HEALTH RELATED QUALITY OF LIFE AND SELF ESTEEM AS MODERATORS OF EMOTION REGULATION DIFFICULTIES AND PSYCHOLOGICAL DISTRESS RELATIONSHIP IN IRRITABLE BOWEL SYNDROME

Ph. D. THESIS

In Fulfillment of the requirement for the Degree of

Doctor of Philosophy in

Psychology

Submitted by

JASNA. M

Guide

Dr. C. JAYAN
Professor and Head (Rtd.)
Department of Psychology
University of Calicut, Kerala, India

Co-guide

Dr. Rajani Ramachandran
Assistant Professor and Head
Department of Psychology
University of Calicut, Kerala, India

DEPARTMENT OF PSYCHOLOGY
UNIVERSITY OF CALICUT, KERALA, INDIA

2022

From

Prof. (Dr.) C. Jayan
Former Professor & Head (Rtd.)
Dept. of Psychology
University of Calicut

To

The Director of Research
University of Calicut

Dear Sir

Sub: Certification of Supervisor regarding suggestions/corrections of adjudicators – Ph.D final thesis – Ms. Jasna M (Psychology)

Ref: Letter No.302495/RESEARCH-C-ASST-1/2022 Admn. dt 11- 08-2023.

This is to certify that there are no corrections/suggestions recommended by the adjudicators in the Ph.D thesis of Ms. Jasna M. Hence submitting the same Ph.D thesis, both in hard and soft copy.

Yours faithfully,

26 09 2023

Prof. (Dr.) C. Jayan
Dr. C. JAYAN, Ph.D.
Professor (Retd.)
Dept. of Psychology
University of Calicut

Place : Calicut
Date : 26/09/2023

DECLARATION

I, Jasna. M, do hereby declare that this thesis, **"Health Related Quality of Life and Self esteem as Moderators of Emotion Regulation Difficulties and Psychological Distress Relationship in Irritable Bowel Syndrome"** is a bonafide record of the research work done by me under the guidance of Dr. C. Jayan, Professor (Rtd), Department of Psychology, University of Calicut. I further declare that this thesis has not previously formed the basis for the award of any degree, diploma, associateship, fellowship or other similar title of recognition.

C. U. Campus, **Jasna. M**

CERTIFICATE

This is to certify that this thesis entitled "**Health Related Quality of Life and Self esteem as Moderators of Emotion Regulation Difficulties and Psychological Distress Relationship in Irritable Bowel Syndrome**" is a bonafide record of research work carried out by **Mrs. Jasna. M,** under my supervision and guidance, and that no part of this has been for the award of any degree, diploma, associateship of other similar title of recognition.

Calicut, Supervising Teacher

Co-guide

Dedication

This thesis is dedicated to my caring parents, Loving husband and Affectionate kids

By

The Author

Jasna. M

Acknowledgements

I thank the Almighty for the blessings he showered on me throughout the journey of my research.

The journey to completing the thesis has been a long and exhausting one. However, I have completed this with the guidance and support of a few people.

With great pleasure I express my deep sense of gratitude to my Supervising Guide, Dr. C. Jayan, Professor, Department of Psychology, University of Calicut, for his inspiring guidance, support and timely advice throughout the whole process of this investigation. As an international scientist his high scientific standards, and his hard work motivated me a lot.

I would also like to express my deep gratitude to Dr. Rajani Ramachandran my Co-guide and Head of the Department of Psychology, University of Calicut, who permitted me to use the facilities of the Department and provided me with an excellent atmosphere for doing research and also gave me proper guidance. I am thankful to my teachers,Dr.Baby Shari and Dr. Manikandan, Department of Psychology, University of Calicut, for their inspiration and guidance.

I am also thankful to Mr. Gokulraj (Librarian) and Mr. Purushothaman (Lab-assistant). And thanks to Mrs Danalakshmi, Mrs Deepthi and Mr Jose (Section officer)

I wish to express my sincere thanks to all the doctors and officials of Government Medical College, Calicut for their valuable help and support during the data collection, especially Dr. Rajendran (Principal) Dr. Ramachandran (Department of Gastroenterology), Dr.Varsha Vidyadharan (Department of Psychiatry), Dr. Aneesh (Department of Community medicine), Dr. Annapoorna (Department of Pharmachology), Dr. Sunil (Department of Gastroenterology), and Dr. Harish (Department of Psychiatry).

Thanking to my CDPO Mrs. Nandini Menon who supported me at the final stages of my thesis works.

I express thanks to my co-researchers and friends, especially, Dr. Shamla, Firosna, Deepa and Nikesh for their valuable suggestions and help at the crucial times. A special thanks to my dearest friend Dr. Saheera for her help and support at the critical stages of this journey.

My sincere thanks to all my seniors and juniors for their support and encouragement sustained me throughout the study.

A special thanks to my caring parents for their support throughout the research. And thanks to my in law family members for their understandings and support. Without their understanding and inspiration, it would have been impossible for me to finish this work. I also remember my siblings with gratitude for their good wishes and prayers.

Finally, I express my deep gratitude to my beloved husband Mr. Khalid and our lovely children Izza, Iffa and Abdulla for their prayers, care and support throughout the research. It is impossible to express in words how thankful I am to my kids for the sacrifices they've made for completing this work. Once again I bow my head before the Almighty for all his blessings.

Calicut University Jasna. M

Date:

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDIX

ABBREVIATIONS

IBS	:	IRRITABLE BOWEL SYNDROME
HRQL	:	HEALTH RELATED QUALITY OF LIFE
SE	:	SELF ESTEEM
DERS	:	DIFFICULTY IN EMOTION REGULATION SCALE
LAE	:	LACK OF EMOTIONAL AWARENESS
LCE	:	LACK OF CLARITY OF EMOTIONAL RESPONSES
DCI	:	DIFFICULTIES CONTROLLING IMPULSES WHEN DISTRESSED
DEG	:	DIFFICULTIES ENGAGING IN GOAL DIRECTED BEHAVIOUR
NAE	:	NON ACCEPTANCE OF NEGATIVE EMOTIONAL RESPONSES
LAERS	:	LIMITED ACCESS TO EMOTIONAL REGULATION STRATEGIES
PD	:	PSYCHOLOGICAL DISTRESS
QOL	:	QUALITY OF LIFE
MBSR	:	MINDFULLNESS BASED STRESS REDUCTION

Abstract

Irritable bowel syndrome (IBS) is a chronic disorder that affects every day's contexts and give rise to high social and health service costs and emotional problems among sufferers. Psychosocial factors were known to affect the development of IBS. Research findings suggest that Psychological factors influence the development of IBS. Health related Quality of life, Self esteem and Emotion Regulation are the important Psychological Variables affecting the psychological distress of IBS patients. The purpose of this study was to find out the relationships between the psychological variables and Irritable Bowel Syndrome. The variables included in this study are Health related quality of life, Self Esteem, Difficulties in Emotion Regulation and Psychological distress. Investigating the role of the Health related Quality of life, self esteem and emotion regulation on the Psychological distress of IBS patients will be helpful for mental health promotion as well as to develop preventive strategies for these patients. Participants for the study consisted 142 IBS patients selected from Gastroenterology department of the Calicut Medical College. The sampling was done by judgmental sampling. Age of the patients in the present study ranges from 20yrs-70yrs. For the present study different tools were used to measure the different variables under investigation like,Self esteem inventory,IBS-36 Questionnaire ,Revised Difficulty in Regulating Emotions Scale and IBS -PD scale .

The participants were approached individually during the consultation hours of Gastroenterology outpatient ward. The doctors identified and suggested Participants for taking part in the study. Participants were briefed about the purpose of the study and confidentiality was assured. The four questionnaires: (1)IBS-36, (2) Self Esteem Questionnaire, (3)DERS and (4) Psychological Distress Scale including the answer sheet and the Personal data sheet were given to the participants. Instructions were given. The responses were scored according to the norms and guidelines of each scale.

Computer analysis (SPSS version 23) was done to test the various hypotheses. The statistical analyses used were Independent Sample t-test, Preliminary analysis, Correlational analysis, Multiple Linear Regression Analysis, Analysis of variance or ANOVA and Moderated Regression Analysis.

The results of this study suggest that in the treatment of patients with IBS, special attention should be paid to the severity and prevalence of depression, anxiety and stress etc. After accurately diagnosing and rejecting the organic causes, it is recommended to refer these patients to specialists in the psychological area so that they can take advantage of the effective psychological treatments along with drug treatments. It requires more cooperation between gastroenterologists, psychiatrists, and psychologists.

CHAPTER 1
INTRODUCTION

- INTRODUCTION
- IRRITABLE BOWEL SYNDROME
- PSYCHOLOGICAL DISTRESS
- HEALTH RELATED QUALITY OF LIFE
- SELF ESTEEM
- EMOTION REGULATION DIFFICULTIES
- RELEVANCE OF THE STUDY
- STATEMENT OF THE PROBLEM
- DEFINITION OF THE KEY WORDS
- REVIEW OF LITERATURE

A 45-year-old woman suffering from recurrent abdominal pain, faecal urgency, and loose stools for 5 years. And she has experienced a few episodes of faecal incontinence when she could not reach a toilet at the time of urgency. She was anxious about unpredictability of her symptoms and worried when thinking about travelling because she needs to be near a toilet. She was referred to a gastroenterologist and did blood testing, abdominal and pelvic ultrasounds, colonoscopy with biopsies, and abdominal and pelvic CT scans, but all tests were unremarkable. And the patient was very stressed, disappointed and curious to know the cause and diagnosis of her problem.

Some similar cases with abdominal disturbances were referred by the physicians to the investigator for psychological counselling. Then the investigator was interested to know the psychological mechanism behind the problems and think about how far a psychologist can intervene in such cases. From the counselling experiences the investigator came into this area of research, and discussed with the Supervising Guide and selected the area of study as functional gastrointestinal disorders. Since, there are a number of functional gastrointestinal disorders the investigators selected IRRITABLE BOWEL SYNDROME as the topic of research.

Sometime when we observing the issues that are disturbing ourselves, we can see our mind will exert its effect on our body. It may be of different forms, for

example if we are preparing for an exam or interview; just before the day we feel butterflies in our stomach, weight in our head or sleeplessness, frequent urgency to go to toilet just before the event, etc. . .

The mind and the body are closely linked, and their relationship can exert an influence on health and quality of life. Attitude, belief and emotional states ranging from love, and compassion to fear and anger can trigger chain reactions that affects blood chemistry, and activity of every cell and organ in the body from the stomach and digestive tract to the immune system. The idea that the mind and body are closely related is as old as medicine and philosophy. Aristotle, Hippocrates; Paracelsus and Jean Paul Marat elaborated upon it – Binger (1946).

The fact is that at least half of the patients who seek medical aid and visit doctors with physical complaints have emotional problems that partly or wholly account for these complaints. Interestingly enough, people are defensive in admitting that the nature of their disease is psychological and feel uneasy on being perceived as pretending and projecting the symptoms for some conscious reason, although what the doctor means is that emotional or nervous tension is the cause of discomfort (Coleman, 1976).

Psychological wellbeing and Physical health are interacting clearly in 'psychosomatic disorders'. Psychosomatic means "Mind-Body". It is used to describe the effect of mind on body and body on mind. Psychosomatic disorders may affect any part of the body, and it is usually found in involuntary systems of our body. A modern view of psychosomatic mechanisms includes a role for stress, depression, and lack of social support alongside biological factors cause the disease.

According to the Encyclopaedia of Britannica: “The Psychosomatic disorder, also called Psycho physiologic Disorder, condition in which psychological stresses adversely affect physiological (somatic) functioning to the point of distress. It is a condition of dysfunction or structural damage in body organs through inappropriate activation of the involuntary nervous system and the glands of internal secretion. Thus, the psychosomatic symptom emerges as a physiological concomitant of an emotional state”.

The term psychosomatic is derived from the Greek words psyche and soma. Psyche, in ancient times, meant soul or mind and more recently has come to mean behaviour, soma typically refers to the physical organism of the body. The term Psychosomatic, therefore, indicates relationships between psychological processes or behaviour on the one hand, and somatic structures or bodily organs, on the other (Mora, 1968).The sequence of appearance and disappearance of psychosomatic disorders appears to be directly related to the stress in the life of an individual. In general, the development of psychosomatic disorders involves the following sequence of events: (a) the arousal of negative or positive emotions, (b) the failures of these emotions to be dealt with adequately, and (c) response stereotype in specific organ system (Coleman, 1976).

Irritable bowel syndrome (IBS) is one of the commonly occuring functional gastrointestinal disorder. Studies have shown that psychosomatic comorbidity plays a relevant role in the development of IBS (Wessely et al.,1999) which was underlined by an epidemiological study in Germany (Donnachie et al.,2017).

The worldwide prevalence of IBS is upto 20%. IBS is a chronic, continuous or intermittent illness wherein the patient has frequent and unexplained symptoms that include abdominal pain, bloating and bowel disturbance (Lacy et al.,2015)

IBS is characterized by a group of symptoms that occur together, with .-no organic gastrointestinal damage. In the past, IBS was called colitis, mucous colitis, spastic colon, nervous colon, and spastic bowel. The name was changed to reflect the understanding that the disorder has both physical and mental causes and is not a product of a person's imagination. The symptoms of IBS usually first appear between 20 and 30 years of age, and is more common in women (Ford & Talley., 2012)

Up to now, the pathogenesis remains unclear. Evidence suggests that dysfunction in the gut-brain-axis, previous gastrointestinal infections, changes in the microbiome, visceral hypersensitivity and changes in the gastrointestinal motility may all contribute to the development of IBS (Kiuntke et al.,2015).

The gut and brain are intimately connected, with more nerve cells in the intestines than in the spinal cord. The gut has been called the body's second brain, containing 95 percent of the body's neurotransmitter serotonin and direct nerve connections to the brain (Brody et al., 2008).

There is no definitive investigation as no biomarker has been found, so IBS is diagnosed clinically through medical history questions focusing on bowel habits, diet, exercise, and stress (Canavan et al.,2014).

IBS is today accepted to be a multifactorial disorder, associated with altered central nervous system processing. Many IBS patients also experience comorbid behavioural disorders, such as anxiety or depression. Stress is an important etiological factor associated with development and exacerbation of visceral pain symptoms. Chronic stress modifies central pain circuitry, and gastrointestinal motility and permeability (Fichna et al.,2012).

However, although research showed a strong link between IBS and these psychological disorders, it is still unclear which one comes first. Since serotonin is involved in many of the functions of digestion and is also associated with depressive symptoms, problems with the body's regulation of serotonin may be behind the overlap between IBS and depression (Bolen, 2013).

Furthermore, IBS is often associated with significant disability and health care costs. The disease burden extends to family members, and this increases proportionally with IBS severity (Wong et al., 2013; Darkoh et al., 2014). Consequently, these patients have significantly impaired QoL. A study of an IBS cohort showed that dysfunctional cognition independently influenced patients' physical and mental QoL and symptom severity, with more negative impact in the presence of anxiety and depression disorders (Han, 2013).

History of IBS

References to gut or intestine dysfunction date back as far as ancient Greece (Thompson, 2006). However it was not until the beginning of the 19th century that the first English language descriptions of what would later be known as Irritable

Bowel Syndrome (IBS) appeared. According to Powell (1818), the three key symptoms of IBS: are abdominal pain, —derangement of digestion and —flatulence. Twelve years later Howship (1830) described the —spasmodic structure of the colon reflecting the (now discredited) beliefs at that time that gut spasms contribute to functional gut disorders. These beliefs endured for many years with the term —spastic colon or spastic colitis being used to describe IBS symptoms and aetiologies (Thompsonet al.,1989). This perplexity about the presentation of IBS is something that continues even 150 years later (Thompson, 2000). The late 19th and early 20th centuries saw several attempts to describe functional bowel disorders in descriptors such as —spastic colitis, —hyperacidity or —autointoxication of the colon (Thompson et al., 1989). Beliefs that functional bowel disorders were related to retained colon contents that needed to be purged or that they were —psychogenic or —neurogenic contributed to a pejorative view of these conditions all through the 1920's and 30's (Hutchison, 1927; Thompson, 2000).

The Rocky Mountain Medical Journal first reported about the concept of an —irritable bowel in 1950 . The explanation for such a condition was for those who suffered the symptoms like diarrhoea, abdominal pain, constipation, but where no identifiable infective cause could be found (Brown, 1950).But unfortunately this paper was ignored. The real acceptance from the research community got only for the research and publications by Chaudhary and Truelove's (1962) review on —irritable colon syndrome.

Thebook —The Irritable Gut classified and described about functional bowel disorders for first time(Thompson, 1979). The Manning Criteria originated

from the detailed investigations of Bristol outpatients with abdominal pain and disordered bowel habit. It decribes 6 specific symptoms (out of 15) were more common in IBS patients than in patients with organic gut disease (Manning et al.,1978).

After that,'the field of research in IBS has seen an exponential increase in publications about aetiology, features, diagnostic criteria, epidemiology and treatment (Thompson, 2006). However there is still no consensus on many of these subjects, which contributes to IBS being a confusing clinical syndrome.

Prevalence

IBS affect between 3-25% of people at their life time. So it is often considered as most common functional gastro intestinal disorder (Chang, 2004; Grundmann & Yoon, 2010).

A 7. 7% prevalence of IBS (using the Manning criteria) was observed among 2549 randomly selected subjects in urban Mumbai, India (Shah & Bhatia, 2001).

Prevalence in Singapore (8. 6%) and Japan (9. 8%) being comparable to Australia (6. 9%) and Europe (9. 6%) (Gwee et al.,1999). There are although exception like New Zealand reporting as low as 3. 3% (Barbezat et al.,2002) of prevalence. Prevalence rates seem to be related to consultation behaviour. It is estimated that between 33-90% of IBS sufferers do not consult or are not identified by their physician (Spiller et al.,2007).

IBS is mostly reported between the ages of 20 and 30, even though it affects people from all age groups (Spiller et al.,2007). A USA based study reported that

IBS was commonly occurring in patients aged 30-64 years (17%) than patients aged 65-93 years (10. 9%) (Camilleri et al.,2002).

Most of the studies report that prevalence of IBS is higher in females. Patients with the majority of female-to-male ratios varying between 2:1 and 3:1 in primary care settings (Chang et al.,2006) and between 4 and 5:1 in tertiary care settings (Frissora & Koch, 2005). Factors like hormonal differences, cultural pressures, response bias towards potentially harmful events and different brain serotonin synthesis have all been suggested to play a part in this disparity (Camilleri et al.,2002). However some studies in the USA, Pakistan and Hong-Kong found no significant differences in prevalence between male and female patients (Gwee et al.,2009).

When analyzing Asian Studies higher prevalence is found in the male population in India (Ghoshal et al.,2018) and Korea (Han et al.,2006),it may be due to the easy access to health services for males than females in these countries and female patients may have remain as unidentified.

Aetiology of IBS

The exact reason or causal factor of IBS is unclear till now. But the results of investigations conducted in last few years shed light to understanding about the factors leading to the origin and maintenance of IBS. Bio psychosocial model of disease contributes an important role to this as a shift in paradigm from a biological reductionist model heavily rooted with the Decartes dualistic theory of separation of mind and body, to a more holistic paradigm (Drossman & Dumitrascu, 2006).

Factors involved in the expression of IBS such as early life factors (genetic or environmental), abnormal gut motility, visceral hypersensitivity, brain-gut interactions or psychological morbidity (Drossman et al.,1999; Spiller et al.,2007).

A Biopsychosocial Model of IBS

At the end of the last millennium a new model of IBS started being proposed, heavily influenced by the bio psychosocial model of Engel (1980) and recent discoveries in the fields of psychosomatics and psychoneuroimmunology. Mayer (2000) proposed a model in which an interaction between cognitive, behavioural, emotional and physiological components would explain the development and maintenance of IBS symptoms. In the same year Drossman et al. (1999) also proposed a biopsychosocial interpretation of IBS which is now recognized as one of the most complete and best fitting models for this illness.

Brain-gut Interactions

Gastrointestinal system is controlled by Enteric Nervous System (ENS) , a subdivision of the peripheral nervous system (Burns & Thapar, 2006). It communicates with the Central Nervous System (CNS) via the parasympathetic (e. g. vagus nerve) and sympathetic (e. g. prevertebral or paravertebral ganglia) nervous systems and shares many neurotransmitters with the CNS like Cholecystokinin (CCK) or Substance P (Gershon, 1999). It has been hypothesized by various authors (Drossman 1998) that this close connection between ENS and CNS might be related to the close relationship between the events observed in both gut and psyche.

The brain-gut axis model proposed by Drossman (1998) proposes that key symptoms in IBS (altered motility, visceral hypersensitivity) are the result of the deregulation in the activity of one or more of the bidirectional communication pathways between ENS and CNS. This communication is influenced by inputs from the neuroendocrine and neuroimmunological systems that are themselves modulated by psychosocial factors. Many neurotransmitters (e. g. serotonin, CCK, cytokines) have been implicated in this brain-gut deregulation model (Ringel et al, 2001).

One of the clearest examples of this brain-gut connection comes from the evidence collected by studies on the effect of stress in IBS. As previously mentioned, stress seems to have an impact both on motility and sensitivity of the colon (Drossman et al.,2003 ; Welgan et al.,1985). It is thought that many of the IBS manifestations are part of a response to internal and external stressors through the integration of the hypothalamo-pituitary-adrenal (HPA) axis and the sympathetic nervous system. Life stressors, psychiatric illness, anxiety-provoking situations as well as psychological traits like somatisation, anxiety and low mood have all been linked with an exaggerated HPA response which is thought to be in turn associated with the immune activation of the gut mucosa in IBS patients (Spiller et al.,2007).

