Emotion Regulation Questionnaire (ERQ)	Unified Protocol (UP) for Transdiagnostic treatment of emotional and gastrointestinal symptoms in IBS or waitlist control group (WLC)	Gastrointestinal symptom rating scale (GIRS)	UP was effective in treatment of IBS symptoms. Changes in emotion regulation mediated the effect.

Porcelli et al. (2003). An Italian study investigated alexithymia as a predictor of treatment outcome with TAS-20 on FGID patients (Porcelli et al., 2003). They compared improved and unimproved groups after 6 months treatment. Treatment consisted of combination forms of gastrointestinal medications, diet modifications, psychotropic medications and sessions of psychological counselling or brief psychotherapy. Unfortunately, the psychological counselling and psychotherapy are not described in more depth by the authors. Unimprovement was measured by scores on the gastrointestinal symptom rating scale (GSRS) (Svedlund, Sjodin, & Dotevall, 1988). The unimproved group had significantly higher levels of alexithymia both before and after treatment. In fact, relative to depression and more pronounced gastrointestinal symptoms, alexithymia was the most powerful predictor of poor treatment outcome.

Porcelli, De Carne, and Leandro (2017b). A similar study by Porcelli and colleagues evaluated the utility of the Diagnostic Criteria for Psychosomatic Research (DCPR) in predicting treatment outcome (Porcelli, De Carne, & Todarello, 2004). As the DSM-IV and ICD-10 has been widely criticized for the adequacy of somatization disturbances, DCPR was developed in order to provide operational tools that are applicable to clinical settings (Fava et al., 1995). The psychosomatic syndromes identified by the DCPR are supposed to better translate the variables than the “psychological factors affecting medical conditions” of the DSM-IV. The authors analyzed improved and unimproved patients following 6 months of treatment. Although applying different measures of alexithymia, treatment and outcome measure were the same as described in the previous study. Similar to the previous study, levels of alexithymia were significantly higher in the unimproved group. In other words, higher DCPR categories of alexithymia was significant in predicting unimprovement.

Farnam, Somi, Farhang, Mahdavi, and Besharat (2014). A randomized clinical trial demonstrated that IBS patients had higher scores on TAS-20 compared with healthy

individuals (Farnam et al., 2014). They further randomly assigned patients to receive symptom-oriented medical treatment alone or an emotional awareness protocol training (EMT) in addition to medical treatment. Findings demonstrated that giving emotional awareness training to the patients significantly reduced pain severity and pain frequency compared to patients who were only given medical treatment. Interestingly, alexithymia did not influence the outcome.

Porcelli et al. (2017b). A third study by Porcelli and colleagues showed that alexithymia was a stable trait and a strong predictor of poor treatment outcome (Porcelli et al., 2017b). The study investigated the individual contribution of both gastrointestinal-specific anxiety (GSA) and alexithymia assessed with TAS-20 on treatment outcome in IBS. The treatment was based on the same combination forms as described earlier in the first and second study by Porcelli and colleagues. The authors are still not specifying the interventions done. Treatment outcome was measured using scores on the IBS-Symptom Scoring System (Wiklund et al., 2003). Their findings suggest that both GSA and alexithymia are relevant in the development and maintenance of IBS. Still, alexithymia showed overtime stability compared to GSA and emerged as a stronger predictor of treatment outcome.

Thakur et al. (2017). Thakur et al. (2017) did a randomized controlled trial where they compared the effect of emotional awareness and expression training (EAET) with the more behavioral-oriented intervention relaxation training (RT) and controls. In this study, alexithymia, emotion regulation or expression traits were not analyzed at baseline. The authors sought to study the effects of EAET based on previous research suggesting elevated life stress, relationship conflicts, and emotional suppression in IBS patients (Drossman et al., 1999). They hypothesized that EAET would be effective in treating somatic symptoms of IBS. Treatment outcome was based on scores on the IBS Symptom Severity Scale (IBS-SSS) (Francis, Morris, & Whorwell, 1997). Their findings supported their hypothesis. EAET, but

not RT, significantly reduced symptom severity. Patients receiving sessions of EAET reported significantly lower levels of symptoms both post-treatment and 10-week follow-up compared to those receiving RT or waitlist controls. EAET did not improve psychological symptoms, but RT reduced depressive and psychological symptoms. Both EAET and RT were superior to waitlist controls in improving quality of life.

Holmes et al. (2018). In the previous study, Thakur et al. (2017) found that EAET was superior to waitlist controls in treating somatic symptoms of IBS. Holmes et al. (2018) investigated potential moderators of treatment outcome in IBS patients and applied secondary analyses to the same data. Baseline measures of ambivalence over emotional expression and social insecurity in patients with IBS were tested as possible moderators. These constructs have not traditionally been viewed as measures of alexithymia. Nevertheless, research suggest that these are in fact partly overlapping constructs (Muller, Buhner, Ziegler, & Sahin, 2008). Especially the DIF and DDF facets of alexithymia are strongly related to social insecurity and ambivalence. In this study, treatment outcome was measured using IBS Symptom Severity Scale (IBS-SSS) (Francis et al., 1997). Their results demonstrated that patients who reported high levels of ambivalence over emotional expression and perceived social constraints received benefits from RT. These factors did not influence benefits from EAET. Hence, the ambivalence and social constraints did predict treatment outcome of RT, but not EAET.

Mohsenabadi, Zanjani, Shabani, and Arj (2018). A randomized controlled trial aimed to evaluate the efficacy of Unified Protocol (UP) for Transdiagnostic Treatment of Emotional and Gastrointestinal Symptoms in IBS (Mohsenabadi et al., 2018). The UP is developed in order to integrate different treatments that focus on emotional dysregulation as a common strategy across different emotional disorders (Boisseau, Farchione, Fairholme, Ellard, & Barlow, 2010). The protocol is an emotion-focused cognitive-behavioral treatment that target key aspects of emotion processing and regulation. It utilizes psychoeducation,

exposure, and skills training in targeting both present-focused emotion awareness and cognitive flexibility. Besides evaluating the efficacy of the UP, the study further aimed to investigate whether emotion regulation mediates the effect of UP. Patients completed the Emotion Regulation Questionnaire (ERQ) (Gross & John, 2003) both pre- and post-intervention. Patients were then randomly assigned into an intervention group who was given 12 weekly sessions of UP treatment or a waitlist control group. They found that UP caused improvement in both emotional and gastrointestinal symptoms in the patients. Treatment outcomes on gastrointestinal symptoms were measured by the gastrointestinal symptom rating scale (GSRS) (Wiklund et al., 2003). Further investigation suggested that this effect was mediated by emotion regulation. Improvement in emotion regulation predicted improvement in symptoms. Hence, findings demonstrated that by targeting emotion regulation skills in patients with IBS, both psychological and somatic symptoms will decline.

Discussion

The aim of this review was to investigate the role of alexithymia as a predictor of treatment outcome in IBS patients. The obtained results from the studies included revealed some inconsistent findings. Three of the studies, from the same lead author, suggested that alexithymia predicts poor treatment outcome (Porcelli et al., 2003; Porcelli et al., 2017b; Porcelli et al., 2004) . They further claimed alexithymia to be a stable trait and difficult to modify through psychological treatment. However, these studies do not describe the details of the interventions given. This makes it difficult to determine which mechanisms of IBS were targeted in treatment.

The studies in this review that investigated interventions directly targeting alexithymia or emotion processing, did find a positive effect on treatment outcome. These studies indicate that the negative effects of alexithymia, demonstrated by Porcelli and colleagues, can in fact

be overcome by emotional awareness training and similar treatments. My results suggest that both EAET and EMT are generally beneficial for IBS symptoms, independent of the level of alexithymia (Farnam et al., 2014; Holmes et al., 2018; Thakur et al., 2017). In these studies, alexithymia did not play a significant role in treatment outcome. This suggests that individuals with alexithymia, or individuals avoiding emotional expression and disclosing, are experiencing the same improvement as non-alexithymic from treatments targeting these traits. Thus, these treatments may be useful for a broader range of patients with IBS (Holmes et al., 2018). Treatment using UP also demonstrated that emotion processing can be modified in individuals with IBS (Mohsenabadi et al., 2018). They found that emotion regulation did mediate treatment outcome and demonstrated that targeting these mechanisms led to improvement in gastrointestinal symptoms.