Due to the relevance of psychosocial factors in the regulation of gut sensitivity and motility and their corresponding neurophysiologic correlates, (CNS and ENS), a closer look at these factors will help for detailed understanding.

Psychosocial Factors

In the last 2 decades, scientists concentrated in the investigations related to the role of psychosocial factors that may lead to IBS. As a result publications related to this topic increased in journals two fold at that time period. The role of various factors like stressful life events, psychological morbidity and certain psychological characteristics in IBS patients have critically evaluated.

Stressful life events

Stressful life events is the key elements in the onset and/or exacerbation of IBS(Chaudhary & Truelove, 1962), with a majority of patients acknowledging the role of stress in their condition (Blanchard et al.,2008).

Early anecdotal observations established a connection between psychological distress and IBS. Chaudhary and Truelove (1962) using an unstructured psychiatric interview and no control group reported a link between psychological distress and functional GI complaints in over 80% of the patients studied. It was concluded that IBS was in general preceded by a stressful life episode. Hislop (1971) also concluded that IBS patients were more likely than controls to report a stressful life episode prior to the onset of their first symptoms than matched controls.

Mendeloff et al. (1970) found that IBS patients reported significantly more stressful major life events (e. g. death in the family, divorce, recent unemployment) prior to illness onset when compared to groups of organic GI patients (e. g. ulcerative colitis). However in a similar study Ford et al. (1987) found no significant differences in experience of life stressors between IBS and organic GI patients. In

fact they noted that only stressful situations that provoked a concomitant state of anxiety were associated with IBS. Bennett et al. (1998) showed that IBS and Functional Dyspepsia patients had significantly more chronic life stressors than patients with other Functional GI disorders and that this might predict severity and extent of gastrointestinal, emotional, and extra intestinal symptoms over time.

Studies have shown that when compared to healthy controls, IBS patients have a higher frequency of major life events (Mendeloff et al.,1970).

Blanchard et al. (2008) looks at the frequency and intensity of minor stress and hassles. Some studies carried out in this area used IBS patients only, samples with no normal or other illness comparison groups. Elsenbruch et al.,(2010) studied the impact on symptomatic, psychological and physiological parameters of a stressful mental task associated with food ingestion in both IBS patients and normal controls. They found that IBS patients only differed from normal controls in their affective response to the task, with no differences being found for symptomatic or physiological parameters. Blanchard et al. (2008) found that IBS patients significantly reported more daily hassles than healthy controls, although the average intensity rating of these events was significantly lower for IBS patients. This meant that on the overall score of daily hassles there were no significant differences between the groups. Fujii and Nomura (2008) found that daily hassles significantly predicted the change from IBS non-consulter to IBS consulter over a period of 3 years, although these changes seem to be influenced by the type of coping used to respond to daily hassles.

Psychological Morbidity

The absence of a structural or organic explanation for IBS and anecdotal observations of patients' behaviour has always been seen as support to the possible presence of psychological morbidity. Early research described the aetiology of IBS to be linked with hypochondriasis or psychogenic traits (Hislop, 1971) with some authors going as far as considering IBS to be part of a diagnosable psychiatric illness (Liss et al.,1973). But it was not until the last three decades that an increasing amount of studies, using a more comprehensive evaluation of both IBS and psychological/psychiatric illness, have looked at the overlap between these two types of disorders.

In most studies it was found that between 54% and 94% of IBS patients meet criteria for at least one (Axis I) psychiatric disorder (Whitehead et al., 2002). Also between 40% and 80% of IBS patients report their psychiatric conditions to have been present before the onset of their GI(GastroIntestinal)symptoms (Mayer et al.,2001). When compared to normal controls or to patients with similar symptoms, but with a clearly identifiable organic cause, it has been found that IBS patients have an increased prevalence (20% and 25% respectively) of psychiatric diagnoses (Levy et al.,2006). It has been suggested that increased psychological illness in IBS patients might be a consequence of a history of abuse, especially in more severe cases (Talley et al.,2003). It had also been previously suggested that increased prevalence of psychological morbidity in IBS was a characteristic of treatment seeking patients (in particular those in secondary and tertiary care), yet recent population based studies have suggested that even non-consulting IBS patients are

more likely to have a concurrent psychiatric diagnosis when compared with people who don't have IBS (Sykes et al.,2003).

The most common psychopathologies associated with treatment seeking IBS patients are depression and general anxiety disorders with up to 38. 5% and 37% of IBS patients meeting criteria for these disorders respectively (Mayer et al.,2001). Guthrie et al., (2003) found in their study sample (n=107) using structured interviews that 44% of presenting IBS patients had a psychiatric diagnosis with general anxiety disorders being the most common (30%) followed by depression (26%).

In a study that describing the relationship between psychological factors and Gastro intestinal problems it reported that depression and anxiety related to a higher chances of GI symptoms (Creed, 1999) at the same time another result shows that they are not the predictors of symptom severity(Spiegel et al.,2008). In this study depression and anxiety did not predict IBS severity, however illness-related fears and cognitions were found to be significant predictors. Another study explain the mediation role of patients beliefs in symptom severity (Lackner, et al., 2004).Also it has been show that depression alone does not predict symptom severity (Drossman, 1999) . Labus et al. (2007) also propose that the capacity for general anxiety disorder to predict symptom severity is mediated by the patient's specific anxious beliefs about IBS. Regarding the capacity for GI symptoms to predict Psychological disorders, Mikocka-Walus et al. (2008), have shown that a greater load of FGIDs (therefore a greater load of GI symptoms) was not associated with more depression or anxiety disorders. Therefore, although there is a clear co-occurrence of depression

and anxiety diagnosis with IBS it seems that they do not linearly affect each other in terms of symptom severity.

It has been suggested by Creed (1999) that anxiety and depression might have different roles and prevalence according to the sub-type of population in IBS. In Mayer's et al.,(2001) review of previous studies regarding psychological morbidities and IBS, the authors note that recently referred IBS patients have a tendency to have more anxiety than depression, while more chronic refractory patients seem to have more depression than anxiety. A possible explanation for this might be that initial uncertainty about the symptoms might prompt anxiety in the recently referred patient while the chronic patient might become more depressed as a consequence of its continuous exposure to the symptomatic stressors or a potential restriction of goal directed behaviours as a response to avoid anxiety provoking situations and symptoms. Another difference in the roles of depression and anxiety in IBS seems to also be related to the different subtypes of IBS. It has been reported in two studies (Eriksson et al.,2008; Muscatello et al.,2014) that patients with constipation predominant IBS have significantly higher levels of depression and anxiety when compared to patients with diarrhoea predominant IBS. In another study, Medeiros et al. (2008) found that depressive symptoms were associated with visceral sensitivity in alternating IBS patients, but not in diarrhoea/constipation predominant patients, suggesting a different role of depression in symptom severity.

In summary, the overlap between IBS and psychopathology is evident and suggests that especially depression and anxiety might play a role in the onset and maintenance of IBS.

Health Related Quality of Life

IBS has been globally reported to adversely affect a patient's quality of life (QoL), irrespective of their culture or nationality. It is associated with a reduced quality of life and accompanied by a high level of suffering for the afflicted patients (Enck et al.,2016).

IBS is not a life threatening condition. But it impacts on several domains of a patient's life when it become chronic (Jones et al.,2000). It has been recognized that in IBS, Quality of Life (QoL) is an important outcome (Amouretti et al.,2006) since measuring symptoms alone may present an incomplete measure of patient's overall well being, impact of illness on daily functioning and how they respond to therapeutic interventions (El-Serag et al.,2002). The World Health Organization (WHO) as defined health "as being more than just the ―absence of disease or infirmity (WHO, 1952) and QoL as being ―the individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations and concerns "(WHO, 1998). Health Related Quality of Life (HRQoL) seeks therefore to encompass both emotional and social dimensions of the patient's illness as well as physical function.

Defining HRQoL has also been problematic (Bowling & Brazier1995) and at least four definitions of HRQoL can be identified in the literature. First, HRQoL can be defined as "how well a person functions in their life and his or her perceived wellbeing in physical, mental, and social domains of health". (Hays &Reeve, 2010). Functioning refers to an individual's ability to carry out some pre-defined activities

(Hays, &Reeve, 2010; Wilson & Cleary, 1995).,while well-being refers to an individual's subjective feelings (Hays, &Reeve, 2010).

A second definition relates HRQoL directly to QoL: "quality of life is an all-inclusive concept incorporating all factors that impact upon an individual's life. Health-related quality of life includes only those factors that are part of an individual's health"(Torrance, 1987). Non-health aspects of QoL, for example economic and political circumstances, are not included in HRQoL (Torrance, 1987).

A third definition of HRQoL focuses on the aspects of QoL that are affected by health. For example, HRQoL is defined as "those aspects of self-perceived wellbeing that are related to or affected by the presence of disease or treatment" " (Ebrahim, 1995) This definition is sometimes stated in a narrower where HRQoL "is used to identify the sub-set of the important or most common ways in which health or health care impact upon well-being" (Peasgood et al., 2014.).

The fourth, and the last, definition of HRQoL focuses on the value of health. For example, HRQoL can refer to the "values assigned to different health states" (Gold et al. 1996).

HRQOL is a multidimensional concept embracing physical, emotional and social components relating to illness and its treatment (Revicki, 1989).

According to the experts of WHO, the concept of quality of life ought to comprise an individual's mode of perception of their material and subjective resources, information about their functioning, its assessment and the level of satisfaction with it (WHO,1998).

Quality of life has been defined as the perception by an individual of their position in life in the context of value and culture systems they live in, and in relation to the culture's expectations, standards and interests. It includes the following elements. Physical condition, mental condition, self-reliance, social relationships, environment, religion, beliefs, convictions and views. The above definition views quality of life from the perspective of the individual. Previously, research on quality of life focused on the objective aspect, tending to ignore the subjective one. The former includes, among other things, the state of health and socio-economic status of an individual (occupation, family income, spare time); the latter stresses the level of contentment with life, satisfaction of one's needs and participation in social structures. The assessment of health-related quality of life commonly takes into consideration the following three elements:

1) The functional capability of an individual, i. e. the ability to satisfy their everyday needs, to take up or continue in social roles; intellectual and emotional efficiency.

2) The way an individual perceives his/her situation in life; the level of satisfaction and contentment with life.

3) Symptoms of an illness, and the general level of fitness following on the illness and age (Tobiasz-Adamczyk, 1996).

Several studies have looked at the differences in HRQoL between IBS patients and healthy controls, with most of them showing that HRQoL is significantly reduced in IBS patients (El-Serag et al.,2002).

Several other studies have shown as well that IBS patients score lower on both physical and mental composites of HRQoL than healthy controls or when compared to the normative score of the general population (Halder et al.,2004; Portincasa et al.,2003). It is therefore generally accepted that IBS has a significant negative effect on quality of life when compared to a healthy state (Spiller et al.,2007).

When compared to other disease groups IBS patients also tend to exhibit a lower HRQoL in some cases. Frank et al. (2002) and Gralnek et al. (2000) found that IBS patients' scores on most SF-36 domains were lower than in patients with gastro oesophageal reflux disease (GERD), type 2 diabetes, end stage renal disease (ESRD), asthma and chronic migraine.

When compared amongst themselves, IBS patients also exhibit some differences according to their characteristics. Several studies report a predominance of poorer HRQoL in female patients (Amouretti et al.,2006; Simren et al.,2001). There also seems to be a difference between patients seen in primary care and those seen in secondary/tertiary care with the latter having a more severe impact on their HRQoL (Simren et al.,2001). Cultural differences have also been reported in HRQoL for IBS patients with Hahn et al.,(1999) reporting more impact on quality of life in UK patients than US patients. A similar cultural difference was reported by Faresjo et al. (2006), between Swedish and Cretan samples, with the Swedish patients having better HRQoL. Also of interest are comparisons of HRQoL between the different bowel predominant patterns in IBS patients. In El-Serag et al.,(2002) review, the authors highlight studies, in Sweden (Simren et al.,2001) and UK

(Creed et al.,2001) where no differences were found in HRQol between IBS patients with a constipation predominant bowel (IBS-C) habit and patients with a diarrhoea predominant bowel habit (IBS-D).

As HRQoL has taken its place as one of the main outcomes to be studied in IBS, many studies have looked into what are the factors that are associated or predict a better HRQol in IBS. Spiegel et al. (2004) found HRQoL, as measured by the SF-36, to be better predicted by factors not associated with symptoms (number of medical visits, fatigue, anxiousness or difficult cognitions —there is something seriously wrong with my body) than by the gastrointestinal symptoms of IBS. Factors like age, length of illness or gender did not contribute to the prediction of any of the HRQoL composites (physical or mental).

A study by Lee et al. (2008) looked at predictors for both generic HRQoL and disease specific HRQoL. The authors found that the severity of psychological distress, symptom severity, abdominal pain and employment were the best predictors of generic physical HRQoL. For the generic mental HRQoL composite, psychological distress and neuroticism were considered to be the best predictors. Regarding the overall disease specific HRQoL, psychological distress was again the best predictor, followed by symptom duration, severity of symptoms and neuroticism. Finally (Jerndal et al.,2010) found that GSA, general anxiety, depression, age and socioeconomic status independently predicted mental HRQoL, while the physical composite was better predicted by symptom severity and comorbidity with other functional GI diagnoses. These studies present some contradictory evidence to the contributions of certain factors like length of illness or

age, however it seems that both psychological factors and symptom severity seem to play an important role in the perception of QoL by IBS patients and should be taken into account by physicians in their approach to the treatment of IBS (Spiller et al.,2007).

Self Esteem

It is a crucial need to have good self esteem for sustainability of healthy psychological development. It helps the person to deal better with the stressors. It has a major role in development of personality. Self esteem reflects how an individual perceives self-significance and worth (Ali& Malik, 2014; Parthi &Rohilla 2017.)

Self esteem is described as an individual's subjective evaluation of his or her worth as a person (Orth & Robins, 2013), which has an important function to psychological well-being.

There is a strong connection between the Central Nervous System (CNS) and the gut. The emotional problems linked to IBS are often related to issues of self esteem, self-confidence and self-respect. They may express themselves as anxiety, panic attacks, depression or eating disorders, or can result in the diarrhoea/constipation seesaw of IBS. (Knight, 2008).

Patients with IBS seem to have higher levels of anxiety in relationships, and their lower self esteem could influence the way they deal with the disease and how the communication with health care professionals works out. (Bengtsson.,2013). Self esteem is often defined as an individual's self-perception of own abilities, skills,

and overall qualities that guide and/or motivates specific cognitive processes and behaviors. Research suggests that self esteem and chronic illness either have a direct or indirect effect on one another (Juth.,2008).

Coopersmith (1967) defined self esteem as the extent to which the individual believes himself to be capable, significant, successful and worthy. According to Coopersmith, self esteem is important to person's identity and awareness and opined that high and low self esteem would influence behaviour in positive and negative ways. Branden (1969) explained self esteem as being competence and worthiness. Branden indicated that self esteem "is the conviction that one is competent to live and worthy of living. "He identified that self esteem is a fundamental human value that is intrinsic to human being and it inspires behaviour. Branden (1994) stated"It(self esteem)is directly affected by how we act. Causation flows in both directions. There is a continuous feedback loop between our actions in the world and our self esteem. The level of our self esteem influences how we act, and how we act influences the level of self esteem. "

Branden (1994) stated that "self esteem has profound consequences for every aspect of our existence" and asserted that he "cannot think of a single psychological problem - from anxiety and depression, to fear of intimacy or of success, to spouse battery or child molestation - that is not traceable to the problem of low self esteem. "There has been extensive research regarding self esteem. William James (1890) defined self esteem as being the sum of successes divided by our pretentions, that is, what we think we have to achieve. Self esteem can be improved by attaining successes and retained by avoiding failures. James claimed that self esteem could be

attained and retained by choosing less ambitious goals. Self esteem was defined as being competence oriented and open to change. Self- esteem refers to an individual's sense of his or her value or worth, or the extent to which a person values, approves, appreciates, prizes or likes him or herself. Self -esteem is considered the evaluative component of self-concept, a broader representation of the self that includes cognitive and behavioural aspects as well as evaluative or affective ones (Blascowich & Tomako, 1991).

Mruk (1999) stated that "Self esteem is the lived status of one's competence in dealing with the challenges of living in a worthy way over time". Mruk identified three elements essential to self esteem. First, there is a connection between competence and worthness, Second, self esteem is lived on both cognitive and affective levels, in that it includes processes like acquiring values, making comparisons on the basis of them, becoming aware of the results of these comparisons and feeling the impact of these conclusions in a personal and meaningful way. Thirdly, self esteem is a dynamic phenomenon which can fluctuate more than more stable characteristics like personality and intelligence. Mruk suggests that as we live our cultural backgrounds, developmental histories or identities both consciously and unconsciously, self esteem is embedded in our perceptions and expressed through our feelings and behaviour. Mruk views self esteem as dynamic and changing over time. The history of our success and failures at handling life challenges lead us to a basic understanding of who we are as people which he means 'global self esteem'.

Self esteem, as an overall reflection of an individual's self worth, encompasses beliefs about oneself as well as an emotional response to those beliefs (Mann et al.,2004). Emler (2001) has stated that "Because self esteem is both desirable for a society as a whole and the right of every individual, all practices or circumstances that could conceivably damage a person's self esteem were to be purged from the curriculum of life. People desire high self- esteem in the same way as they desire good physical health or prosperity. High self - esteem is considered to be good for individuals who have it but also good for society as a whole.

Emotion Regulation

Emotion

Emotion is a state of being aroused and experienced by the individual, sometimes emotional arousal is conscious, sometimes it is unconscious (Wang & Guo 2003)

"Emotion is referred to as the process of registering the significance of a physical or mental event, as the individual construes that significance. The nature of the significance (perceived insult, threat to life, depreciation by another, relinquishment of a desired state, avoidance or resolution of a problem etc.) determines the quality of the emotion. The degree of perceived significance determines the magnitude of the emotional response, as well as its urgency " (Campos et al.,2004). Damasio (2000) suggested that emotions are functional. Oattley et al.,(1987) stated that emotions facilitate decision making. Frijida (1986) explained that emotions prepare a person for rapid motor responses.

According to Schwarz and Clore, (1983) emotions provide information regarding the ongoing match between organism and environment. Gross (2002), a pioneer in emotion regulation research point out that emotions serve social functions and they provide information about other's behavioural intentions and script our social behaviour. Emotions serve numerous functions such as an evolutionary function (Tooby & Cosmides, 1990),a social and communicative function (Ekman, 1992) and a decision making function (Oatley & Jhonson-Laird, 1987). Affect, emotion and mood have been used interchangeably during earlier period, now they are differentiated conceptually and empirically. Affect is defined as the super ordinate class for all valenced conditions (Rottenberg & Gross, 2003).

Emotions are considered to be a subtype of affect, are flexible response sequences elicited by internal or external events appraised as relevant to an organism's well being. Gross (2001) asserted that emotions are multidimensional, consisting of experiential, behavioural, and psychological components. Rottenberg and Gross (2003) define mood as a combination of affective responses that last for a long period of time compared to emotions which are relatively transient. Davidson (1998) suggested that individuals differ in emotion behaviour. Experiential behaviour and physiological components of emotion vary within the same individual. He explained that individuals differ on certain components of emotional responding including threshold for emotion elicitation, amplitude of emotional response, rise time to peak and recovery time. Davidson referred that these aspects constitute affective chronometry which he viewed as intrinsic to the understanding of psychopathology. Emotions can be viewed as biologically based reactions that

coordinate adaptive responding to important opportunities and challenges (Levenson, 1994; Tooby & Cosmides, 1990).

One of the characteristic of emotion is situational antecedents. The emotions always begin with a psychological relevant situation which can be either external or internal. The second feature is attention. Whatever the situation whether it is external or internal, situations must be attended so that an emotional response occur. The third characteristic of emotion is appraisal. Once they are attended to, situations are appraised for their bearing on one's currently active goals, a process referred to as appraisal (Lazarus, 1966).When the situation has been attended to and appraisal sets in motion an elaborated emotional response and it is the fourth aspect of emotion. It involves experiential, behavioural and central and peripheral physiological systems (Mauss et al.,2005). The experiential components referred to as "feeling", behavioural components means behavioural displays such as smiling in happiness. The facial displays of emotion and impulses are associated with autonomic and neuro-endocrine changes that both anticipate the associated behavioural responses and follow it. The last characteristic of emotion is malleability. Once initiated, emotional responses do not necessarily follow a fixed and inevitable course.This emotional aspect is an important part of emotion regulation because it is this feature that gives rise to the possibility for regulation.

"The ability to control one's emotions is a highly valued characteristic in today's society. Being able to regulate one's emotions increases flexibility in new situations and adjustment overall" (Hannesdottir & Ollendick, 2007). Cicchetti et al.,(1995) suggested that emotion dysregulation appears as emotions become

connected to deviant cognitive and action strategies thus leading to difficulties in preventing the elicitation of certain emotions or managing emotions and expressions once they are elicited. Rottenberg and Gross (2003) defined emotion regulation as methods of influence related to the experience and expression of emotions as well as the times in which emotions appear. This definition focuses on the idea that it occurs within the individual rather than other definition which also include extrinsic force such as other people's effect on one's regulation.