The results of this review highlight several aspects with implications for the literature on the subject. The role of alexithymia on treatment outcome in IBS depends on the specificity of the treatment applied. Alexithymia and emotion dysregulation may be overcome through therapy, suggesting the trait to be modifiable. There are differences between psychological treatments in effectiveness of treating gastrointestinal symptoms. Alexithymia predicted less symptom relief for unspecified psychological treatments. Treatments that directly targeted alexithymia or emotional processing on the other hand, were effective on treating somatic symptoms independent of level of alexithymia. Results emphasize the importance of the biopsychosocial approach in understanding IBS. It further amplifies directions on how to utilize this approach in treatment.

The role of alexithymia

The present results cannot give conclusive answers regarding the role of alexithymia and emotion processing in treatment outcome due to the substantial differences in study parameters and the limited studies available. Overall, studies demonstrate that whether

alexithymia predicts treatment outcome is dependent on the type of intervention. Alexithymia predicts less improvement of physical symptoms in some forms of psychological treatment. However, when targeting alexithymia or emotion processing directly, improvement in gastrointestinal symptoms is evident, independent of alexithymia. The difference between therapies supports the possible benefit of tailoring treatment to patient characteristics. In some studies alexithymia predicts outcome while in others it does not have a significant influence. Hence, the role of alexithymia as a predictor of treatment outcome in IBS is still unclear. This is consistent with the ongoing disagreement regarding alexithymia in treatment in general (Leweke et al., 2009). However, the consistent improvement in symptoms when participating in treatment targeting these mechanisms suggest that alexithymia and emotion processing do play a role in maintaining symptoms of IBS.

Stability of alexithymia during treatment

The present review did not specifically investigate the stability of alexithymia, and whether it can be modified through therapy. It did not compare levels of alexithymia before and after the different treatments. Still, my findings are consistent with previous research suggesting alexithymia as malleable in psychological treatment depending on the type of interventions applied (Cameron et al., 2014). This further support the view of alexithymia as lacking absolute stability but demonstrating relative stability. These findings are promising and emphasize the need for alexithymia to be addressed in treatment.

The benefits of emotion-focused treatments on gastrointestinal symptoms

Somewhat surprising was my findings of the importance of specificity of treatment on outcome. This is inconsistent to previous findings suggesting an equivalence of different therapies on treatment outcome in IBS. Psychological treatments have been found effective in general, but relative superiority of specific treatments have been left an unanswered question (Lackner et al., 2004). Lackner and colleagues suggested that psychological treatments on IBS

may solely impact common factors and lacking treatment specificity. This is consistent with the much debated “dodo bird verdict” of psychological treatments which is well-known in psychological literature (Budd & Hughes, 2009). Lackner et al. (2004) discusses whether the equivalence in treatment is consistent with placebo effects or if it reflects different paths to similar outcome. However, my results suggest that different rationales for treatment actually lead to different outcomes in IBS patients. This further indicates that specific mechanisms are attributable for change, rather than common factors. More specifically, targeting alexithymia and emotion processing in therapy seems to play a difference for patients high on alexithymia suffering from IBS.

Little is known about the effective mechanisms behind the most commonly applied psychological treatments on IBS (Lackner et al., 2004; Windgassen et al., 2017). The present review discovered that EAET, EMT and UP were overall successful in treating somatic symptoms of IBS. All these treatments have in common that they focus on dysregulation of emotional processing through emotional awareness and exposure, in addition to skill training (Farnam et al., 2014; Holmes et al., 2018; Mohsenabadi et al., 2018; Thakur et al., 2017). As mentioned previously, failure to cope with life stressors has been seen as an important factor in mental and physical health (van Middendorp et al., 2008; Zautra et al., 2005). Thus, knowing the high prevalence of alexithymia in IBS (Carrozzino & Porcelli, 2018) it may not be surprising that interventions targeting these processes have an impact on treatment outcome. EAET has integrated several techniques from different therapies to create a brief approach to reduce stress and improve health (Lumley et al., 2017). The techniques focus on awareness and expression of emotions. It further emphasizes the attribution of pain and other symptoms to mechanisms of the central nervous system. EAET is framing different pain conditions as based on processes in the central nervous system, strongly influenced by avoided emotions. Interventions then aim to facilitate awareness and expressions of these

emotions (Lumley & Schubiner, 2019). In the study investigating EMT, authors utilized a protocol that focused on psychoeducation on eight primary emotions: anger, fear, joy, sadness, disgust, acceptance, surprise and anticipations. These emotions were focused on through schematic faces, role playing, semantic examples and discussions with therapist (Farnam et al., 2014). Similarly, UP target emotion dysregulation by increasing emotional awareness and cognitive flexibility, and prevent maladaptive emotion-driven behaviors and emotional avoidance. The protocol further focus on increasing awareness and tolerance of physical sensations and practice interoceptive and situational exposure (Mohsenabadi et al., 2018). This protocol is based on interventions from CBT, with particular focus on deficits in emotion regulation.

Lumley et al. (2017) compared EAET to CBT in treating patients with fibromyalgia. They found that EAET was effective in treating the experienced pain, and was significant to CBT in reducing some fibromyalgia symptoms. While CBT is the most common treatment for IBS and other chronic pain conditions, Lumley and Schubiner (2019) argue that it does not target trauma or conflicts that appear to drive symptoms. EAET focus on processing instead of avoiding painful experiences, memories and emotions. Process studies of psychotherapy has shown that emotional expression during therapy is one of the strongest predictors of positive treatment outcome (Peluso & Freund, 2018). This is used as a fundament for several evidence-based therapy forms today, such as emotion-focused therapy (Greenberg & Bolger, 2001) and affect phobia therapy (McCullough & Andrews, 2001). Greenberg and Bolger (2001) emphasize the importance of gaining access to overregulated emotional experience that may account for pain. Similarly, McCullough and Andrews (2001) view affect phobias, or conflict regarding the expression of emotions, as the fundamental issues underlying several disorders. They further view desensitization of emotions through exposure to emotional experience as essential for therapeutic change (McCullough & Andrews, 2001).

Both EAET and EMT resulted in patients reporting lower pain and symptom severity following these treatments, independent of patients' level of alexithymia (Farnam et al., 2014; Holmes et al., 2018). In other words, alexithymia neither predicted improvement nor non-improvement in symptoms. Patients receiving UP also reported lower levels of symptom severity, with change in emotion regulation mediating the effect (Mohsenabadi et al., 2018). Lumley et al. (2017) argue that these forms of treatment have a more optimistic view of illness than CBT. While CBT may look at IBS and fibromyalgia as chronic diseases where one can only work on symptom management, EAET has a different rationale. EAET propose that corrective emotional experiences can modulate nerve pathways attributable for symptoms (Lumley & Schubiner, 2019).

Interestingly, EAET did not improve psychological symptoms. Thakur et al. (2017) explains this finding as in line with a classic view of somatization (Kellner, 1990). Prior to treatment, patients with IBS may not be consciously aware of emotional symptoms, but solely report somatic pain. Through emotion-focused therapies, like EAET, EMT and UP, psychological difficulties are reaching awareness while somatic symptoms decrease. The number of sessions in the current studies may not be sufficient for most patients to enhance emotional awareness and resolve psychological conflicts. In the study investigating EAET on IBS, patients were given three sessions of EAET with homework in between sessions (Thakur et al., 2017). In the study of EMT by Farnam et al. (2014), each patient received two 30-minute sessions and had to write an emotion diary between the sessions. They also had to continue writing the emotion diary for one months after the second session. The study investigating the effects of UP gave participants twelve sessions of UP treatment. In this study, both gastrointestinal and emotional symptoms improved. These findings may imply that improvement of emotional and psychological symptoms requires a larger number of sessions than improvement in gastrointestinal symptoms of IBS. Nevertheless, the fact that

level of alexithymia and deficits in emotion processing did not predict less engagement or poorer outcome for these types of treatment is promising for future interventions for both IBS and alexithymia.