Davidson (1998) suggested that emotion regulation is an inherent aspect of emotional response tendencies. This bridge between emotion generation and regulation creates a blurry boundary as to one ends and the other begins. Researchers like Thompson (1994) argue that emotion generation and regulation are inextricably entwined. Individual display variations in the intensity, persistence, modulation, onset and rise time, range, and labiality of and recovery from emotional responses (Thompson, 1990). These emotion dynamics (Thompson, 1990) constitute significant response parameters that are influenced by emotion regulation processes.

Emotional arousal has the ability to either enhance or undermine effective functioning and emotion regulation processes are important or they enlist emotion to support adaptive, organized behavioural strategies (Thompson, 1994). Discrete emotions are biologically adaptive to the awareness that emotional responses must also be flexible, situationally responsive and performance enhancing and must change quickly and effectively in order to adapt to changing conditions if they are to support organized constructive functioning in higher organisms.

Emotion regulation is the process of individual for what kind of emotions, when emotions appear, how to affect the expression of emotional experience and expression (Gross, 2001).

Thus, the emotion regulation involves the process of the change of the latent period of emotion, the occurrence time, the duration, the behaviour expression, the psychological experience, the physiological reaction and so on. This is a dynamic process.

Emotion regulation can be defined as the modification of any processes, extrinsic or intrinsic in the system that generates emotion or its manifestation in behaviour (Campos et al.,2004). Emotion regulation is the ability to manage states of arousal in order to facilitate adaptive functioning or goal-directed activity, is an essential component of healthy psychological development (Halligan et al.,2013).

Gross (1998) defined emotion regulation as the "manner in which individuals influence experience, control and express their emotions". This elaborating process can modulate the impact of emotions on behaviour, fine-tuning responses to a given context; however, poor emotion regulation can also negate the adaptive benefits of emotions. Researchers identified three determinants of emotion dysregulation 1) poor understanding of emotion 2) negative reactivity to present emotional state and 3) maladaptive regulation responses (Menin et al.,2007).

Evidence suggests that poor emotion play a role in the development and maintenance of psychopathology (Mennin et al.,2005). Certain emotion regulation strategies can be effective in reducing stress and modifying emotions in anxiety

provoking situations, these strategies can become maladaptive in the long run and lead to emotion dysregulation (Hannesdottis et al.,2010).

Emotion dysregulation refers to the maladaptive ways in which a person experience and responds to emotional states (Werner et al., 2011).

Each particular emotion (e. g. anger, fear, happiness, sadness, disgust, shame) is related to physiological and behavioural correlates that are typically adaptive in situations that activate emotion (Panksepp, 1982). Emotion regulation refers to the manner in which individuals influence, experience, control and express their emotions (Gross, 1998). The adaptive management of emotions is necessary for social functioning and psychological well-being (Gross, 1998).

Problems with emotion or emotion regulation characterize more than 75% of the diagnostic categories of psychopathology in the Diagnostic and Statistical Manual of Mental Disorders (Barlow et al., 2002). Mineka and Sulton (1994) stated that emotion dysregulation is prominent among mood and anxiety disorders and they are defined mainly on the basis of disturbed emotions. Individuals with emotional disorders such as anxiety, depression, and bipolar disorders tend to experience their negative emotions as overwhelming and uncontrollable and often lack the skills necessary to manage and regulate these intense emotional experiences (Fairholme et al., 2010). Various studies have found that maladaptive emotion regulation strategies play a role in the development and maintenance of psychopathology (Gross & Munoz, 1995).

Emotion Regulation and IBS

Preliminary findings suggest that individuals with IBS report stronger beliefs about the unacceptability of experiencing and expressing negative emotions compared to healthy controls and that these beliefs mediate the relationship between emotional suppression and quality of life (Bowers & Wroe, 2016).

Most psychological interventions for IBS follow Cognitive Behavioural Therapy (CBT) based protocols. Repeatedly, these interventions have been found to be helpful in improving treatment outcome but there is no conclusive evidence regarding the mechanisms through which CBT achieves this. Two studies found evidence that CBT had an indirect effect on IBS symptoms through anxiety and gastrointestinal specific anxiety (Jones et al, 2011; Ljotsson et al., 2013). However, other studies concluded that CBT had either a direct effect on IBS symptom improvement (Lackner et al.,2007) or that unhelpful behaviour and negative perceptions of IBS symptoms mediated the effects of CBT on IBS symptom severity and participation in life (Chilcot & Moss-Morris, 2013; Reme et al.,2011). Overall, there is no definitive evidence about the role of emotional factors as mediators of treatment outcome in IBS (e. g. changing distress) and CBT studies have focused on the role of negative affect, rather than emotional processing, in the process of change in therapy.

Psychological Distress

Psychological distress is a general term used to describe the state of impaired psychological health which consists of a combination of symptoms extending from

depression and anxiety to personality traits, functional disabilities and behavioural problems (Mirowsky& Ross,2002)

Different theoretical perspectives of psychological distress

1. Medical Model: The medical model is a prevailing or dominant view of pathology in the world (Kaplan & Sadock, 1998).According to medical model psychological distress is regarded as a disease in the same category as any other physical illness, this model uses similar model in defining psychological distress as that used by medical practitioners. In other words, psychological distress is some form of neurological defect responsible for the disordered thinking and behavior, and requires medical treatment and care (Carson et al.,1996).

2. Interpersonal Theory: Interpersonal theories attribute psychological difficulties to dysfunctional patterns of interaction (Carson et al.,1996). They emphasize that we are social beings, and much of what we are is a product of our relationships with others. Psychological distress is described as the maladaptive behavior observed in relationship which is caused by unsatisfactory relationships of the past or present. Psychological distress is identified when examining the distressed person's different patterns of interpersonal relationships.

3. Psychodynamic Theory: Traditional psychoanalytic model looks at pathology (Psychological distress) from an intrapsychic view. They emphasize the role of unconscious processes and defence mechanisms in the determination of both normal and abnormal behavior. Early childhood experiences are imperative in later personality adjustment. In other words, they understand the expression of a

symptom in the present as an extension of past conflicts (Box, 1998).Therefore, psychological distress in a person's life may be described as his attempt to cope with present difficulties using past childhood defence mechanisms, which may seem maladaptive and socially inappropriate for the present situation.

4. Cognitive Theory: According to the cognitive model, negatively biased cognition is a core process in psychological distress (Barlow & Durand, 1999).This process reflected when distressed patients typically have a negative view of themselves, their environment and the future (Weinrach,1988).They view themselves as worthless, inadequate, unlovable and deficient. According to cognitive theorists, people's excessive affect and dysfunctional behaviour is due to inappropriate ways of interpreting their experiences. The essence of the model is that emotional difficulties begin when the way we see events gets exaggerated beyond the available evidence, this manner of seeing things tend to have a negative influence on feelings and behaviour in a vicious cycle.

Brunette and Mui (1997), conceptualized psychological distress as lack of enthusiasm, problems with sleep (trouble falling asleep or staying asleep), feeling downhearted or blue, feeling hopeless about the future, feeling emotionally bored (for example, crying easily or feeling like crying) or losing interest in things and thoughts of suicide (Weaver, 1995).

Guthrie et al., (2003) found that "IBS patients rated psychological distress twice as high when comparing their scores on the Symptom Check List (SCL-90-R) with those of healthy controls."

Lerutla (2000) defined psychological distress as the emotional condition that one feels when it is necessary to cope with upsetting, frustrating or harmful situations. Mirowsky and Ross (1989) add that psychological distress is the unpleasant subjective state of depression and anxiety (being tense, restless, worried irritable and afraid), which has both emotional and psychological manifestations. In another study of Chalfant et al., (1990),psychological distress is defined as a continuous experience of unhappiness, nervousness, irritability and problematic interpersonal relationships.

The relation between self esteem and emotions is supported by Harter (1993) who proposed that self esteem promotes emotional well being.

As observed from the findings of several studies, numerous reserachers have recognized the role of facets of emotion regulation in depressive symptoms. Liverant et al., (2008) suggested that depressed individuals have difficulties when utilizing adaptive emotion regulation strategies. Researchers like Rude and McCarthy (2003); Honkalampi et al., (1999) have also associated depressive symptoms with difficulties identifying emotions. As seen in the present study that the depressive symptoms is associated with nonacceptance of negative emotions is in line with the study of Brody et al.,(1999).In accordance with the present study of close relation between depressive symptoms and difficulty in emotion regulation, researchers Gross and Munoz(1995) put forward the similar findings.

Garnefskin et al., (2002) have also proposed that less adaptive emotion regulation strategies as correlates of depressive symptoms. Silk et al., (2003) found that young people experience more intense and variable emotions. They were not

competent in regulating their emotions and so they reported more depressive symptoms.

Mennin et al., (2005) and Salters-Pedneault et al., (2006) have observed that difficulties in understanding emotional responses has been linked to anxiety symptoms. Salters-Pedneault, et al., (2006) have also found the relation between difficulties engaging in goals when distressed and anxiety.

As per the findings of a study that difficulties in emotion regulation is related to generalized anxiety disorders is supported by Mennin. et al., (2005), they explained that GAD is characterized by deficits in emotional experience and regulation. These theorists viewed that individuals with GAD experience heightened intensity of emotions, have remarkable difficulties identifying, describing, and clarifying their emotional experiences, have greater negative cognitive reactivity to emotions by holding catastrophic beliefs about the consequences of both negative and positive emotions and endorsing more difficulty attending to and allowing emotional experience to unfold.Finally, they struggle to manage themselves while experiencing negative emotions. Similarly the studies of Salters-Pedneault et al., (2006) also agree with the above mentioned concept.

Relevance of the Study

Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder with a global prevalence characterized by disturbances in bowel habits in the absence of known organic pathology. Psychological stress has been blamed to be a major factor leading to gastrointestinal symptoms.

Irritable bowel syndrome is a chronic disorder that affects every day's contexts and gives rise to high social and health service costs and emotional problems among sufferers (Tosic-Golubovic et al., 2010). IBS is a fairly common disorder that occurs in the general population. It is a functional bowel disorder associated with decreased work productivity, diminished quality of life, and increased healthcare costs (Tosun et al., 2016). Patients with IBS suffer disturbances in their social and professional life and feel ashamed of their symptoms. They often change their eating habits and frequently resort to the healthcare services in a useless search for effective medical care (Mira et al., 2015).

Psychosocial factors were known to affect the development of IBS (Surdea-Blaga et al., 2012). IBS is one of the most common non-infectious diagnoses seen by gastroenterologists and accounting for about 1 in 20 of all general practice consultations (Thompson et al., 2002; Thompson et al., 2000). Researches show that 10-15% of the entire world population has been or will be diagnosed with IBS sometime during their life and IBS has had a significant effect on society in terms of the workforce, as IBS patients showed a 20% loss in work productivity (Black et al., 2012). The symptoms are often distinctly troublesome for patients and limit both their everyday lives and quality of life. IBS interfere with life to such an extent that patients cannot enjoy a normal life. The relevance of IBS research caught the media attention and as a result the World Health Organization (WHO) recognizing this condition and included IBS in the 10th revision of the International Classification of Diseases (ICD-10) manual (WHO, 2007).

The disorder substantially impairs the quality of life, and the overall health-care costs are high. IBS has therefore gained increased attention from clinicians, researchers, and pharmaceutical industries. It is often frustrating to both patients and physicians as the disease is usually chronic in nature and difficult to treat. However, the understanding of IBS has been changing from time to time and still most of its concepts are unknown. IBS is associated with high economic and personal costs (Simren et al., 2004). IBS is not a life threatening disease. But since it is a chronic condition that may significantly impair a person's quality of life. And when considering the personal issues resulting from this condition in many individuals reporting IBS as the cause for the avoidance of many day to day activities, e. g. eating specific foods, work, travel, sex, socializing, exercising or leisure activities (Corney & Stanton, 1990; Lea & Whorwell, 2001).

Although the pathogenesis of IBS remains incompletely understood, a growing amount of evidence supports the dysregulation and/or hyper-reactivity of the brain-gut axis (BGA), a framework involving bidirectional pathways among central nervous system (CNS), autonomic nervous system (ANS), and enteric nervous system (ENS), useful to understand the interplay among emotional and cognitive factors, psychopathology, and chronic distress as possible contributing factors or associated features in IBS onset, course, and clinical expression. IBS patients show dysfunctions in the BGA, including abnormalities in the autonomic nervous system, peripheral factors, central neural functions, neurotransmitters, hormones, and peptides (Mayer & Tillisch, 2011). Within this context, affective and emotional features are mostly viewed as specific and integral to the syndrome, rather

than consequences of IBS, and the physiological effects of emotional arousal provide one potential mechanism by which affective and cognitive states may influence IBS pathophysiology. Emotional arousal mainly affects intestinal motility patterns and visceral pain sensitivity (Chapman & Martin, 2011; Walter et al., 2013), whereas persistent negative affective states and chronic psychological distress have been further associated with alterations of immune system and inflammatory pathways (Muscatello et al., 2014).

Moreover, a study demonstrated that IBS patients perceive stigma about their illness, with increased prevalence of depression and anxiety, decreased self esteem and self-efficacy, and lower Quality of Life (QoL). Additionally, the perceived stigma was shown to have a negative impact on clinical outcomes (Taft et al., 2011). Such psychological disorders can affect the way patients perceive discomfort coming from the GI tract. Thus, understanding this condition can give patients the reassurance to live with it (Chandra, 2013). Psychological factors have significant impact on severity as well as outcome. Treatment of psychiatric disturbances can result in improvement of symptoms. Hence, it is important to recognize and treat the psychological factors related to IBS.

Statement of the Problem

To have a better understanding of Health related quality of life, self esteem, Emotion regulation difficulties and Psychological distress among IBS patients. The present investigation aimed to study the relationship, interaction and predictive effect of these variables. So the problem for the investigation is “Health related

quality of life and self esteem as moderators of Emotion regulation difficulties and psychological distress relationship in IBS.

Independent Variable [IV]

Emotion regulation difficulties have been proposed as the independent variable for the present investigation.

Dependent Variable [DV]

Psychological distress is taken as dependent variable

Moderators

Two moderators of the present study are, self- esteem and health related quality of life.

Definition of the Key Terms

The health-related quality of life

It generally refers to an individual's physical, psychological and social functioning (Korevaar et al., 2000).

Self esteem

Self esteem is defined as the evaluation that persons make about themselves that expresses a self-judgement of approval, disapproval, and personal worth (Demo & Savin-Williams, 1983; Rosenberg, 1965; Suls, 1989).

Emotion Regulation

Emotion regulation is defined as the "manner in which individuals influence experience, control and express their emotions" (Gross, 1998). It is the ability to manage states of arousal in order to facilitate adaptive functioning or goal directed activity, is an essential component of healthy psychological development (Halligan et al .,2013). Since the present study utilized difficulty in emotion regulation scale for measuring the emotion regulation of participants, the term difficulty in emotion regulation is used throughout the study instead of emotion regulation. Difficulty in emotion regulation is defined as maladaptive patterns of regulating emotions that may involve a difficulty in regulating emotions or interfere in adaptive functioning.

Psychological Distress

It is a general term used to describe unpleasant feelings or emotions that impact an individual level of functioning. Mirowsky and Ross (1989) add that psychological distress is the unpleasant subjective state of depression and anxiety (being tense, restless, worried irritable and afraid), which has both emotional and psychological manifestations.

Irritable Bowel Syndrome

According to Rome IV criteria IBS is recurrent abdominal pain on average at least1 day per week during the previous 3 months that is associated with two or more of the following:

1) Related to defecation [may be increased or decreased] by defecation
2) Associated with a change in frequency of stool
3) Associated with a change in form (appearance) of stool

REVIEW OF LITERATURE

Going through the relevant studies related to the study variables is essential for any investigation for getting a clear idea about the status of the investigations related to a specific topic. Following are the literature reviews related to the study variables like Health related Quality of life, Self esteem, Emotion regulation difficulties and psychological distress. Studies related to the dimensions (Stress, Depression, Anxiety, Somatization and Catastrophizing) of the dependent variable Psychological distress also included.

Health Related Quality of Life (HRQOL)

Quality of life (QOL) is a broad multidimensional concept that usually includes subjective evaluations of both positive and negative aspects of life.

In 1948, the World Health Organization defined health as "the state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (World Health Organization [WHO], 1948). Since then, QoL has become increasingly important in health-care practice and research. The term "health-related quality of life" (HRQoL) narrows QoL to aspects relevant to health. However, HRQoL is a comprehensive and complex concept for which no universally accepted definition is available (Fayers&Machin, 2000). Two aspects of HRQoL are central in most definitions. First, it is a multidimensional concept that can be viewed as a latent construct which describes the physical, role functioning, social, and psychological aspects of well-being and functioning (Calman, 1987; Spilker, 1996; Bullinger, 1991). Second, in contrast to QoL, HRQoL can include

both objective and subjective perspectives in each domain (Testa & Simonson, 1996).

Graham et al., (2009), studied irritable bowel syndrome symptoms and health related quality of life in female veterans and reported that irritable bowel syndrome symptoms are associated with considerable reduction in health related quality of life.

Garlnek et al., (2000), investigated HRQOL in IBS, and concluded that HRQL is poor among those with IBS than among both the general population and various chronic disease groups including diabetes and end-stage renal disease, most pronouncedly in energy/fatigue, role limitations, bodily pain, and general health perception.

Quality of life of IBS patients and patients with other GI diseases or other chronic diseases such as asthma and migraine was examined by Jafari et al., (2013), QoL of Patients having IBS was found to be lower compared with patients with other examined GI diseases or other chronic diseases such as asthma and migraine.

Kaji et al., (2010), examined the prevalence of overlaps between GERD, FD and IBS and impact on health related quality of life. Overlaps among GERD, FD and IBS were common and worsened HRQOL.

Drossman (1998), pointed out that IBS should be viewed and understood in a bio psychosocial context while the patho physiology of IBS is the main component affecting HRQoL. Psychological factors in functional gastrointestinal disorders were enquired by Herschbach et al.,(1999), and come to the conclusion that IBS is associated with impaired quality of life.

Smith et al., (2010), studied health related quality of life and symptom classification in patients with irritable bowel syndrome. Health related quality of life is impaired in community based individuals with IBS. Enck et al., (2016), reported IBS is associated with a reduced quality of life. Rey and Talley (2009), investigated that Health-related quality of life is used to gauge symptomology in the lives of patients, as well as the effect of any treatments or therapies In IBS.

Creed et al., (2001), came with the conclusion about the Severity and frequency of IBS symptoms and concluded that, abdominal pain and diarrhoea are associated with impaired health related quality of life.

According to Mathew and Bhatia (2009), abdominal pain, bloating, and bowel difficulties are symptoms that have the most negative influence on quality of life. Lembo et al.,(2009), stated that the discomfort is a factor in measuring patients' quality of life, symptoms that have a negative impact on quality of life are those that decrease their confidence and make them feel the need to avoid social settings.

Hertig et al., (2007), Pointed out how IBS affects the lives of patients, Patients do not feel comfortable being in environments where they can't easily access a bathroom at all times, so many choose to remain at home. These symptoms affect their sleep patterns, work habits, and overall lifestyle in addition to these inconveniences, IBS can also significantly affect the financial habits of patients, either through healthcare costs or hours lost at work. All these factors serve as sources of stress and anxiety in the lives of IBS patients, which further decrease their quality of life.

In patients diagnosed with IBS, MDD additional diagnosis is very common. Mayer et al., (2001) with Creed stated that, IBS in early stages is associated with anxiety and in the long term with depression (Creed, 1999). Against the epidemiological data at hand, IBS co-occurring with depression and anxiety disorders cause patients search for help more frequently and due to this Properties of the patients included in the study it is suggested that detected ratios could be misleading (Creed, 1999; Talley & Spiller, 2002). Thus, it is claimed that more than 50% of the patients who are looking for treatment due to IBS, had depression and anxiety disorder (Drossman, 2006). There are significant data showing that anxiety disorders, depression (Sykes et al., 2003) and somatization (Oudenhove et al., 2011), are risk factors for IBS.

Somatization is a syndrome of physical symptoms causing distress that may not be fully explained by a confirmed medical condition. Associations with anxiety, depression, and interpersonal conflicts are also noted, and it is also common for somatization, depression and anxiety to all occur together. Catastrophizing, on the other hand, is an irrational thought process which perceives something far worse than it actually is.

Whitehead et al., (2002) reported that IBS patients are more committed to a somatic explanation for their symptoms. Riedl et al., (2009) found that IBS patients who present more somatic attributions have more impaired physical quality of life and higher physical complaints while those who make more intrapsychic attributions have a more impaired mental quality of life and better physical symptoms outcomes.

An initial cross-sectional study from Rutter and Rutter (2002) showed that reporting higher consequences and attributing cause to psychological factors were associated with greater levels of anxiety and depression.

Catastrophizing can generally take 2 forms. One, in which a situation is made into a catastrophe, as this relates to IBS, it can be noted in many IBS patients who describe gas and bloating as debilitating, going through extreme and radical life changes to compensate for symptoms that many other people experience on a daily basis as well, but with little or no complaint. The second form of catastrophizing occurs when future events are anticipated as going wrong, in an almost inherent manner. We see this in the patient who has lost all hope in medicine, but still presents week after week for follow-up appointments, all the while arguing against the likelihood of any treatment being able to work for them.

Self Esteem

Social psychological approaches to mental health often emphasize the link between social roles and psychological distress. Identity theorists, in particular, explain distress in terms of the meanings that roles hold for individuals. This research draws from sociological and psychological models of self and identity to explain how distress arises from discrepancies that occur among aspirations, obligations, and perceptions of role-identities. It also examines the role of self esteem as both an outcome of identity.

Discrepancies and a buffer in the relationship between identity discrepancy and distress. The results of this study indicate that although discrepancies related to

aspirations tend to be associated with lower levels of depression and higher self esteem, obligation-related identity discrepancies do not predict distress or self-evaluation. As expected, individuals with lower levels of self esteem suffer more from aspiration-related discrepancies than do individuals with higher levels of self esteem; however, individuals with higher self esteem are more reactive to obligation discrepancies.

Prevalence of Irritable Bowel Syndrome and its Relation to Self esteem, Depression, and Quality of Life of Female Students in Health-Related Faculties at Umm Al-Qura /University have investigated by Ali et al.,(2016), and the aim of the study was to measure the prevalence of IBS among female students in health-related faculties, identify its potential risk factors, and assess connected psychological aspects such as symptoms of depression, self esteem, and Quality of Life (QoL). They concludes that the prevalence of IBS among university students in health-related faculties is high. Its independently associated factors are stress, use of laxatives, and low fiber intake. The disorder is associated with high prevalence of depressive symptoms and low QoL, in addition to low self esteem.

In a study conducted by Bengtsson et al., (2013), comparing IBS patients with IBD Patients lower self –esteem was found for the IBS group as well as a higher frequency of anxiety in relationships with others.

The emotional problems linked to IBS are often related to issues of self esteem, self-confidence and self-respect. They may express themselves as anxiety, panic attacks, depression or eating disorders, or can result in the diarrhea/constipation seesaw of IBS (Knight, 2008). Self esteem is often defined as

an individual's self-perception of own abilities, skills, and overall qualities that guide and/or motivates specific cognitive processes and behaviors. Research suggests that self esteem and chronic illness either have a direct or indirect effect on one another.

Patients with IBS seem to have higher levels of anxiety in relationships, and their lower self esteem could influence the way they deal with the disease and how the communication with health care Professionals work out (Bengtsson et al., 2013). Moreover, a study demonstrated that IBS patients perceive stigma about their illness, with increased prevalence of depression and anxiety, decreased self esteem and self-efficacy, and lower Quality of Life (QoL). Additionally, the perceived stigma was shown to have a negative impact on clinical outcomes (Taft et al., 2011).

The study conducted by Bengtsson et al., (2013) has also revealed that approximately one-tenth of the students were having low self esteem, and this was significantly related to IBS in bivariate analysis, although it did not persist in multivariate analysis. A similar significant association between IBS and low self esteem was revealed in a study in Sweden.Moreover, one more study in Sweden confirmed this association between low self esteem and IBS through multivariate analysis (Grodzinsky, 2015). The discrepancy with this study could be attributed to the setting since the Indian study was carried out in a rural area, while this study was in the capital city. The study has also demonstrated that the scores of students' self esteem were independently influencing their depressive symptoms and QoL scores.

Thus, lower self esteem is associated with more depressive symptoms and worse QoL. This implies that a feeling of low self esteem is an intermediate factor in

inducing depressive symptoms and low QoL among the students in this sample. In congruence with this, (Bonsaksen et al., 2015) in a study in Norway argued that in chronic disorders, the duration of illness and the ability to cope with the symptoms are important factors influencing the feeling of self esteem. Thus, the annoying and sometimes embarrassing symptoms of IBS would be expected to negatively influence self esteem, with consequent negative impacts on the prevalence of depressive symptoms and on QoL.

Psychological Distress

MacDonald and Bonchier (1980), suggested that anxiety and depressive illnesses are more common in IBS than organic gastrointestinal illness. Jerndal et al.,(2010), reported that IBS patients with severe GI symptoms have more severe Gastrointestinal specific Anxiety scores. Ayres et al.,(1989), studied stress and oesophageal motility in normal subjects and patients with irritable bowel syndrome. The result indicates that symptoms of irritable bowel syndrome and their association with stress are attributable to increased sensitivity of oesophageal motility to disruption by stressful stimuli.

Plante et al., (2007), investigated physiological stress responsivity and perceived stress among subjects with irritable bowel syndrome, results suggest that IBS sufferers may be more sensitive to perceived stress than others.

Park et al., (2008), compared psychological distress symptoms and gastrointestinal symptoms related to severity of bloating in women with irritable bowel syndrome and reported a history of depressive disorder and anxiety. Savas et

al., (2009), examined the prevalence and association of irritable bowel syndrome and dyspepsia among women veterans and its association and prevalence with psychological distress. They concluded that women veterans have high prevalence of IBS and dyspepsia symptoms, both of these are highly associated with presence of depression, anxiety and PTSD.

Shen (2009), studied the prevalence of irritable bowel syndrome and its relationship with psychological stress status in Chinese university students. And concluded that depression and anxiety could potentially induce IBS.

Creed et al., (2005), reported that 12% of IBS patients had panic disorders, 14% has Generalized Anxiety Disorders and 29% had depressive disorders. This study conducted in several secondary and teritiary gastroenterology clinics. Trikas et al., (1999), studied core mental state in irritable bowel syndrome and the study investigated the predominant psychiatric symptoms in women with IBS were psychological stress.

Lackner et al., (2010), assessed the ties that bind perceived social support, stress, and IBS in severly affected patients. This study links the perceived adequacy of social support to the global severity of symptoms of IBS and its cardinal symptoms. It also suggests that the mechanism by which social support alleviates pain is through a reduction in stress levels.

Pitchel et al., (2010), investigated the impact of functional bowel symptoms on quality of life and fatigue in quiescent Crohn disease and irritable bowel

syndrome. The presence of IBS-like symptoms quiescent CD is probably associated with the range of fatigue \ depression disorders.

Heitkemper et al., (2005), studied subjective and objective sleep indices in women with irritable bowel syndrome. All women were studied on two consecutive nights in a sleep research laboratory where PSG (PolySomnography) data were collected. Retrospective and daily measures were obtained of Self-reported sleep quality, psychological distress and gastrointestinal symptoms across one menstrual cycle. Self-report measures of psychological measures and sleep quality were significantly worse in the IBS-severe group compared with controls. The results highlight the importance of considering the 'first-night effect' in those with IBS and the lack of concordance between self-report and objective indices of sleep in women with IBS.

Jones et al., (2006), analysed physical and psychological comorbidity in irritable bowel syndrome: a matched cohort study using the General Practice Research Database. A matched cohort study was implemented. People who are diagnosed with irritable bowel syndrome experience more anxiety and depression and a range of physical problem compared with controls, they are more likely to be referred to hospital.

Beesley et al., (2010), analyzed anger and childhood sexual abuse are independently associated with irritable bowel syndrome. The study was a comparison between IBS and Crohn's disease and the results indicates that childhood sexual abuse was more prevalent in IBS than Crohn's disease patients.

Chaudhary and Truelove (1962), identified psychological factors responsible for the onset of IBS. These factors are categorized into three separate groups such as diagnosable psychiatric illness like depression, personality types for example life long worries and environmental stress like family problems.

Creed et al., (1988), argued that the most frequent events reported by patients with functional abdominal pain including IBS patients during 38 week prior to onset of symptoms, were a major disruption of close relationships, a marital separation, a family member leaving home, or break-up of a serious girl/boy friend relationship. Sperber et al., (2005), explored that a sudden cultural change such as moving from a rural to an urban area increased the prevalence of IBS.

Toner and Akman (2000), explored that the bowel functions are more likely to be considered shameful and kept secret by women, contributing to physical, social and emotional isolation. Labus et al., (2007), argued that anxiety related to GI sensations, symptoms or that context in which these may occur is refers to as gastro intestinal specific anxiety (GSA). GSA influences symptom severity and quality of life in patients with IBS.

Sugawara et al., (2017) tested the Coping behaviour and experience of depressive symptoms in IBS and concluded that Coping behavior may influences the experience of depressive symptoms among individuals with IBS. Psychological therapy may reduce depressive symptoms as well as the variety of IBS symptoms.

Bengtsson et al., (2013), concluded stress has been reported to increase disease activity, with chronic stress likely to more important than acute stress in IBS.

Shahbazi et al., (2016), examined the effect of Hypnotherapy in IBS patients. Hypnotherapy reduced somatic, mental symptoms abdominal pain, diarrhoea, depression, isolation, anxiety and psychopathological symptoms in IBS patients.

Kennedy et al., (2011), suggested that IBS has been associated with altered psychological and cognitive functioning. Lee et al.,(2009), reported that Anxiety is more common in IBS patients than in the general population.

Palmer et al., (1974), Anxiety Scores were high in IBS patients and It is neurosis rather than bowel symptoms which bring the IBS patients to the doctor.

Esler and Goulston (1973), found that only diarrhoea Predominant IBS patients had neuroticism scores on the EPI significantly higher than control subject with ulcerative colitis and general medical patients. They also found that anxiety is high in IBS patients. Palmer et al., (1974), analysed the personality factors of IBS patients, and reported that IBS subjects were significantly more neurotic and less extroverted than the normals.

Hislop (1971), argued that dysharmony in close relationships and divorce or separation were more common in the IBS patients. Mendeloff et al., (1970), found that stress events were more common among IBS patients than ulcerative colitis and healthy comparison subjects.

The role of psychological and biological factors in post infective gut dysfunction studied by Gwee et al., in 1999 and they concluded that psychosomatic co morbidity plays an important role in the development of IBS and it is also underlined by an epidemiological study in Germany.

Cash and Chey (2004), studied about the role of emotional stress as an etiologic factor in the development of IBS symptoms and this factor may be inferred from the effects of psychological therapies. Bengtsson et al., (2013), reported that Stress has been increase disease activity in IBS patients and specifically chronic stress likely to be more important than acute stress causing IBS disease. Elsenbruch et al., (2010) suggested that IBS has been associated with altered visceral interoception by negative emotions and stress.

Tilburg et al., (2013), investigated that IBS has been associated with somatisation, catastrophizing. Whitehead et al., (2007), argued that IBS is associated with mood disturbance. Voth and sirois (2009), patients with IBS have reported higher levels of self-blame than patients with IBD. Drossman et al., (1988), compared IBS Patients with non-IBS patients and healthy controls and in that study it was found that psychological factors were associated with the patient's status rather than with the disorder per se. Creed et al., (2005) argued that depression is the most common psychiatric diagnosis in IBS patients.

Koloski et al., (2011), concluded that the People with IBS have significantly reduced mental and physical functioning when compared with community controls. It is found that, more severe abdominal pain and more frequent diarrhoea to be significantly associated with having greater physical impairment.

Jone et al., (2006), suggested that, Poor social support or maladaptive coping styles have been linked to people with IBS. Lackner et al., (2013), investigated the Negative social relationships, conflicts and negative exchanges and results indicates

that they were more consistently and strongly related to IBS outcomes than social support from the family and friends.

Psychological Distress and HRQOL

Jerndal et al., (2010), investigated gastrointestinal specific anxiety, an important factor for severity of GI symptoms and quality of life in IBS. And the results show that the Gastro intestinal specific anxiety seems to be an important factor for GI symptom severity and Quality of life in patients with IBS.

Han (2013), found that Dysfunctional cognition independently influenced patients physical and mental QoL and symptom severity with more negative impact in the presence of anxiety and depression disorders.

Monikes (2011), Patients with IBS seems to have worse health related quality of life than patients with gastroesophageal reflux disease, diabetes and end-stage renal disease, HRQoL in IBS patients affected by psychological conditions.

Kearney et al., (2011), reviewed the association of participation in a mindfulness programme with bowel symptoms, gastrointestinal symptom specific anxiety and quality of life. They concluded that participation in MBSR (Mindfulness Based Stress Reduction) is associated with improvement IBS-related quality of life and GI-specific anxiety. White et al., (2010), reported IBS is more common in patients with PTSD, and PTSD represents an independent risk factor for IBS. Sykes et al., (2003), suggested that anxiety play a role in the development of IBS.

Graham et al., (2010), concluded depressive disorders are more common in clinic patients with IBS compared to patients with similar symptoms and organic GI

diseases and compared to healthy controls. Similarly Savas et al., (2009), reported that, Patients with IBS have higher scores of depression than healthy controls.

Self esteem, Quality of Life and Psychological Distress

Ali et al., (2016), studied about the prevalence relation of IBS to self –esteem, Depression and Quality of life of female students in Health- related faculties at Umm Al –Qura University. They concluded that the prevalence of IBS among University students in health –related faculties is high. IBS is associated with depressive symptoms and low QoL, and low self esteem.

Taft et al., (2011), reported IBS patients perceive stigma about their illness, with increased prevalence of depression and anxiety, decreased self –esteem and self-efficacy and lower quality of life.

Psychological distress refers to feeling anxious and depressed. These symptoms are more frequent and more intense in IBS patients, and they are associated with more gastrointestinal symptoms, disability and quality of life impairment (Fadgyas-Stanculete, 2014) of IBS patients, psychological symptoms are so severe that co-morbid psychiatric disorders can be diagnosed. The association between psychological distress and IBS seems to be bidirectional in nature: psychological distress both precedes the onset of IBS (Tilburg, 2013) and is aggravated by the challenges of managing a chronic gastrointestinal disorder (Dumic et al., 2019).

The effect of stress on IBS is almost universally recognized by clinicians and patients. IBS symptoms wax and wane with daily stress (Tilburg, 2013) and IBS

There is particularly strong evidence for the role of early life stressors such as sexual abuse and maternal separation in IBS (Tilburg, 2013) Dysfunctional brain-gut interactions have been found in maternally separated rodents-an often studied model of early life stress in IBS(Pohl, 2015). And also IBS patients show greater reactivity to stress (Chang, 2011) that is, compared to healthy controls, the same exposure to stress leads to a greater physiological gut response in IBS patients.

Quartana (2009) suggested that Pain Catastrophizing is one of the most robust predictors of pain intensity. And it is defined as a maladaptive way of coping (or not coping) with pain by magnifying the threat or seriousness of pain and feeling helpless to do anything about it (Leung, 2012).

Patients who experience IBS have been found to display greater tendency toward the use of catastrophizing coping style (Lackner et al., 2004). Catastrophizing coping style, a cognitive coping style, has been shown to be a robust predictor of outcomes such as pain levels, physical functioning, and depression in individuals with IBS (Drossman et al., 2000). Catastrophizing coping style is characterized by the propensity to focus on and overemphasize the threat of symptoms Psychological Distress. To measure the level of reported psychological distress in the current sample, the Brief Symptom Inventory-18 (BSI-18) was used. This instrument assesses the degree of psychological distress along three symptom dimensions: depression, anxiety, and somatization over the past week. This measure was chosen as it addresses all three of the psychological distress variables frequently noted in patients with IBS (Drossman et al., 2002)

Coping also played an important role in HRQOL. The literature reports those with IBS tend toward catastrophizing coping strategies. This tendency to "catastrophize" has been found to contribute to more intense pain and greater emotional distress (Keefe et al., 1989)

Several randomized controlled trials have also shown that psychological interventions (e. g. Cognitve Behavioural Therapy and Hypnosis) can be particularly effective in improving IBS outcomes such as symptoms, psychological distress or quality of life (Spiller et al., 2007)

Somatization is frequently seen in IBS patients (Tilburg, 2013) .The problems like chronic pain syndromes , other functional gastrointestinal disorders, , and symptoms such as chronic fatigue, frequent urination, bad breath and heart palpitations are commonly seen in IBS patients. Somatization defined as the psychological tendency to report multiple physical symptoms.

People high in somatization are hyper vigilant and often notice somatic sensations and interpret these symptoms as part of disease (Zdankiewicz-Ścigała et al., 2021). It has been established that these psychological variables play a role in IBS, but it is essential to determine the relative strength of their contribution to the waxing and waning of IBS as this will suggest which psychological factors should be targeted in treatment.

Somatization is a worldwide phenomenon (Adams, 2001). A somatization spectrum can be identified, up to and including at one extreme somatization disorder clarification whereas psychological distress (i.e., anxiety, depression, and

somatization) (Drossman et al., 2009) and cognitive and behavioral factors (i.e., coping and adapting) are the most frequently reported psychological factors affecting HRQOL (Jones et al., 2006) in those with IBS.

Emotion, Self esteem and Psychological Distress

Knight (2008) suggested that the emotional problems linked to IBS are often related to issues of self esteem, self-confidence and self-respect. They may express themselves as anxiety, panic attacks depression or diarrhea or constipation seesaw of IBS.

Erikson et al., (2015), Many IBS patients have been exposed to traumatic events and may have low self esteem and hypersensitivity. Hence, IBS patients may be in a state of chronic distress, there by affecting the work productivity.

In summary, the relationship between IBS and psychological problems has long been known. Co-occurrence of IBS is frequently seen with anxiety disorders and depression. It is clear that a multidisciplinary approach to patients with IBS approach and a follow up will contribute positively. If clinicians only focus on the symptoms of IBS and cannot see the patient as a bio psychosocial whole, they will be insufficient to provide successful treatment for the disease.

Research Gap

Most of the studies conducted in Irritable bowel syndrome are focused only on the biological side of the disease. Studies conducted in India focused on the following areas like, Epidemiological and Clinical profiling of IBS (Ghoshal, 2008), Prevalence of IBS (Mukharia et al., 2011), Clinical Perspectives on IBS (Rahman,

2017), Epidemiological factors of IBS (Nagaonker et al., 2018). Published works addressing Psychological problems related to IBS are rare in Kerala. Since IBS is a multifactorial disorder investigating the relationship among important Psychological factors related to IBS is relevant.

Objectives for the Present Study

Through review of literature, the importance of Health related Quality of life, self esteem and emotion regulation and its relation to Psychological Distress have been revealed. Research findings suggest that Psychological factors influence the development of IBS. Health related Quality of life, Self esteem and Emotion Regulation are the important Psychological Variables affecting the psychological distress of IBS patients. Investigating the role of the Health related Quality of life, self esteem and emotion regulation on the Psychological distress of IBS patients are helpful for mental health promotion as well as to develop preventive strategies for these patients. Based on the review of literature, the following objectives were formulated for the present study.

Objectives of the Study

1. To have a general idea on the nature of distribution of the variables under Study through preliminary analysis.

2. To find out the role of certain demographic variables on Psychological distress of IBS patients.

3. To examine the nature and extent of the relationship among the dimensions of Health related quality of life, Self esteem, Difficulty in emotion regulation and Psychological distress.

4. To identify those variables (Health related quality of life, Self esteem and Difficulty in Emotion Regulation) which predict Psychological distress.

5. To find out whether there exists any influence of Health Related quality of life/Self Esteem as moderator on Emotion Regulation difficulties and Psychological Distress relationship.

Hypotheses

Based on the above objectives , following Hypotheses are formulated.

1. There will be normality on the nature of distribution of the variables under Study through preliminary analysis.

2. There will be significant difference between demographic variables on Psychological Distress of IBS Patient.

    a. There will be significant difference between age groups on Psychological Distress of IBS Patient.

    b. There will be significant difference between sex on Psychological Distress of IBS Patient.

    c. There will be significant difference between marital status on Psychological Distress of IBS Patient.

3. There will be significant relationship among the dimensions of Health Related Quality of life,Self esteem, Difficulty in emotion regulation (DERS) and Psychological Distress.

   a. There will be significant relationship between Health Related Quality of life and Self esteem.

   b. There will be significant relationship between Health Related Quality of life and DERS and its dimensions.

   c. There will be significant relationship between Health Related Quality of life and Psychological Distress and its dimensions.

   d. There will be significant relationship between Self Esteem and DERS and its dimensions.

   e. There will be significant relationship between Self Esteem and Psychological Distress and its dimensions.

   f. There will be significant relationship between DERS and Psychological Distress.

   g. There will be significant relationship between the dimensions of psychological distress.

   h. There will be significant relationship between the dimensions of Emotion regulation difficulties.

4. There will be significant predictor relationships between Variables Health Related Quality of life, Self esteem and Difficulty in Emotion Regulation on Psychological distress and its variables.

5. Health Related Quality of life and Self Esteem moderate Difficulty in emotion regulation and Psychological Distress.

CHAPTER 2

METHOD

- SECTION A: PARTICIPANTS
- SECTION B: MEASURES /TOOLS USED
- SECTION C: PROCEDURE
- SECTION D: STATISTICAL TECHNIQUES

"Research method may be understood as all these methods/techniques that are used for the conduction of the research. Research methods refer to the method the researcher uses in performing research operations. In other words, all those methods that which are used by the researcher during the course of studying the research problem are termed as research method" (Kothari, 1985).

Research design

Correlational Research design is used for the present study.

This chapter deals with the general plan of the work done. The method formulated for the purpose consists mainly the following four sections:

Section 1: Participants for the investigation

Section 2: Measures Used

Section 3: Procedure

Section 4: Statistical Technique Used

Section 1: Participants

In this section, the procedure used for the selection of the participants for the present study is described.

Section 2:Measures Used

This section is presented in two parts: In the first part, the various measures are described. In the second part, the test development and the standardization of the questionnaires for the study are presented (chapter 3).

Section 3: Procedure

In this section, a description of the data collection procedures, procedures for administration of the different tests, and scoring details of the tests are described in detail under suitable sub –sections.

Section 4: Statistical techniques used

This section deals with the statistical treatment of the data in accordance with the objectives of the study.