The biopsychosocial perspective and attitudes towards psychosomatic diseases

Changes in gastrointestinal symptoms as a result of psychological treatment supports the biopsychosocial perspective on IBS. This indicates a complex relationship between emotions and somatic symptoms. Whether the gut is driving the brain manifestations or vice versa is hard to determine. Still, knowledge about the brain-gut axis suggest a complex reciprocal interaction. Emotions are said to bridge the mind and the body. Through the cognitive experiential component of emotions, they are able to regulate bodily arousal. The role of alexithymia in this cognitive processing and regulation makes it especially useful in exploring the pathogenesis of somatic illness.

We are constantly expanding the field of medicine and learning more about manifestation of symptoms. In response to new technology, knowledge arises and explanatory models of illness changes. However, new models require acceptance and recognition of society. What is accepted as symptoms and clinical solutions depend on culture and discourse. The way we conceptualize disease is important regarding the influence on attitudes and behavior in society. Clinicians therefore have a responsibility in how health is talked about. Drossman et al. (1999) claims that there is no need for a rationale where one discriminates between physiological and psychological explanations. He argues that both are active, and that research has to focus on the degree of each contribution and its remedies. Dichotomy of functional and organic pathology should possibly be abandoned as many patients demonstrate both. IBS is an example of a complex disease where both pharmacological and non-pharmacological approaches are important in treatment. Moreover, today's diagnostic classifications may in some cases hinder a positive and respectful patient-clinician

relationship. The differentiating of psyche and soma often leaves patients feeling stigmatized and taken less seriously (Drossman et al., 1999). Yunus (2015) argues that patient-blaming terms like somatization and catastrophizing should be avoided. The relationship and the attitudes from clinicians have shown to have profound impacts on patients' health (Adler, 2007).

Limitations

There was a limited amount of research on the role of alexithymia in treatment outcome in IBS available. More studies are needed in order to be able to describe the role of alexithymia in different psychotherapies. Because of the limited studies, a vast array of parameters were included in the review. This makes it difficult to properly compare the studies and make assumptions about the effects. Furthermore, the interventions included in this review may still not be «pure» enough to appropriately be able to distinct the different mechanism accountable for change. Even though the rationale behind the treatments may be clear and distinct, they still include a range of different interventions and strategies to achieve symptom relief.

This review further deals with two broadly conceptualized constructs. Both FGID and alexithymia have some issues with validity. Both concepts are still in lack of comprehensive, agreed-upon operational definitions. Alexithymia as a construct show some confusion around related partly overlapping constructs (Maroti et al., 2018; Müller et al., 2003; Parker et al., 1998). The difficulties of clear distinctions within constructs measuring emotional competence and well-being should be considered when clinicians assess such aspects in relation to therapy. Self-report measures of alexithymia and emotion regulation further have weaknesses regarding the difficulty these individuals have inferring their own emotional awareness. The role of somatization may also be an important contributor. One of the characteristics in somatization is the tendency to report low levels of emotional problems

when actually experiencing internal emotional conflicts (Kellner, 1990). Observer-rated instruments are recommended as an additional measure to self-reports (Waller & Scheidt, 2004). Similarly, IBS and FGID are not based on clear biomarkers, but clusters of symptoms. The validity of Rome diagnostic criteria has been frequently questioned in literature (Dang, Ardila-Hani, Amichai, Chua, & Pimentel, 2012). Although research suggest several reciprocal interacting factors as accountable for symptoms in FGID and IBS, the pathogenesis is still not completely understood.

Future studies

Future studies should continue to consider the mechanisms in psychotherapy accountable for improvement in the physical symptoms of IBS. This will provide insight into the processes that should be targeted through treatment. Research should further aim to investigate effective interventions for alexithymia by systematically comparing psychological treatments.

Conclusion

Findings in this review are promising, but in need for further study. My results suggest that the role of alexithymia on treatment outcome in IBS depends on the treatment given. Treatments targeting alexithymia or emotion dysregulation show symptom relief in IBS patients, independent of level of alexithymia. More general psychological treatment, however, demonstrate alexithymia as a predictor of poor treatment outcome. Identifying the components involved in change offers an opportunity to modify and enhance treatment. Addressing alexithymia and emotion processing may have great implications for symptom reduction and perhaps relapse prevention. Based on the theory of shared pathogenesis across different chronic pain conditions, these finding may be generalized to a range of psychological treatments for co-occurring physical and emotional symptoms.

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