SECTION-1: PARTICIPANTS

All items in any field of inquiry constitute a 'Universe' or 'Population'. A complete enumeration of all items in the population is known as a census inquiry. When all items are covered in the study, no element of chance is left and highest accuracy is obtained. The study of the total population is practically not possible. Researchers collect data from a subset of individuals and use those observations to make inferences about the entire population. These subset of individuals constitute sample which is the representative of the total population. The researcher must decide the way of selecting a sample or what is popularly known as sample design. In other words, a sample design is a definite plan determined before any data are

actually collected for obtaining a sample from a given population. Sample comprises a certain portion of the population or universe. Sampling design means the method the researcher adopts for selecting the samples from the population. Sample design should be done prior to data collection. Sample can be either probability sample or non-probability sample.

Selection of participants is the crucial step in any research. In order for the results to provide valid conclusions the sample should be adequate and representative. The adequacy of the sample is determined by its similarity to the population of the study. There are several methods available for selecting the sample for an investigation. When the population for the survey or investigation is very large, consideration of time -cost almost invariably leads to the selection of a limited number of individuals. A sample is a selected part, a representative, of the whole (universe of population), and sampling is the selection process of the sample from the population (Kothari, 1985).

Sample for the study was 142 IBS patients selected from Gastroenterology department of the Calicut Medical College. The sampling was done using judgemental sampling. Age of the patients in the present study ranged between 20yrs-70yrs.

Age

Table 1

Distribution of the Sample Based on Age

Sl No	Age	No of Respondents	%
1	20-40 yrs	63	44.4
2	41-65 yrs	66	46.5
3	66 above	13	9.2

From the above table it is clear that 44.4% of the patients are of the age group of 20-40 yrs and 46.5 % of the patients belong to 41-65 yrs category. Only 9.2 % of patients included in the age category of 66 yrs and above.

Sex

Participants are divided into males and females on the basis of sex.

Table 2

Distribution of Sample Based on Sex

Sl No	Sex	No. of Participants	Percentage
1	Male	101	71.1%
2	Female	41	28.9 %

The above table shows 71.1 % participants are Males and 28.9% of participants are females.

Marital Status

Table 3

Details of Classification of the Respondents According to Marital Status.

Sl No	Marital Status	No. of Respondents	Percentage
1.	Married	104	73.24
2	Unmarried	38	26.76

It may be inferred from the above table that 73.24 %of the respondents are Married and 26.76%Unmarried.

Categorization of the Participants based on independent variables

In order to conduct different types of analysis, the participants are classified into different groups on the basis of the three main independent variables such as Health related quality of life, self esteem, and difficulties in emotion regulation. Classification of the variables into three levels is given in the tables below.

Table 4

Split Up of the Participants on the Basis of Levels of Health Related Quality of Life

No	Levels of HRQOL	N	PERCENTAGE
1	Low (Below45)	39	27.46
2	Moderate(46-60)	60	42.25
3	High(above 61)	43	30.28

The Table 4 shows above Mean plus Standard Deviation (SD) score for high level of HRQOL, the Mean plus Standard Deviation (SD) to mean minus SD of HRQOL score for moderate category and below the Mean minus Standard Deviation (SD) of HRQOL score for low category. It reveals that there is a remarkable

difference between the three groups (high, moderate, and low level HRQOL). The high score group has high HRQOL as compared to moderate and low HRQOL groups. Similarly, there are also three distinctive levels of Self Esteem and Emotion Regulation Difficulties.

Table 5

Split Up of the Participants on the Basis of Levels of Self Esteem Score

No	Levels of SE	N	Percentage
1	Low(Below 66)	37	26.05
2	Moderate(67-79)	70	49.29
3	High(Above 80)	35	24.64

Participants are classified into three groups such as low, moderate and high self esteem groups on the basis of the Mean and Standard deviation obtained for self esteem. Mean of self esteem is 72.18 and its Standard deviation is 13.33. The groups are categorized by considering the criterion Mean plus or minus half Standard deviation. Table clearly indicates that among the 142 participants, most of them come under the moderate group.

Table 6

Split Up of the Participants on the Basis of levels of Emotion Regulation Difficulties

No	Levels of Emotion Regulation Difficulties	N	Percentage
1	Low (Below 64)	35	24.6
2	Moderate (65-80)	74	52.11
3	High (above 81)	33	23.23

The Table 6 shows Mean plus Standard Deviation (SD) score for high level Of DER, the Mean plus Standard Deviation (SD) to mean minus SD of DER score

for moderate category and below the Mean minus Standard Deviation (SD) of HRQOL score for low category. It reveals that there is a remarkable difference between the three groups (high, moderate, and low level DER. The high score group has high DER as compared to moderate and low DER groups. It is clear that among the 142 participants, most of the participants come under the moderate group.

Section B: Measures/Tools used

For the present study different tools were used to measure the different variables under investigation. The following measures were used to assess the variables under study.

1. IBS-36 Questionnaire by Groll (2002)
2. Self esteem inventory by Immanuel Thomas and Sam Sananda Raj (1995)
3. Revised Difficulty in Regulating Emotions Scale by Milu and Jayan(2011)
4. IBS -PD scale by Jasna and Jayan (2019)
5. Personal Data Sheet.

Irritable Bowel Syndrome Impact on Quality of Life (IBS-36)

The IBS-36 is a measure of Quality of Life created by Groll et al. (2002) that addresses the impact on quality of life in areas as diverse as food, symptoms, family relations, emotional impact, work/school/daily activities impact, social impact, sleep/fatigue, and sexual relations. This self-administered scale consists of 27 questions that ask the patient to think how IBS has impacted on his/her Quality of life over the course of the last 2 months. Each question is scored on a 7 point Likert Scale ranging between 0 (—Never) and 6 (—Always). The overall score is obtained

by summing the individual item scores with a possible minimum of 0 and a possible maximum of 162. A higher score implies a higher impact on Quality of Life. A higher total score indicates a lower health related QoL. The scale has a high internal consistency (Cronbach $\alpha = 0.95$), high test-retest reliability over a period of 2 weeks (Spearman's $r = 0.92$) is responsive to change (Groll et al., 2002). Copy of inventory is appended in the Appendix B.

Self Esteem Inventory

Self esteem inventory is a five point interval scale consisting of 20 self-Evaluative or descriptive statements (10 positive statements and 10 negative statements) from a wide variety of behavioural domains. Higher scores on this scale indicate high self esteem and lower score denotes low self esteem. Split-half reliability of this scale is 0.95 and test-retest reliability is 0.90 significant at 0.01 levels. The content validity correlation coefficient of this scale is 0.41 significant at 0.01 levels. The maximum and minimum score obtained in the scale are 100 and 20 respectively. Copy of the Inventory is appended in the Appendix C.

Difficulty in Regulating Emotions Scale (DERS)

The difficulty in Regulating Emotions Scale is a self-reported questionnaire consisting of 29 items assesses clinically relevant difficulties in ER with a particular emphasis on negative emotions. This scale has six dimensions such as lack of awareness of emotional responses, lack of clarity of emotional responses, non acceptance of emotional responses, limited access to emotion regulation strategies perceived as effective, difficulties controlling impulses when experiencing negative

emotions and difficulties engaging in goal directed behaviour when experiencing negative emotions. Total of all dimensions yield DERS score. This scale has found to be good test-retest reliability which is 0.88. Support for the construct and predictive validity have also been found. Its copy is kept in the Appendix D.

IBS-Psychological distress scale (IBS-PD)

The Psychological distress scale was constructed and standardized by the present investigators (Jasna & Jayan, 2019). The inventory was designed to help and understand the psychological factors affecting the IBS patients. Psychological distress scale assesses the psychological problems of IBS patients in five vital dimensions –Stress, Depression, Anxiety, Somatisation and Catastrophizing. The scale consisted of 21 items and it was rated in 5 point Likert scale like strongly agree to strongly disagree. The maximum and minimum scores obtained in the scale were 105 and 21 respectively. Details of the test development are given in chapter 4. Copy of the scale is appended in the Appendix F.

Personal Data Sheet

Personal Data Sheet includes the general information about the participants such as Sex, Age, Religion, Educational qualification, Marital Status, Occupation status, etc.

Section C: Procedure

Ethical Approval

The study protocol was approved by the Ethical Committee of the Research Ethics Committee, Calicut Government Medical College.

The Participants of the present study comprised of 142 IBS patients selected From Outpatient ward of gastroenterology department, Calicut medical college. Their age ranging from 20-70 years. Prior permission was taken from the Directorate of Medical Education, Government of kerala. Doctor diagnosed IBS patients were selected as participants. Organic causes were ruled out by the gastroenterologist after appropriate investigations wherever necessary. A brief introduction about the purpose of the study was given to the participants. Informed consent was taken from the participants and confidentiality was assured.

All the questionnaires, Personal Data Sheet and informed consent were printed in a booklet form. The instructions for filling each questionnaire were given at the top of the inventory. The investigator also gave oral instructions to the respondents. Instructions for Self esteem inventory is as follows “Some statements are given below for the following questionnaire. Indicate how much you agree with each statement, there are five response categories viz., A, B, C, D and E. A denotes ‘strongly agree’, B denotes ‘agree’, C denotes ‘undecided’, D denotes ‘disagree’ and E denotes ‘strongly disagree’. After reading each statement, mark your answer with a tick mark in the appropriate circle. Please note select C only when you can’t say clearly either you agree or disagree with a statement. Do not omit any statements”.

Instructions for IBS –PD Scale and DERS scales are common and they are as follows “Please put a tick mark in the appropriate column that shows how often each of these things happen to you. There is no right or wrong answers”.

Instruction for the IBS-36 is as follows “corresponding to each questions there is a scale for marking the frequency of your response to that question. Please put tick mark on appropriate response”. While collecting the questionnaires, the investigator took special care to note whether the respondents missed any item and if any found, encouraged the participants to complete all the items. The collected questionnaires were again checked and incomplete questionnaires were excluded from the data set.

Scoring

IBS - 36 Questionnaire

IBS-36 consists of 27 questions and is designed for self-administration by IBS patients. The IBS-36 questionnaire asks patients to think about the impact of their IBS symptoms on their Quality of Life (QOL) over a 2-month time frame and is scored on a 7-point Likert scale where 0 means never and 6 means always. A final score is a sum of the scores of the 27 questions. Greater score indicates higher impact on the quality of life of the patient due to IBS. The highest possible score on the IBS-36 is therefore 162, and the lowest is 0.

Self esteem Inventory

Self esteem inventory is a five point interval scale consisting of 20 self-evaluative or descriptive statements consisting of 10 positive statements and

10negative statements. For positive statements items in the inventory-viz item numbers 3, 5, 8, 10, 13, 15, 16, 18, 19 and 20, scoring is done as follows: a score of 5, 4, 3, 2 and 1 is given to the response categories A, B, C, D and E respectively, denotes strongly agree, agree, undecided, disagree, and strongly disagree. For negative items viz item numbers such as 1, 2, 4, 6, 7, 9, 11, 12, 14 and 17, the scoring is done in the reverse order of, that is, a score of 1, 2, 3, 4, and 5 is assigned to the response categories A, B, C, D and E respectively. The maximum score is 100 and minimum score is 20.

Difficulty in Regulating Emotions Scale (DERS)

The standardized version of Difficulty in Emotion Regulation Scale comprised 29 items. This scale is scored based on the responses ranging from 1 to 5, where 1 is almost never, 2 is sometimes, 3 is about half the time, 4 is most of the time and 5 is almost always. This scale has six dimensions such as lack of awareness of emotional responses, lack of clarity of emotional responses, non acceptance of emotional responses, limited access to emotion regulation strategies perceived as effective, difficulties controlling impulses when experiencing negative emotions and difficulties engaging in goal directed behaviour when experiencing negative emotions. Following are the subscale related items:

Lack of awareness of emotional responses - 1, 6, 13, 27.

Lack of clarity of emotional responses - 3, 4, 5

Non acceptance of emotional responses-2,10,15,20,25.

Limited access to emotion regulation strategies perceived as effective - 9, 14, 19, 26.

Difficulties controlling impulses when experiencing negative emotions - 7, 8, 16, 17, 18, 22.

Difficulties engaging in goal directed behaviour when experiencing negative emotions - 11, 12, 21, 23, 24, 28, 29.

DERS was scored so that the overall score, as well as all subscale scores, reflect greater difficulties in emotion regulation. Thus the maximum expected score obtaining for a subject is 145 and minimum score is 29. Higher scores in the scale indicate greater difficulties in emotion regulation.

IBS- PD (Psychological Distress) Scale

The psychological distress Scale comprised 21 items. This scale is scored based on the responses ranging from 1 to 5, where 1 is almost never, 2 is sometimes, 3 is about half the time, 4 is most of the time and 5 is almost always. This scale has five dimensions such as stress, depression, anxiety, somatisation and catastrophizing. The sum of the scores for all the items constituted the total score on the scale. All the items were positive. Items 1- 5 included stress, 6- 10 depression, 11 - 13 anxiety, 14-17 catastrophizing and 18-21 somatization. The maximum and minimum scores obtained in this inventory were 105 and 21 respectively.

Section 4: Statistical Techniques Used

"Analysis refers to the computation of certain measures along with searching for patterns of relationship that exist among data groups" (Kothari, 1985). According to Giles (1974), "in the process of analysis, relationships or differences supporting or conflicting with original or new hypotheses should be subjected to statistical tests

of significance to determine with what validity can be said to indicate any conclusions". Analysis of data involves a number of closely related operations which are performed with the purpose of summarising the collected data and organizing thesis in such a manner that they answer the research questions. It involves categorizing, ordering, obtain answer to research questions. The purpose of analysis is to reduce data to intelligible and interpretable form so that the relation of research problems can be studied and tested.

Major statistical techniques used for the analysis of data were as follows:-

- Descriptive statistics
- t test
- Correlation
- Regression
- ANOVA
- Moderation Analysis

Descriptive Statistics

"Set of statistical procedures used to organize, summarize and present the data collected in a research project" (Runyon et al., 1996). Descriptive statistics are a set of statistical tools used to help understand and discuss the data. These tools include graphs as wells as mathematical calculations such as mean, median, mode, skewness, kurtosis, etc. An important characteristic of descriptive statistics is that they are objective and follows a set of consistent rules using descriptive statistics is

in the convention that everyone can understand and that helps remove subjective errors when interpreting scores.

Student 't' Test

A ‘t’ test is any statistical hypothesis test in which the test statistic follows a student's t-distribution if the null hypothesis is supported. It can be used to determine if two sets of data are significantly different from each other, and is most commonly applied when the test statistic would follow a normal distribution if the value of a scaling term in the test statistic were known. When the scaling term is unknown and is replaced by an estimate based on the data the test statistic (under certain conditions) follows a student's distribution.

Analysis of variance

"Analysis of variance is one of the most powerful tools of statistical analysis to test the hypothesis whether the means of several samples have significant difference or not. Analysis of variance furnishes a technique for testing simultaneously the significance of difference among several means" (Gupta, 1989). The following are the major assumptions in the use of analysis of variance technique. The populations from which the various samples are selected are normally distributed. The populations from which the samples are drawn have means and variances. That the individuals being observed have been randomly selected from the populations represented by samples, so that the dispersion of sample observations is the result of the sampling errors under null hypothesis. A

significant difference in sample means implies the existence of bias in one or more of the means.

One-way Analysis of Variance

In one-way analysis of variance, observations are classified into group or samples on the basis of single criterion. In such an analysis of variance, there are 'k' samples, one from each of 'k' normal populations with common variance (σ^2). Common variance means that each population has the same variance.

The null hypothesis to be tested is:

H0: $\mu 1 = \mu 2 = \mu 3 = ... = \mu 4$ that is, the means of the populations are equal.

H1: At least two of the μi are not equal. If the hypothesis is rejected, we assume that 'μ' are significantly different. If it is accepted, we cannot say that μi are identical. We can only say that they are not significantly different. The method to be employed, utilizes a comparison between the variances computed in two different ways; one variance will be computed as the variance between the samples (S^2 1) and the second will be computed as the variance within the samples (S^2 2). F ratio is computed with the variance between the sample means as the numerator and the variance within sample means as the denominator. The calculated value of F ratio is compared with the table value of F at 5% or 1% level of significance for given number of degrees of freedom. If F (calculated) > F.05 or F.01, the null hypothesis is rejected, that means that the difference between sample means is significant. If F (calculated) < F.05 or F.01, then the null hypothesis is accepted, that means, the difference between sample means is not significant.

Correlation

Correlation refers to the relationship of variables. It is a statistical technique which measures and analyses the degree or extent to which two variables or phenomena fluctuate with reference to each other. Correlation denotes the interdependence between two variates. Gupta, 1989 stated "when the relationship is of a quantitative nature, the appropriate statistical tool for discovering and measuring the relationship and expressing it in brief formula is known as correlation.

On the basis of the nature of relationship between the variables, i.e., the direction in which changes take place in them or the ratio by which they change, correlation may be

1. Positive or negative
2. Simple, partial or multiple
3. Linear or non linear

1. Positive or negative correlation .'Positive' or 'direct' correlation refers to the movement of the variables in the same direction. As one variable increases the other also increases or as one decreases, the other also decreases. 'Negative' or 'inverse' correlation refers to when one variable increases or decreases, the other moves in the reverse direction.

2. Simple, partial or multiple Correlation. These terms refers to the number of variables involved in the study and to the techniques involved in measuring the correlation. When only two variables are involved, the analysis of relationship between items is described as simple correlation. The variable

which is independent is called the subject series, while dependent variable is called relative series. When more than two variables are involved they are to be studied in relation to their relationship with one another, it is called multiple correlation. In partial correlation the relationship of two variables is studied by eliminating the effect of other variables from both.

3. Linear or non-linear correlation. The distinction between linear and nonlinear correlation is based upon the consistency of the ratio of change between the variables under study. If the ratio of change between two variables is uniform then there will be linear correlation between them. In non-linear correlation the amount of change in one variable does not bear a constant ratio to the amount of change in the other variable.

Karl Pearson's coefficient of correlation is a widely used measure of the degree of relationship between two variables which is represented by the symbol 'r'.

Multiple Regressions

The association between a criterion variable and two or more predictor variables is called multiple correlation. Making predictions in this situation is called multiple regression. Multiple regression is aimed to examine the relation between dependent (predicted) variable and several independent (predictor) variables. There are several types of multiple regression analyses such as standard, hierarchical, stepwise, set wise, etc.

Stepwise Multiple Regression

Stepwise multiple regression would be the question of what the best combination of independent (predictor) variables would be to predict the dependent (predicted) variable. In stepwise regression, predictor variables are entered into the regression equation one at a time based upon statistical criteria. At each step in the analysis the predictor variable that contributes the most to the prediction equation in terms of increasing the multiple correlation, R is entered first. The process is continued only if additional variables add anything statistically to the regression equation. When no additional predictor variables add anything statistically meaningful to the regression equation, the analysis stops. Thus, not all predictor variables may enter the equation in step wise regression process of a step wise multiple regression (Aron et al., 2006)

Step 1: Search all potential predictor variables and find the best predictor of the criterion variable.

Step 2: Test significance

If significant, → stop.

If significant, include this predictor variable in all further steps, and → continue

Step 3: Search all remaining potential predictor variables for the best single variable to combine with → stop those already included for predicting the criterion variable----Stop

If no addition is significant, → Stop.

If an addition is significant, include this variable in all further steps, and → Repeat step 3 to search for the next best remaining predictor variable.

Stepwise regression goes through a step by step procedure in a computer programme first picking out the single variable that accounts for the most variance in the criterion variable. If the proportion of variance accounted for by this predictor is significant, the process goes on to the next step. The next step is to pick out the predictor variable that in combination with this first one has the highest R^2. The computer then checks to see whether this combination is a significant improvement over the best single predictor variable alone. If it is not, the process stops. If it is a significant improvement, the computer goes on. The next step is to pick out which of the remaining predictor variables, when combined with these first two, gives the highest R^2. Then, this combination is checked to see if it is a significant improvement in prediction over and above just the first two predictors. The process continues until either all the predictor variables are included or adding any of the remaining ones does not give a significant improvement. This procedure is called "stepwise" because it proceeds one step at a time.

Moderated Regression Analysis

In statistics, moderation occurs when the relationship between two variables depends on a third variable. The third variable is referred to as the moderator variable or simply the moderator. The effect of a moderating variable is characterized statistically as an interaction; that is, a qualitative (e.g., sex, race,

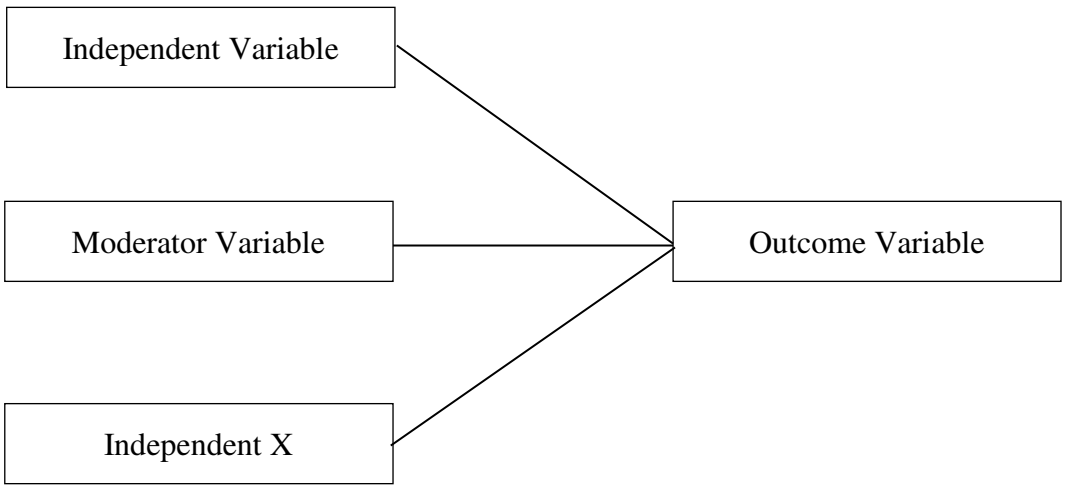
class) or quantitative (e g., level of reward) variable that affects the direction and/or strength of the relation between dependent and independent variables. Specifically within a correlational analysis framework, a moderator is a third variable that affects the zero-order correlation between two other variables. In analysis of variance (ANOVA) terms, a basic moderator effect can be represented as an interaction between a focal independent variable and a factor that specifies the appropriate conditions for its operation. In general terms, a moderator is a qualitative (e.g., sex, race, class) or quantitative (e.g., level of reward) variable that affects the direction or strength of the relation between an independent or predictor variable and a dependent or criterion variable (Baron & Kenny, 1986).

Moderation analysis in the behavioural sciences involves the use of linear multiple regression analysis or causal modelling. To quantify the effect of a moderating variable in multiple regression analyses, regressing random variables Y on X, an additional term is added to the model. This term is the interaction between X and the proposed moderating variable.

Thus, for a response Y and two variables x_1 and moderating variable x_2,

$$Y = b_0 + b_1 x_1 + b_2 x_2 + b_3 \left(x_1 \times x_2 \right) + \varepsilon$$

In this case, the role of x_2 as a moderating variable is accomplished by evaluating b_3, the parameter estimate for the interaction term



In the present study, moderated regression analysis is conducted to ascertain the precise relationship between;

(i) Health related quality of life and Emotion regulation difficulties on Psychological distress.

(ii) Self Esteem and Emotion regulation difficulties on Psychological distress

CHAPTER 3

TEST DEVELOPMENT

- IBS PSYCHOLOGICAL DISTRESS SCALE (IBS-PD)
- STANDARDISATION OF TOOLS

This chapter discusses the development of test required for conducting the present study "A psychological test is essentially an objective and standardized measure of a sample of behaviour" (Anastasi&Urbina, 1997).

For the present study, the investigators developed research instrument due to its unavailability and also to meet the requirements of the study. The tool developed by the investigators is IBS- psychological distress scale(IBS-PDS), It is an instrument to assess the psychological problems of IBS patients.

PSYCHOLOGICAL DISTRESS SCALE

Psychological factors may play a role in the persistence and perceived severity of abdominal symptoms in IBS patients and it contribute to impairment of quality of life and excessive use of health-care services. For these reasons, coexisting psychological conditions are common in referral centers and may include:Anxiety, Depression, Somatization, Hypochondriasis, Symptom-related fears and Catastrophizing(Quigley et al, 2015).

The advent of the 19th century saw the emerge of the idea that emotions probably affect the sensorimotor function of the gastrointestinal tract. Much of the evidence researched during that time is still worthy (Oudenhove et al., 2010). This model includes all probable liable factors for the pathogenesis and clinical

expression in IBS. According to the biopsychosocial approach symptoms can be regulated by psychological and social effects (Drossman et al., 2006). The connection between psychological elements and gastrointestinal function (sensation, motility, inflammation) is via the brain-gut axis. This entails a bidirectional association system between the gastrointestinal tract and the brain found in neural, neuroimmune and neuroendocrine pathways (Jones et al., 2006).

Psychosocial factors influencing IBS are life stress, Abuse history, Mood disorders (depression,anxiety), Somatization, personality (neuroticism), Maladaptive coping, social support and Education (Chang, 2011 & Bradford, 2012). IBS patients fared worse in the areas of daily function, days in bed, psychological distress and pain severity(Drossman et al, 1996) IBS patients shows significantly impaired QoL and they express higher levels of psychological distress, specifically of anxiety-related states. Generally, research shows increased levels of anxiety in IBS patients compared to healthy controls (Cho et al,2011; Quigley,2005; Sugaya&Nomura, 2008). Some IBS patients have psychiatric comorbidities and suffer from anxiety-spectrum disorders; however most of them have heightened but subclinical levels of anxiety-related states(Levy et al., 2006).

Stressful life events have long been considered one of the key elements in the onset and/or exacerbation of IBS since its earliest descriptions (Chaudhary& Truelove, 1962), with a majority of patients acknowledging the role of stress in their condition (Blanchard et al.,2001). Psychologic assessment of IBS patients shows high prevalence of self-reported stress (Mendel et al., 1970).

The introduction of the bio psychosocial model has led to an increased focus on the psychological state of patients and anxiety and depression are prevalent in patients with IBS that seek health care (Whitehead et al., 2002). A meta-analysis of ten studies showed that people with IBS had significantly higher scores of depression and anxiety than healthy controls (Fond et al., 2014). It is unclear however, in what direction these associations work and both top-down and bottom-up processes has been suggested. Creed et al., (2006) suggests that psychological symptoms modulate the experience of symptoms in IBS and thus illness behavior such as for example the decision to seek medical attention. However, Drossman (2006) suggests a bidirectional association where psychological symptoms intensify gut related symptoms, which in turn intensifies the psychological stress, i.e., a vicious circle. Nicholl et al., (2008), found that exposure to sleep problems, anxiety, depression and other psychological distress in a cohort free of IBS predicted IBS symptoms at 15 months follow-up, which suggests that psychological factors precedes IBS, but there is also a more recent follow-up study implicating the importance of bidirectional interaction between the brain and the gut regarding the development of IBS symptoms (Koloski et al., 2011).

Patients often report that stress worsens their symptoms, and chronic stress affects both gastrointestinal function and central stress response systems (Chang, 2011), Psychosocial circumstance such as stressful incidents and psychological distress can affect digestive functions, symptom perception, illness behavior and therefore health daily function and quality of life (Drossman et al.,2006)

The experience of stressful life events can also determine symptom exacerbation among adults with IBS and frequent health-care seeking (Creed et al., 2006; Palsson & Drossman, 2005). Thus, the severity of abdominal pain was higher in patients exposed to emotional stress (Devanarayana et al., 2011) and stress exacerbated abdominal distension in one third of IBS patients (Chang et al., 2001). In addition, recent data showed that environmental factors and psychosocial stressors (for example history of being psychologically abused, less than 6 hours of sleep and irregular diet) influenced the progression from an IBS non-consulter to an IBS patient (Fujii & Nomura, 2008).

DEFINITIONS

Psychological distress is the deviation from some objectively healthy state of being. It implies maladaptive patterns of coping. It is mild psychopathology with symptoms that are common in the community. It is negative feelings of restlessness, depression, anger, anxiety, loneliness, isolation and problematic interpersonal relationships (adapted definition from Burnette & Mui, 1997).

Mirowsky and Ross (1989) add that psychological distress is the unpleasant subjective state of depression and anxiety (being tense, restless, worried irritable and afraid), which has both emotional and psychological manifestations. They further added that there is a wide range of psychological distress, ranging from mild to extreme, with extreme levels being considered as mental illness such as schizoaffective disorder. In another study of Chalfant et al., (1990), psychological distress is defined as a continuous experience of unhappiness, nervousness, irritability and problematic interpersonal relationships.

Psychological distress is largely defined as a state of emotional suffering characterized by symptoms of depression (e.g., lost interest; sadness; hopelessness) and anxiety (e.g., restlessness; feeling tense) (Mirowsky & Ross, 2002). These symptoms may be tied in with somatic symptoms (e.g., insomnia; headaches; lack of energy) that are likely to vary across cultures (Kleinman, 1991).

Measurement and dimensions related to Psychological Distress.

Other measures of Psychological distress

Numerous instruments have been used to assess the psychological factors of IBS patients. It can be seen from studies, Psychological distress measured by PGI Health questionnaire N-1. It was developed by Verma et al., (1985). It consists of 38 items based on Cornell Medical Index. The items yield scored on A (physical) and B (psychological) sections. The respondent is required to put a tick mark against questions he/she agrees with. The number of ticks on section A and B indicate the respective scores which can be then added up to give a total distress score also**.**

To measure the level of reported psychological distress in the IBS sample, the Brief Symptom Inventory-18 (BSI-18) was used. This instrument assesses the degree of psychological distress along three symptom dimensions: depression, anxiety, and somatization over the past week. This measure was chosen as it addresses all three of the psychological distress variables frequently noted in patients with IBS (Drossman et al.,2002)

The Kessler Psychological Distress Scale (K10) (Kessler et al., 2003) is another simple measure of psychological distress. The K10 scale involves 10 questions about emotional states each with a five-level response scale. The measure

can be used as a brief screen to identify levels of distress. The tool can be given to patients to complete, or alternatively the questions can be read to the patient by the practitioner.

Another instrument used to measure Psychological distress is, The 12-item General Health Questionnaire (GHQ12) was used to determine the rate of psychological distress among dental undergraduate students. The items on the GHQ-12 represent 12 manifestations of psychological distress, and respondents were asked to rate the presence of each of these manifestations in themselves during the last few weeks preceding the study period. A binary scoring method is used to evaluate responses (i.e., 0-0-1-1). Thus, responses can only be scored as zero or one. The minimum GHQ-12 total score was 0 and the maximum GHQ-12 total score was 12 ‘Caseness’ was defined as a total questionnaire score of 4 or more(Goldberg &Williams, 2010;Goldberg et al., 1997).

The State-trait anxiety inventory(STAI)(Speilberger et al.,1970) and the Beck depression inventory (Beck et al., 1961)are two questionnaires commonly used to assess the presence of anxiety and depression in IBS patients.

The Symptom Checklist-90-Revised (SCL-90-R) is a 90-item self-report symptom inventory developed by Leonard R. Derogatis in the mid-1970s to measure psychological symptoms and psychological distress (Derogatis & Unger., 2010). In 1988, Whitehead's group (Whitehead et al., 1988) administered the Symptom SCL-90-R in order to comparing IBS patients with IBS non-patients and normal subjects. They revealed that the IBS patients have higher level of psychological symptoms compared to other two groups.

In recent years, epidemiological studies have attempted to use less items to proficiently measure and monitor the extent of psychological distress in the widespread community (Sunderland et al., 2012). For the purpose of measuring depression and anxiety few scales have been used so far. These include the Beck Depression Inventory, (Beck et al.,1961)the Hospital Anxiety and Depression Scale (Zigmond & Snaith, 1983). The Depression Anxiety Stress Scales (Parkitny & McAuley, 2010) and the Kessler 10-item (K10) Scale. (Kessler et al., 2002) The K10 is one of the most popular tools for screening psychological distress in the general population. (Kessler et al., 2003) K10 comprises 10 items, rated on 5-point Likert-type scales, which indicate the degree of psychological distress prevalent among persons (Kessler et al., 2002). The K10 has been established predominantly from western population samples. (Kessler, 2002; Furukawa et al., 2008; Andrews & Slade, 2007; Cairney et al., 2007)

Development of Psychological distress scale (IBS-PDS)

In order to meet the requirements of this research the investigators developed IBS-PDS for measuring the psychological problems of IBS patients. The development of an inventory is a very important step while doing research. There were essentially four segments in the development of an inventory.

These segments were

a) Variable selection,

b) Item formation

c) Item analysis and

d) Item Selection.

a) Variable selection

Relevant variables related to Psychological Problems of IBS patients were selected on the basis of the empirical research and theoretical reviews. These selected variables were highly related to Psychological distress. Selected variables were as follows:

- Stress
- Depression
- Anxiety
- Catastrophizing
- Somatization
- Neuroticism
- Irritability
- Low ego strength
- Health beliefs
- Hypochondriacal beliefs

The investigator through discussions and interviews with the experts in clinical psychology, Psychiatry, Gastroenterology, etc. selected the most relevant variables among the above variables required for measuring the Psychological Distress in IBS patients. These variables were categorized into five dimensions. These dimensions are:

1. Stress
2. Depression

3. Anxiety

4. Catastrophizing

5. Somatization

b) Item Formation

The second step in the development of Psychological Distress Scale was preparation of items for the test. According to Bean (1953), an item is defined "as a single question or task that is not often broken down into any smaller units". Nunnally (1959), referred to items as the "lowest denominator of a test which is scored".

- Items should be phrased in such a manner that there is no ambiguity regarding its meaning.
- The item should not be too easy or too difficult.
- Item should have discriminating power, that is, it must clearly distinguish between those who possess problem and those who do not.
- Items should be relevant to the IBS patients as well as for appropriate age groups.
- Items should be applicable to the laymen.
- Items should be equally relevant to both males and females.
- They should not present difficulty in reading.

- Items should not be such that its meaning dependent upon another item and/or it can be answered by referring to other item.
- They should be assignable to one of the five subscales.

Numerous items were prepared according to the above principles. The items were prepared in Malayalam (mother tongue of people of Kerala). These items were shown to the experts in Psychology, and Malayalam Literature. Expert's suggestions were sought in order to make any kind of omissions, clarity of thought or simplicity of language. The items were modified according to the expert suggestions. Finally 26 items constituting 5 dimensions were made.

Meaning and References of the five dimensions

1. STRESS

Stress is a state of physical or psychological strain which imposes demands for adjustment upon the individual. It may be internal or environmental, brief or persistent. If excessive or prolonged, it may overtax the individuals resources and lead to a breakdown of organized functioning or compensation. Types of situation that produce stress include frustrations, deprivations, conflicts and pressures, all of which may arise from external or internal sources.

Stress adversely affects the normal function of GI tract. There are many studies concerning the effect of stress on the function of the GI (gastrointestinal) system (Collins, 2001). For instance, studies have shown that stress affects the absorption process, intestinal permeability, mucus and stomach acid secretion, function of ion channels, and GI inflammation (Collins, 2001; Nabavizadeh et

al.,2011). Stress also increases the response of the GI system to inflammation and may reactivate previous inflammation and accelerate the inflammation process by secretion of mediators such as substance P (Collins, 2001)

Stress can also alter the functional physiology of the intestine (Kiliaan et al., 1998). Many inflammatory diseases, such as Crohn's disease and other ulcerative-based diseases of the GI tract, are associated with stress (Hommes et al., 2002). It has been suggested that even childhood stress can lead to these diseases in adulthood (Schwartz & Proctor. (2000). Irritable bowel syndrome, which is a disease with an inflammatory origin, is highly related to stress (Gonsalkorale et al., 2003)

Stress also affects movement of the GI tract. In this way, it prevents stomach emptying and accelerates colonic motility (Mönnikes et al., 2001). In the case of irritable bowel syndrome, stress increases the movement (contractility and motility) of the large intestine (Mönnikes et al., 2001)

2. ANXIETY

A pervasive feeling of dread, apprehension, and impending disaster. Anxiety should be distinguished from fear. Fear is a response to a clear and present danger; Anxiety is a response to an undefined or unknown threat which in many cases stems from unconscious conflicts, feelings of insecurity, or forbidden impulses within ourselves. In both, however the body mobilizes itself to meet the threat, and muscles become tense, breathing is faster, and the heart beats more rapidly.

The American Psychological Association (APA) defines anxiety as “an emotion characterized by feelings of tension, worried thoughts and physical changes

like increased blood pressure." Anxiety is defined as "a painful or apprehensive uneasiness of mind usually over an impending or anticipated ill" (Merriam-Webster, 2012). The anxiety response pattern is a complex blend of unpleasant emotions and cognitions that is both more oriented to the future and much more diffuse than fear (Barlow et al., 2002). It is the subjectively unpleasant feelings of dread over anticipated events (Davidson, 2008). Anxiety is a feeling of uneasiness and worry, usually generalized and unfocused as an overreaction to a situation that is only subjectively seen as menacing (Bouras & Holt, 2007).

Anxiety is often accompanied by muscular tension, (American Psychiatric Association, 2013), restlessness, fatigue and problems in concentration. Anxiety is closely related to fear, which is a response to a real or perceived immediate threat; anxiety involves the expectation of future threat (American Psychiatric Association, 2013).

3. DEPRESSION

The term depression is used for a complex of symptoms, a 'depressed', despondent condition, unresponsiveness and loss of drive, motor and mental inhibition, typically depressive ideas and definite somatic disorders. In primary care, somatic symptoms play an important role in the manifestation of depressive disorders (Barkow et al., 2004)

The Oxford English Dictionary defines depression as "a mental condition characterized by severe feelings of hopelessness and inadequacy, typically accompanied by a lack of energy and interest in life."

4. CATASTROPHIZING.

Catastrophizing is a maladaptive coping strategy defined as “a negative cognitive process of exaggerated negative rumination and worry” (Keogh & Asmundson, 2004). Pain catastrophizing is the tendency to magnify the seriousness of pain, or feel helpless about it either in direct response to pain or in anticipation of painful stimuli (Sullivan et al., 2001). Irritable bowel syndrome patients demonstrate greater catastrophizing scores than controls (Heymen et al., 2010). Pain catastrophizing is a significant predictor of GI symptoms related to pain (Lackner et al., 2011). Catastrophizing, more than pain severity, influences the variance of QOL in IBS (Seres et al., 2008).

The construct catastrophizing is broadly perceived as an exaggerated negative “mental set” that comes to be when an individual is experiencing pain or is anticipating a pain experience (Sullivan et al., 2001). It is a “method of cognitively coping that is characterized by negative self-statements and overly negative thoughts and ideas about the future” (Keefe et al., 1989). Catastrophizing has been associated with increased pain severity, disability and functional limitations, decreased quality of life, and worsening disease activity as measured by physiologic indices in those with rheumatoid diseases (Edwards et al., 2006). Specifc to IBS, Tilburg et al., (2013) observed a direct association between catastrophizing and IBS severity; in addition, catastrophizing was found to mediate the relationship between anxiety and IBS severity. Individuals with IBS often experience comorbid psychiatric disorders such as anxiety, depression, and somatization (Whitehead et al., 2002; Whitehead, 2007).

5. SOMATIZATION

Somatization is a tendency to experience medically unexplained somatic symptoms, to attribute them to physical illness, and to seek medical help for them (Lipowski, 1989). Various mechanisms may contribute to somatization, including sensitisation of the brain to bodily sensations (Eriksen & Ursin, 2002), physiological abnormalities in the nervous and endocrine systems (Sharpe & Carson, 2001) heightened awareness of bodily sensations. (Burton, 2003) and inappropriate illness beliefs and sickness behavior (Mayou & Farmer, 2002). Experiencing one or just a few medically unexplained symptoms (e.g. dizziness or upset stomach) is common in "normal" people under stressful circumstances (Eriksen & Ursin, 2002). However, experiencing many unexplained symptoms from different organ systems (e.g. dizziness ánd upset stomach ánd palpitations ánd muscular aches) implies somatization as described above (Mayou & Farmer, 2002)

Somatization is a tendency to experience and communicate psychological distress in the form of somatic symptoms and to seek medical help for them (APA, 1994; Anderson, 1981). More commonly expressed, it is the generation of physical symptoms of a psychiatric condition such as anxiety.

Somatization is a worldwide phenomenon. (Baker, 1989). A somatization spectrum can be identified, up to and including at one extreme somatization disorder

Lipowski (1968) defined somatization as “the tendency to experience, conceptualise and / or communicate psychological states or contents as bodily sensations, functional changes or somatic metaphors”. This definition puts emphasis

on the patient's interpretation of the symptoms. Kellner (1991) conceptualises somatization as involving the "occurrence of physical symptoms that are not supported by recognisable or sufficient physical pathology". This definition does not rule out the presence of organic pathology altogether, which Lipowski's definition appears to do, neither does Kellner's definition make any assumption that psychological or emotional states are at the root of the problem, which Lipowski's explicitly does.

c) Item Analysis

The third segment in the construction of the inventory was item analysis. Item analysis is a technique through which those items which are valid and suited to the purpose are selected and the rest are either eliminated or modified to suit the purpose (Singh, 2002)

Pilot Study

A pilot study is required for the item analysis of Psychological distress scale. For this, the inventory was administered to 50 participants.

Participants

A sample of 50 IBS patients selected for the study. Participants included both males and females belonging to the age group of 20-70 years.

Administration

Participants were approached individually and explained about the concept of Psychological distress Scale. The investigator gave a clear explanation about the

purpose of the study. Psychological distress Scale was given to the selected samples and they were asked to read the instructions clearly which was given at the top of the Scale. Clarifications regarding the Scale were rectified before the respondents started filling the Scale. Scale collected was verified to find out the incomplete and improper ones and they were omitted.

Scoring

The Scale consisted of positive items only. A score of 1, 2, 3, 4, 5 was given for the items. The lowest score in the Scale is 26 and highest score is 130.

d. Item selection

Psychological distress scale consisted of 5 subscales, with a total of 26 items for item analysis. The response sheets were arranged in order of the criterion score (total score) in the ascending order. 27 percent of the subjects with the lowest total score and 27 percent of the subjects with the highest total score were taken. The respondents were classified into high score group and low score group. In order to find out the significant difference between the low and high groups with respect to the items of psychological distress scale, the‘t’ value was calculated. ‘t’ values relating to the items are shown in Table 7.

Table 7

't' Values of the 26 Items of the IBS PD Scale

Item No	't ' Value	Item No	't ' Value
1	8.81**	14	3.21**
2	6.33**	15#	0.69
3	6.13**	16#	1.33
4	8.59**	17	2.61**
5	5.15**	18	4.47**
6	3.34**	19	2.75**
7	2.66**	20	4.52**
8	3.46**	21#	1.89
9#	0.22	22	2.77**
10	6.36**	23#	0.86
11	5.49**	24	4.73**
12	3.22**	25	5.31**
13	3.22**	26	3.25**

**.05 Significance level

Note: Items removed from the final draft of the scale are shown in hash mark (#).

The 't' value indicates the level of significant difference between low and high group with respect to these statements. When the 't' value is equal or greater than 1.96 (at 0.05 level of significance), significant difference can be inferred between two groups. Among the 26 items in the Psychological distress Scale , five items were removed due to insignificance. Finally 21 items were selected for the preparation of the final draft of the IBS Psychological Distress Scale (IBS PDS). Copy of the draft scale and original are attached in the Appendix E &F.

Reliability

An appropriate reliability index should be ensured during test development. Reliability index of a test score indicate its stability. This means stability of test scores over time (test-retest), stability of item scores across items (internal consistency), or stability of ratings across judges, or raters, of a person, object, event and so on (inter-rater reliability) (Kline, 2005). For this investigation, reliability was assessed using Cronbach Alpha and it was found to be 0.852. Reliability for the subscales such as stress, anxiety, depression, catastrophizing and somatization are 0.867, 0.658, 0.584, 0.402 and 0.523 respectively.

Validity

"Validity of a test is the degree to which the test actually measures what it purports to measure. Validity provides a direct check on how well the test fulfills its function" (Anastasi & Urbina,1997). The scale shows good face validity

STANDARDISATION OF THE TOOLS

Translation, adaptation, and re-administration

TRANSLATION OF IBS -36

Since there are no physiological markers for IBS disease, it can be recognized only by its clinical features. Because there is no single known etiology for IBS, therapy is aimed at symptom reduction and improving patient Quality of life (QOL). So measuring QOL is very relevant when studying about Irritable Bowel Syndrome. Measures commonly used to study Quality of Life in IBS are like the

IBSQOL (Patrick et al., 1998), the IBSQOL (Hahn et at., 1997) or the IBS-HRQOL (Wong et al., 1998). The IBSQOL and the IBS-HRQOL were considered but not used due to lack of proper validation (Groll et al., 2002). Although the IBS-QOL is the most commonly used measure of Quality of Life in IBS, it has been critiqued for only having been validated in an all-female population (Drossman et al., 2000), and because its response to change was evaluated against a telephonic self-report rather than a self-report plus expert clinical evaluation (Patrick et al., 1998).

A condition-specific tool is necessary to accurately evaluate the exact situation of the IBS patients. Roll et al., (2002) developed a questionnaire to meet this purpose, it was IBS-36. The IBS-36 addressed all the short-comings of the previous measures and was consequently selected as the most suitable measure of Quality of Life in IBS for this study. Questions in this tool asked to mark how IBS impacted their QOL and activities of daily living. Areas covered were impact on family life, work, leisure, sleep and pain.

To suit the tool for the current samples IBS-36 had to translate into the mother tongue of the participants that is Malayalam. In cases where a formal translation was not available, questionnaires were translated using forward-translation and back-translation following WHO guidelines for the process of translation of questionnaires (WHO, 2016).

Table 8

't' Value of each Items of IBS-36 Scale

Item No.	t value	Item No.	t value
1	5.16**	19	3.00
2	8.48**	20	3.76**
3	4.69**	21#	0.97
4	6.98**	22	3.36**
5	2.89**	23	2.59**
6	5.10**	24	2.78**
7	4.39**	25	2.91**
8	5.60**	26	3.07**
9	3.57**	27#	0.47
10#	1.75	28	2.9**
11	2.83**	29#	1.59
12	3.67**	30	1.93**
13	3.59**	31#	1.68
14	2.25**	32	2.36**
15	2.63**	33#	0.89
16	2.86**	34	1.97**
17#	0.798	35#	1.00
18#	1.05	36	5.04**

**0.05 Significance level

Note: Items removed from the final draft of the scale are shown in hash mark (#).

The table 8 shows that after standardization of the Malayalam scale, items 10, 17, 18, 21, 27, 29, 31, 33 and 35 were removed from the final scale. Copy of the draft and original attached in the appendix A&B.

Reliability and Validity

"The Chronbach's alpha was used to assess the instrument reliability. The reliability coefficient of IBS- 36 was found to be 0.731for the total scale. Scale shows good face validity"

DIFFICULTIES IN EMOTION REGULATION SCALE (REVISED)

Difficulties in emotion regulation scale was adapted from the original scale developed by Gratz and Roemer (2004). The present research utilized the adapted version of Difficulties in emotion regulation scale by Milu and Jayan (2014). Since the present study involves Patient population, the Scale was standardized in Patients. The copy of the original scale is attached in the appendix D.

Item Analysis

Item analysis is a statistical technique to find out and select the best items suited for the study. A pilot study was conducted for the adaptation and restandardization of the scale. Difficulties in Emotion Regulation Scale revised and standardized by Milu and Jayan (2014) constituted 29 items. Difficulties in Emotion Regulation Scale along with scoring sheet were given to the participants. Instructions were given to the patients regarding the scale. Individual doubts were cleared and confidentiality was assured. The collected response sheets were scored. The total score for each individual was obtained by finding out the sum of the scores for each dimension. Thus the subject could score from a minimum of 29 to and maximum of 145. The high score suggested greater difficulties in emotion regulation. The response sheets were arranged in order of the criterion score (total

score) in the ascending order 27 percent of the subjects with the lowest total score and 27 percent of the subjects with the highest total score were taken. The respondents were classified into high score group and low score group.

Item Selection

Difficulties in Emotion Regulation Scale comprised 6 dimensions, with a total of 29 items for item analysis. Response sheets having the highest criterion score counted and constituted the upper group. Similarly response sheets having the lowest criterion score constituted the lower group. The ‘ t’ value of the items of the low and high group was then computed. The value of ‘t’ obtained is a measure of the extent to which a given statement differentiated between the high and low group. When the ‘t’ value is equal or greater than 1.96 (at 0.05 level of significance) and 2.58 (at 0.01 level of significance), significant difference can be inferred between two groups. Items which indicated significant difference between high and lowest groups were included in the final draft of questionnaire shown in Table 9.

Table 9

The 't' Values of the 29 Items of Difficulty in Emotion Regulations

Item No	't' value	Item No	't' value
1	2.52**	16	7.55**
2	3.68**	17	3.95**
3	7.21**	18	4.58**
4	6.20**	19	5.91**
5	3.90**	20	7.74**
6	2.31**	21	581**
7	4.37**	22	7.83**
8	5.37**	23	3.55**
9	2.34**	24	5.29**
10	5.91**	25	4.64**
11	7.97**	26	4.75**
12	5.30**	27	4.00**
13	3.07**	28	4.81**
14	5.39**	29	3.20**
15	5.73**		

**P < 0.05

From item analysis, it was revealed that all the items in the Difficulty in Emotion Regulation Scale revised by Milu and Jayan (2014) showed significant difference between low and high score groups. Hence all the items in the scale were selected for the final scale of Difficulty in Emotion Regulation Scale. Subscales of the Difficulty in Emotion Regulation Scale consist of 6 subscales such as Lack of Emotional Awareness, Lack of Emotional Clarity, Difficulties controlling impulses when distressed, Difficulties Engaging in Goal Directed Behaviour when distressed, Non acceptance of Negative Emotional Responses and Limited access to emotion regulation strategies. Items are scored on a 5 point scale ranging from 1(almost

never) to 5 (almost always). Subscale scores are obtained by summing the corresponding items. Thus a subject could score from a minimum of 29 to maximum of 145. Higher scores on this inventory indicate greater difficulty in emotion regulation.

Reliability and Validity

Reliability is one of the important characteristics of a standardized test. “Reliability refers to the consistency of scores obtained by the same persons when they are reexamined with the same test on different occasions or with different sets of equivalent items, or under other variable examining conditions” (Ann Anastasi, 1997). In the present study, the reliability of the test has been analyzed by method of Chronbach Alpha and it was found to be 0.817 for the total scale. For the subscales the reliability was found to be Lack of Emotional Awareness (0.374), Lack of Emotional Clarity (0.589), Difficulties Controlling Impulsive Behaviors when Distressed (0.568), difficulties engaging in Goal Directed Behaviors when Distressed (0.516), Nonacceptance of Negative Emotional Response (0.651), Limited Access to ER strategies (0.630). “Validity of a test concerns what the test measures and how well it does so. It tells us what can be inferred from test scores” (Ann Anastasi, 1997). The scale shows good face validity".

CHAPTER 4

RESULT AND DISCUSSION

- **SECTION 1**

  PRELIMINARY ANALYSIS

- **SECTION 2**

  EXAMINING THE INFLUENCE OF DEMOGRAPHIC VARIABLES ON PSYCHOLOGICAL DISTRESS AND ITS DIMENSIONS

- **SECTION 3**

  CORRELATION ANALYSIS BETWEEN HEALTH RELATED QUALITY OF LIFE, SELF ESTEEM, DIFFICULTIES IN EMOTION REGULATION AND PSYCHOLOGICAL DISTRESS

- **SECTION 4**

  MULTIPLE REGRESSION ANALYSIS ON PSYCHOLOGICAL DISTRESS AND ITS DIMENSIONS

- **SECTION 5**

  MODERATION ANALYSIS

Section 1- Preliminary Analysis

Preliminary Analysis is a basic step in the Statistical Analysis which gives a clear picture of the nature of the distribution of variables. It involves the basic descriptive statistics like arithmetic mean, median, mode, standard deviation, skewness and kurtosis.

Arithmetic Mean

The most frequently encountered measure of central tendency is the arithmetic mean or mean. It is the total of a set of measurements divided by the number of measurements in the set.

Median

Median is another measure of central tendency. Median is that value which lies in the middle of a sample or population of values when they are arranged in order of magnitude. If the number of values is odd, the median is equal to the middle value. If the number of values is even, the median is equal to the mean of the two middle values (Daniel, 1977). Mode This is also another measure of central tendency. It is that value which appears most frequently in a set of data (Daniel, 1977)

Standard Deviation

The positive square root of the variance is called the standard deviation. Variance of a set of data is obtained by subtracting each value from the mean of all the values, squaring each of the resulting differences, adding the squared differences, and dividing this total by the number of values less 1. The standard deviation is expressed in the same units as the original observations and the mean, where as the variance is expressed as units squared (Daniel, 1977).

Skewness

Skewness is the symmetry or asymmetry of frequency distribution. If a distribution is asymmetrical and the larger frequencies tend to be concentrated toward the low end of the variable and smaller frequencies toward the high end, it is said to be positively skewed. If the opposite holds, the larger frequencies being concentrated toward the high end of the variable and the smaller frequencies toward the low end, the distribution is said to be negatively skewed (Fergusson, 1981).

Kurtosis

It refers to the flatness or peakedness of one distribution in relation to another. If one distribution is more peaked than another, it is known as leptokurtic. If it is less peaked, it is known as platykurtic. The normal distribution is known as mesokurtic, which falls between leptokurtic and platykurtic distributions (Fergusson, 1981).

Table 10 shows the basic descriptive statistics of variables such as Health related quality of life, Self esteem, Difficulty in regulating Emotions and Psychological distress.

Table 10

Basic Descriptive Statistics of Variables under Investigation.

Variables	Mean	Median	SD	Skewness	Kurtosis
HRQOL	51.68	49.00	15.12	.956	1.4888
Self Esteem	72.18	72.50	13.339	-.712	.686
Emotion Regulation Difficulties	71.97	69.50	15.646	.967	2.002
Psychological Distress	55.41	53.00	13.34	.63	-.19

While considering the first independent variable, Health related quality of life, the arithmetic mean and median are 51.68 and 49.00 respectively. Kurtosis value is 1.48, indicate that distribution is leptokurtic. Thus the variable, Health related Quality of life is found to be normally distributed among the population. Skewness value, which explains the symmetry of the distribution is 0.956, suggest that the distribution is moderately skewed.

The arithmetic mean and median for the variable, Self Esteem are 72.18 and 72.50 respectively. These values show that mean and, median are almost equal. The value of Kurtosis is 0.686 suggests that the distribution is considered as mesokurtic. The Skewness value for Self esteem is -.712 shows that the distribution is negatively skewed, suggests that the distribution can be considered as moderately skewed. The values of arithmetic mean and median of Difficulty in Regulating Emotions are

71.97 and 69.50 respectively. These values show that mean and median are almost equal.

Kurtosis value which explains the peakedness of distribution is 2.002 which mean that the distribution is mesokurtic.The measure of symmetry,skewness is .967 indicating that the distribution is positively skewed.

Regarding the dependent variable Psychological distress, the mean and median values are 64.65 and 63 respectively. Here mean and median are approximately equal. The Kurtosis value, which is -0.19 suggests that the distribution has flatter peak than the normal distribution that is platykurtic. Skewness value is 0.63 which explains that the distribution is positively skewed.

In the light of these findings, it can be inferred that the distribution is considered as normal. Since most of the variables are not much deviated from the normality, the variables under investigation are suitable to adopt Parametric Analysis.

Section 2: Examining the Influence of Demographic Variables on Psychological distress of IBS patients

To study the impact of demographic variables such as age, sex and marital status on Psychological Distress, one way Analysis is carried out. For this, the whole sample is classified into different groups on the basis of each of the demographic variables.

1. AGE ON PSYCHOLOGICAL DISTRESS

The whole sample is categorized into three groups on the basis of age of respondents. Group I constituted those between the age group of 20 to 40 years, Group II constitute those between the age group of 41 to 65 years and Group III constitute the age group of 66 years and above. To find out whether these three groups differ significantly in their mean values on Psychological Distress and its dimensions, One Way ANOVA is conducted.

Table 11

One way ANOVA of age on Psychological distress and its dimensions.

Dimensions of PD	Age						F Value
	20 to 40		41 to 65		66 Above		
	Mean	SD	Mean	SD	Mean	SD	
Stress	12.95	5.020	17.65	5.138	16.93	6.787	13.236**
Depression	14.06	3.836	16.73	5.064	15.00	5.318	5.436**
Anxiety	11.06	2.872	11.90	3.579	13.27	4.250	2.922
Somatization	11.91	3.600	12.50	3.098	13.00	2.976	.894
Catastrophizing	10.09	2.854	12.16	3.245	12.20	2.783	8.303**
Total PD	60.08	10.388	70.94	15.133	70.40	17.760	11.211**

** 0.01
* 0.05

Table 11 shows the Mean and Standard Deviation of three age groups on Psychological Distress and its dimensions. From the ANOVA Table, it is clear that three groups differ significantly on the dimensions of Psychological Distress such as stress, Depression and Catastrophizing. Their respective F values are 13.236 (p<0. 10), 5.436 (p<0.01)and 8.303 (p<0.01). It can be seen from the above finding that

the three age groups show significant difference with respect to these dimensions. For the dimensions such as Anxiety and Somatization the three age groups do not differ significantly. And the results show that all the three age groups differ significantly in overall Psychological distress and the F value is 11.211** ($p<0.01$).

When analyzing the mean and standard deviation of Psychological distress and its dimensions displayed in the Table 11 it can be clear that stress, depression and overall psychological distress is greater for group 2 (41 to 65). And for the dimensions Anxiety, Somatization and Catastrophizing mean value is greater for group 3 (66 and above).

Table 12

Multiple comparisons of Mean Differences (Scheffe Procedure) of groups based on Age.

Dimensions	Comparison group		
	I vs. II	II vs. III	I vs. III
Stress	-4.691**	0.712	-3.979*
Depression	-2.664*	-.938	-.938
Catastrophizing	-2.069*	-.039	-2.108
Total PD	-10.859*	.535	-10.323*

**p<.01, *p<.05

From the multiple comparison table it can be explain that the age group I (20 to 40) & II (41 to 65) and group I (20 to 40) & III (66 above) differ significantly on the dimension stress. For the dimension Depression group I (20 to 40) & II (41 to 65) differ significantly. In relation to the dimension Catastrophizing, groups I & II

differ significantly. And when considering overall psychological distress groups I & II, and groups I and III differ significantly.

Elyse et al., (2016) found that younger IBS patients with more medical comorbidities to be more distressed than their older counterparts and also they reported that psychological distress to be more common in young adulthood.

Since younger patients acts multiple roles and have various responsibilities, Medical comorbidities may not be perceived as manageable to them and also they have less experience with life stressors, and may be less prepared to cope with all these. But the older adults might adjust more readily because they consider multiple medical problems as a normative part of the aging process (Sarkisian et al., 2002).

2. SEX ON PD

The samples categorized into two groups on the basis of sex of respondents. Group I constitute males and Group II constitute females. To find out whether these two groups differ significantly in their mean values on Psychological Distress and its dimensions, t test was conducted.

Table 13

Mean Standard Deviation and 't' values of Psychological distress and its dimensions based on Sex.

Dimensions	Male (101)		Female(41)		t value
	Mean	SD	Mean	SD	
Stress	15.46	5.418	15.34	6.460	.107
Depression	15.14	4.454	15.78	5.322	.735
Anxiety	11.50	3.267	12.05	3.715	.864
Somatization	12.18	3.413	12.54	3.123	.581
Catastrophizing	10.74	3.032	12.39	3.262	8.240**
Overall Psychological distress.	65.02	13.241	68.10	17.003	1.329

Result of the't 'values indicate that participants differ significantly only for the dimension Catastrophizing. And the mean values of Females are greater than Males for the dimensions Depression, Anxiety and Somatization. Stress is greater for Males than females. And on overall psychological distress mean value of females is 68.10 which is greater than the mean value of males 65.02.

As identified in the present study that the males and females do not vary with respect to depressive symptoms, Mueen et al., (2006) also came up with the similar findings. According to the result, men and women do not differ in the depressive symptoms. This finding is in contrast with the study of Wilson and Cairns (1988) who stated that depression occur in women than men and suggested that instrumentality among men makes them less prone to depression than females. Thayer et al., (2003) also found depressive symptoms occurring in females as they think negative thoughts over and over and have significant difficulty thinking in

healthier ways. Consistent with the present finding that social phobia occur more females is supported by Costello et al., (2003). Huselid and Cooper (1994) reported that women have higher levels of psychological distress and depression.

On the dimension Catastrophization, mean value for male is 10.74 and females is 12.39 which is significantly differ and we can explain that females catastrophize more than males. The t value of catastrophizing is 8.240 From the Table, it is clear that Male and Females differ significantly.

Most of the researches conducted in IBS showing that the disorder predominantly affects women (Lovell & Ford,2012). Researchers have hypothesized that sex hormones may affect the mechanisms that regulate the brain-gut-microbiota axis which is finally involved in the development of IBS (Earls, 1987). IBS is well thought to have a shared etiopathogenesis with other functional and somatic symptom disorders (Mulak, Taché & Larauche, 2017). In a study done by Haug et al., (2004) also proved that females usually manifest psychiatric disorders as somatic complaints.

Studies conducted in this area show the similar results that women report more frequent catastrophic cognitions (Sullivan et al., 2001). There exist sex differences in relation to pain appraisals and catastrophizing and Women reported more catastrophizing (Keefe et al., 1989).

Research finding reveals that women engage in catastrophic thinking to a great extent than men. Sullivan et al. (1995) investigated that women obtained higher scores than men on the two subscales such as rumination and helplessness of

the Pain Catastrophizing Scale. Similar findings have been seen in a study. (Osman et al., 1997). Studies conducted on catastrophing difference have shown that women are more likely to catastrophize than men (Jensen, 1994).

Contrary to these results Some studies show no sex differences in catastrophizing (Edwards et al., 2006).

3. MARITAL STATUS ON PD

To study the influence of marital status on the Psychological distress the participants are categorized into two groups as Unmarried and Married. The 't' test carried out to study the significant difference between unmarried and married participants. Details of the results shown in the table 14.

Table 14

Mean, Standard Deviation and 't' values of Psychological Distress and its Dimensions Based on Marital Status

Dimensions	Unmarried		Married		t value
	Mean	SD	Mean	SD	
Stress	12.67	5.193	16.27	5.638	3.368**
Depression	13.89	3.552	15.89	4.988	2.220*
Anxiety	10.86	2.428	11.85	3.636	1.523
Somatization	11.25	2.912	12.72	3.402	2.309*
Catastrophizing	10.33	2.757	11.58	3.280	2.045*
Overall Psychological distress	59	18.215	68.31	12.684	1.562**

*p<0.05, **p<0.01

Results from table 14 reveals that the two groups significantly differ with regard to overall psychological distress and its dimensions such as Stress, Depression, Somatization and Catastropizing. The significant difference does not seen on Anxiety only. The mean of Married participants is 11.85 on anxiety which is greater than the mean of unmarried, 10.86. All the mean values are greater for married participants.

Similar results can be seen in some studies that the risk of getting IBS and psychological distress due to this disorder is higher among women, young adults, smokers and unmarried participants (Johansena & Jensenb, 2022). The influence of unhappy marital relationship on psychological status is revealed in a study that being unhappy in marriage may result in psychological problems such as depression, which may adversely affect health status (Beach et al., 1995). Opposing these findings When investigating the effects of some variables like marital status, education level, smoking, and alcohol use in the study participants, results reveal that these variables were not significantly different among patients with Irritable bowel syndrome (Nicholas et al., 1995).

Similar to the above findings investigation result shows that being unhappy in marriage may result in psychological problems such as depression, which may adversely affect health status (Beach et al., 1995). But there are studies which show contradictory findings like marital status, education level, smoking, and alcohol use were not significantly different among the subgroups (Nicholas et al., 1995). And another study revealed the fact that the risk was higher among women, young adults, smokers and unmarried participants (Johansena & Jensenb, 2022).

Section 3: Correlation Analysis between health related quality of life, Self esteem, Difficulties in Emotion Regulation and Psychological distress.

Correlation analysis is carried out to find out the relationship between the variables under study. Among the various correlation methods, Pearson Correlation method is adopted for the present study. Analysis is done to identify the relation between Health related quality of life, Self esteem, Difficulties in Emotion Regulation and Psychological distress.

Relation between Self esteem and Health Related Quality of Life

Self esteem refers to the extent to which the individual believes himself to be capable, significant, successful and worthy (Coopersmith, 1964)

The World Health Organization (WHO) has defined Quality of life as "the individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns". This definition includes six domains: physical health, psychological state, levels of independence, social relationships, environmental features, and spiritual concerns

Correlation analysis is done to find out the relation between Health related Quality of life and Self esteem. The relation between Health related Quality of life and Self esteem is shown in Table 15.

Table 15

Correlation between Self -esteem and Health related quality of life.

Variable	Health Related Quality of life
Self Esteem	-0.406**

**Significant at 0.01 level

Correlation coefficient value obtained is -.406, which is significant at 0.01 level indicates that there is a negative relationship between self Esteem and health related Quality of life in IBS patients. In this study the IBS-36 measures how much the Quality of life affected due to the Irritable syndrome and high score in the scale indicates greater problem. So it is clear that from this correlational analysis if Self Esteem is low, the Quality of life will be affected. And it is also clear from the following studies,

The results of a study support the hypothesis that individuals with IBS have certain personality traits concerning lower self esteem and inferior coping strategies than patients without any present or previous GI complaints. This study suggested that IBS Patients had higher levels of negative self esteem but lower levels of positive self esteem (Grodzinsky, 2015)

The present study supports the results of Bengtson et al. demonstrating that IBS cases tend to have lower self esteem compared with other patients, they felt more insecure and anxious (Bengtson et al., 2006).

Similar result is found in the study conducted by Ali et al., (2016). They investigated the prevalent relation of IBS to self –esteem, Depression and Quality of

life of female students in Health- related faculties at Umm Al–Qura University. They concluded that the prevalence of IBS among University students in health – related faculties is high. IBS is associated with depressive symptoms and low QoL, and low self esteem.

Taft et al., (2011) reported IBS patients perceive stigma about their illness, with increased prevalence of depression and anxiety, decreased self –esteem and self-efficacy and lower quality of life.

Relation between Overall Difficulty in Regulating Emotions and its Dimensions with Health Related Quality of Life

Table 16

Correlation between Overall Difficulty in Regulating Emotions and its Dimensions with Health Related Quality of Life.

Dimensions of difficulty in regulating emotions	HRQOL
Lack of awareness of emotional responses	0.298**
Lack of clarity of emotional responses	0.391**
Non acceptance of emotional responses	0.317**
Limited access of emotion regulation strategies	0.361**
Difficulties controlling impulses when experiencing negative emotions	0.530**
Difficulties engaging in goal directed behaviour	0.518**
Overall Difficulty in regulating emotions	0.532**

**Significant at 0.01 level, *Significant at 0.05 level

Findings from the correlation analysis suggest that all the dimensions of difficulty in regulating emotions and overall difficulty in regulating emotions are

significantly correlated with Health related Quality of life. All the correlations are positive.

Several studies have found that cognitive emotion regulation strategies are associated with adverse health outcomes, including depression, anxiety, or psychological maladjustment (Martin & Dahlen, 2005; Garnefski & Kraaij, 2006; Schroevers et al.,2007)

Specifically, a number of findings, both in the general adult population and in different samples across different types of stressful life event, have revealed that maladaptive cognitive emotion regulation strategies such as self-blame, rumination, and catastrophizing, show strong relations with indicators of emotional problems such as anxiety or depression (Garnefski et al 2001; Garnefski et al., 2002; Garnefski & Kraaij 2006)

Extremera and Rey(2014) presented in their study that HRQoL is associated with several cognitive emotion regulation strategies. The high use of rumination, catastrophizing, and self-blame were maladaptive strategies associated to reduced HRQoL.

Relation between Health Related Quality of Life and Dimensions of Psychological Distress

Table 17

Correlation between Health Related Quality of Life and Dimensions of Psychological Distress.

Sl. No.	Dimensions Of PD	HRQOL
1	Stress.	0.305**
2	Depression.	0.184*
3	Anxiety.	0.190*
4	Somatization.	0.240**
5	Catastrophizing.	0.132
6	Total psychological distress.	0.310**

**Significant at 0.01 level, *Significant at 0.05 level

The above table shows the results of the relationship between Psychological distress and its dimensions with the Health related quality of life. All the dimensions of Psychological distress such as Stress, Depression, Anxiety, Somatization, Catastrophizing and overall psychological distress are positively related with health related quality of life. Except the dimension catastrophizing all other variables are significantly correlated with health related quality of life.

The tendency to "catastrophize" is a major contributing factor to more intense pain and greater emotional distress in IBS Patients (Keefe et al., 1989). When comparing the QoL of IBS patients with other GI diseases or other chronic diseases such as asthma and migraine, it was found to be lowered (Jafari et al., 2013).

The psychotherapy is effective in alleviating symptoms and improving QoL in IBS patients, through the reduction of anxiety and depression since psychological distress, including depression, negative affect, stress, and other anxiety-related states, has been related to lower QoL in IBS patients (Jamali et al., 2014).

IBS has been reported to be associated with altered psychological and cognitive functioning (Kennedy et al., 2011). IBS patient's symptom severity, treatment choices and outcomes is influenced by their comorbid anxiety, depression, somatization, or history of sexual and physical abuse, and also their perspectives and coping styles (Whitehead et al., 2002). Disturbances in fundamental psychosocial aspects include early life stressors, psychological state (i.e., depression, anxiety, and somatization), coping strategies, learned health behaviors, and beliefs (Chang, 2011).

The dysfunctions within the gastrointestinal tract influence an individual's perceptions and behaviors. These dysfunctions stimulate reactions in the neurological, immune, and endocrine systems through the brain-gut axis leading to heightened IBS symptoms. Furthermore, the brain-gut axis is bi-directional. An individual's emotions, thoughts, and perceptions influence sensations, secretions, motility, immune regulation, mucosal inflammation, and intestinal permeability of the gastrointestinal tract (Chang, 2011).

Drossman et al., 2007; Monnikes, 2011; Patel et al., (2016) noted significant impairment of HRQOL for patients with IBS. Moreover, a study demonstrated that IBS patients perceive stigma about their illness, with increased prevalence of depression and anxiety, decreased self esteem and self-efficacy, and lower Quality

of Life (QoL). Additionally, the perceived stigma was shown to have a negative impact on clinical outcomes (Taft et al., 2011).

Relation between Self -esteem and dimensions of difficulty in regulating emotions

Table 18

Correlation between Self -esteem and dimensions of difficulty in regulating emotions

Dimensions of difficulty in regulating Emotions	Self Esteem
Lack of awareness of emotional responses	-0.301**
Lack of clarity of emotional responses	-0.325**
Non acceptance of emotional responses	-0.325**
Limited access of emotion regulation strategies	-0.167*
Difficulties controlling impulses when experiencing negative emotions	-0.275**
Difficulties engaging in goal directed behaviour	-0.324**
Overall Difficulty in regulating emotions	-0.349**

**Significant at 0.01 level , *Significant at 0.05 level

Above correlation analysis reveals that all the dimensions of difficulty in regulating emotions and overall difficulty in regulating emotions are negatively correlated with self esteem. All the dimensions of Difficulty in regulating emotions and Self esteem are significantly correlated at 0.01 level.

These results indicate that the lack of self esteem leads to limited awareness of emotional responses, lack of clarity of emotional responses, difficulty in accepting emotional responses, limited access to emotion regulation strategies, inability to control impulses while experiencing negative emotions, difficulties engaging in goal directed behavior and overall difficulty in regulating emotions. The

relation between self esteem and emotions is supported by Harter (1993) who proposed that self esteem promotes emotional wellbeing. The emotional problems linked to IBS are often related to issues of self esteem, self-confidence and self-respect. They may express themselves as anxiety, panic attacks, depression or eating disorders, or can result in the diarrhea/constipation seesaw of IBS (Knight, 2008). Research suggests that self esteem and chronic illness either have a direct or indirect effect on one another (Juth et al., 2008). The findings of the study explain that there exists negative relationship between self esteem and difficulty in emotion regulation.

Relation between Self -esteem and dimensions of Psychological distress

Table 19

Correlation between Self -esteem and dimensions of Psychological distress.

Sl no	Dimensions of Psychological distress	Self Esteem
1	Stress	-0.063
2	Depression	-0.077
3	Anxiety	-0.145
4	Somatization	-0.210*
5	Catastrophizing	-0.089
6	Overall Psychological distress	-0.152

**Significant at 0.01 level, *Significant at 0.05 level

It is clear from the table that the relationship between all the dimensions of psychological distress and overall psychological distress is negative with the variable self esteem, but all are not significant except somatization. It explains that when self esteem decreases all the problems related to Psychological distress increase.

Patients with IBS seem to have higher levels of anxiety in relationships, and their lower self esteem could influence the way they deal with the disease and how the communication with health care professionals works out (Bengtsson, 2013).

Relation among the dimensions of Emotion regulation difficulties and dimensions of Psychological distress

Table 20

Correlation among the dimensions of Emotion regulation difficulties and dimensions of Psychological distress.

Dimensions of Psychological Distress /	LAE	NAE	DCI	DEG	LCE	LAE	Overall Emotion Regulation difficulties.
Stress	.040	.216**	.303**	.355**	.053	.286**	.323**
Depression	.165*	.180*	.229**	.306**	.105	.128	.278**
Anxiety	.013	.230**	.173*	.088	-.004	.219**	.175*
Somatization	.239**	.244**	.231**	.283**	.239**	.197*	.336**
Catastrophizing	.009	.104	.131	.257**	.182*	-.042	.170*
Overall Psychological distress	.130	.278**	.317**	.383**	.150	.242**	.374**

**Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

The above Table shows 42 correlations among the dimensions of Psychological distress and dimensions of Emotion regulation difficulties. Out of 42 correlations 29 of them are significant. All the correlations are positive except the relationship between anxiety & LCE (Lack of clarity of emotional responses) and Catstrophizing and LAE (Limited access of emotion regulation strategies), which are negatively correlated.

The result indicates that if a person having the difficulties to manage his or her own emotions it may lead to psychological distress. The following studyby Mineka and Sulton (1994) stated that emotion dysregulation is prominent among mood and anxiety disorders and they are defined mainly on the basis of disturbed emotions. Another study explains that individuals with emotional disorders such as anxiety, depression, and bipolar disorders tend to experience their negative emotions as overwhelming and uncontrollable and often lack the skills necessary to manage and regulate these intense emotional experiences (Fairholme et al., 2010).

Inter Correlation between the Dimensions of Psychological Distress

Table 21

Inter Correlation between the Dimensions of Psychological Distress

Dimensions of Psychological distress	Stress	depression	Anxiety	Somatiza-tion	Catastrophi-zing
Depression	.572**				
Anxiety	.391**	.163			
Somatization	.306**	.533**	.192*		
Catastrophization	.281**	.450**	.207*	.416**	
Overall Psychological distress	.807**	.813**	.533**	.662**	.623**

**Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

The above table shows the inter correlation among the variables of Psychological distress and its dimensions. All the variables are positively correlated with each other. The Overall Psychological distress is correlated with Stress ($r=0.807$, $p<0.01$), Depression ($r=0.813$, $p<0.01$), Anxiety ($r= 0. 533$, $p<0.01$),

Somatization (0.662, p<0.01)and Catastrophizing (0.623, p<0.01). The relationship between all variables except the relation between anxiety and depression are significantly correlated. The dimensions stress and depression shows greater correlation with the overall psychological distress.

Inter correlation between the dimensions of Emotion regulation difficulties

Table 22

Inter correlation between the dimensions of Emotion regulation difficulties

Dimensions of Emotion regulation difficulties	Lack of awareness of emotional responses	Lack of clarity of emotional responses	Non acceptance of emotional responses	Limited access of emotion regulation strategies	Difficulties controlling impulses when experiencing negative emotions	Difficulties engaging in goal directed behavior when experiencing negative emotions.
LAE						
LCE	.245**					
NAE	.163	.443**				
LAE	.450**	.264**	.452**			
DCI	.297**	.488**	.624**	.488**		
DEG	.332**	.359**	.416**	.421**	.568**	
Overall DER	.537**	.622**	.736**	.699**	.838**	.786**

**Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

On examining the inter relationship among dimensions of difficulty in regulating emotions, it has been found that all the dimensions of difficulty in regulating emotions are positively related to each other. Among 21 correlations 20 are significantly correlated. Overall Emotion regulation difficulties correlated with

Lack of awareness of emotional responses (r= 0.537, p<0.01), Lack of clarity of emotional responses (r= 0.622, p<0.01), Non acceptance of emotional responses (r= 0.736, p<0.01), Limited access of emotion regulation strategies. (r= 0.699, p<0.01), Difficulties controlling impulses when experiencing negative emotions (r=0.838, p<0.01), Difficulties engaging in goal directed behavior when experiencing negative emotions. (r= 0.786, p<0.01). All the dimensions of Emotion regulation difficulties are highly correlated with Overall Emotion regulation difficulties.

Section 4: Multiple Regression Analysis of Psychological Distress and its Dimensions.

This part of the analysis has been done with a view to find out the predictor variable, which may best predict the Psychological Distress of IBS(IBS-PD) patients. The analysis is designed to specifically examine the relative contribution of each of the independent variables to the dependent variables through step-wise regression analysis. In this analysis the dependent variable comprises IBS Specific Psychological Distress (IBS-PD)) and its dimensions and the predictor variables include six dimension of Emotion Regulation Difficulties(ER), Health Related Quality of Life (HQRL) and Self Esteem (SE).

1. Dimensions of Psychological Distress (IBS- PD)

- Stress (ST)
- Depression (DP)
- Anxiety (AX)
- Somatization (SM)
- Catastrophizing (CZ)

2. Dimensions of Emotion Regulation Difficulties(ER)

- Lack of awareness of emotional response (LAE)
- Lack of clarity of emotional responses(LCE)
- Non acceptance of emotional responses (NAE)
- Limited access to emotion regulation strategies (LAERS)
- Difficulties controlling impulses when experiencing negative emotions, (DCI)
- Difficulties engaging in goal directed behavior when experiencing negative emotions. (DEG)

3. Health Related Quality of Life (HQRL)

4. Self Esteem (SE).

Multiple Regression Analysis (Step-wise): psychological distress as dependent variable

In this analysis Psychological distress is considered the dependent variable, and 6 Emotion Regulation difficulty variables, Health Related Quality of life (HQRL) and Self Esteem are considered Independent variables. Stepwise regression analysis is made to find out maximum possible variance in Psychological distress that can be explained with the help of each of the independent variables.

Table 23

Multiple Regression Analysis (Step-wise) Psychological distress as dependent variable

Independent Variable	Multiple Regression (R)	F-Value for R	R^2	S.E for R	Partial Regression Coefficient(b)	Constant	Beta Coefficient (β)
DEG	.383a	24.038	.14	13.381	.383(DEG)	48.163	.383
HRQL	.415b	14.478	.17	13.224	.291(DEG) .174(HRQL)	42.923	.306 .178

The summary of the multiple regression analysis is given in Table.

The first variable entered in the analysis is DEG(Difficulties engaging in goal directed behavior when experiencing negative emotions), which is the most important variable in the prediction of Psychological distress (IBS-PD). The multiple regression value (R) for this variable is 0.383 and the value is significant at 0.001 level (F=24.038, for 1and 140 df). The R signifies the strength of the interaction between dependent variable and independent variable and it is 38.3 % at this stage. The value of R^2 (0.14) proves that 14% of variance in Psychological distress can be contributed by the variable, Difficulties engaging in goal directed behavior when experiencing negative emotions). The partial regression coefficient (b) shows that for a unit increment in DEG there will be 3.83 unit increments in Psychological distress.

The equation for this will be PD = 48.163+.383(DEG)

The second most significant variable in the analysis is HRQL (Health Related Quality of Life); with the R value 0.415 significant at 0.001 levels

(F=14.478, for 2 and 139 df.). The strength of the interaction between the two independent variables put together to the dependent variable is 41.5%, The value of R^2 0.17 predicts the variance accounted for by DEG and HRQL together to Psychological Distress to be 17%. The proportion of contribution to the dependent variable by these independent variables is shown by the value of 'b' i.e., for every unit change in DEG and HRQL respectively, there will be 0.291 and 0.174 unit changes in Psychological distress. The "b" value of HRQL is positive which suggests that for every unit of increment in HRQL there will be 0.174 unit increment in Psychological Distress.

The equation at this point will be IBS-PD = 42.923 +0.291(DEG)+0.174(HRQL)

Multiple Regression Analysis (Step-wise): Stress as Dependent Variable

In this analysis stress is considered the dependent variable, and 6 Emotion Regulation difficulty variables, Health Related Quality of life (HQRL) and Self Esteem are considered Independent variables. Stepwise regression analysis is made to find out maximum possible variance stress that can be explained with the help of each of the independent variable.

The summary of the multiple regression analysis is given in Table 24

Table 24

Multiple Regression Analysis (Step-wise) stress as dependent variable

Independent Variable	Multiple Regression (R)	F-Value for R	R^2	S. E for R	Partial Regression Coefficient(b)	Constant	Beta Coefficient (β)
DEG	.355	20.164	.126	5.362	.355(DEG)	8.910	.355
HRQL	.393	12.68	.154	5.293	.355(DEG) .305(HRQL)	6.735	.275 .187

The first variable entered in the analysis is DEG(Difficulties engaging in goal directed behavior when experiencing negative emotions), which is the most important variable in the prediction of stress (ST). The multiple regression value (R) for this variable is 0.355 and the value is significant at 0.001 level (F=20.164), for 1and 140 df). The R signifies the strength of the interaction between dependent variable and independent variable and it is 35.5 % at this stage. The value of R^2 (0.126) proves that 12.6% of variance in Stress can be contributed by the variable, Difficulties engaging in goal directed behavior when experiencing negative emotions). The partial regression coefficient (b) shows that for a unit increment in stress there will be 0.355 unit increments in stress.

The equation for this will be ST = 8.910+0.355(DEG)

The second significant variable in the analysis is HRQL (Health Related Quality of Life), with the R value 0.393, significant at 0.001 level (F= 12.68 for 2 and 139 df.). The strength of the interaction between the two independent variables put together to the dependent variable is 39.3%. The value of R^2 0.154 predicts the variance accounted for by DEG and HRQL together to Stress to be 15.4.

The proportion of contribution to the dependent variable by these independent variables is shown by the value of 'b' i.e., for every unit change in DEG and HRQL respectively, there will be 0.355 and 0.305 unit changes in stress. The "b" value of HRQL is positive which suggests that for every unit of increment in HRQL there will be 0.305 unit increment in stress.

The equation at this point will ST = 6.735 +0.355(DEG)+0.305(HRQL)

Multiple Regression Analysis (Step-wise): Depression as Dependent Variable

In this analysis depression is considered the dependent variable, and 6 Emotion Regulation difficulty variables, Health Related Quality of life (HQRL) and Self Esteem are considered Independent variables. Stepwise regression analysis is made to find out maximum possible variance in depression that can be explained with the help of each of the independent variables.

The summary of the multiple regression analysis is given in Table 25.

Table 25

Multiple Regression Analysis (Step-Wise): Depression as Dependent Variable

Independent Variable	Multiple Regression (R)	F-Value for R	R^2	S.E for R	Partial Regression Coefficient(b)	Constant	Beta Coefficient (β
DEG	.306	14.451	.094	4.501	.306(DEG)	10.696	.306

The variable entered in the analysis is DEG(Difficulties engaging in goal directed behavior when experiencing negative emotions), which is the most important variable in the prediction of depression (DP). The multiple regression

value (R) for this variable is 0.306 and the value is significant at 0.001 level (F=14.451, for 1and 140 df). The R signifies the strength of the interaction between dependent variable and independent variable and it is 30.6 % at this stage. The value of R^2 (0.094) proves that 9% of variance in depression can be contributed by the variable, Difficulties engaging in goal directed behavior when experiencing negative emotions). The partial regression coefficient (b) shows that for a unit increment in DEG there will be 0.306 unit increments in Depression.

The equation for this will be DP = 10.696+.306(DEG)

Multiple Regression Analysis (Step-wise): Anxiety as Dependent Variable

In this analysis Anxiety is considered the dependent variable, and 6 Emotion Regulation difficulty variables, Health Related Quality of life (HQRL) and Self Esteem are considered Independent variables. Stepwise regression analysis is made to find out maximum possible variance in Anxiety that can be explained with the help of each of the independent variables.

The summary of the multiple regression analysis is given in Table 26.

Table 26

Multiple Regression Analysis (Step-Wise): Anxiety as Dependent Variable.

Independent Variable	Multiple Regression(R)	F-Value for R	R^2	S. E for R	Partial Regression Coefficient(b)	Constant	Beta Coefficient (β
NAE	0.230	7.82	0.053	3.318	0.230 (NAE)	8.920	0.230

The variable entered in the analysis is NAE (Non acceptance of emotional responses), which is the most important variable in the prediction of Anxiety (AX). The multiple regression value (R) for this variable is 0.230and the value is significant at 0.001 level (F=7.82, for 1and 140 df). The R signifies the strength of the interaction between dependent variable and independent variable and it is 23 % at this stage. The value of R^2 (0.053) proves that 5% of variance in Anxiety can be contributed by the variable, Non acceptance of emotional responses. The partial regression coefficient (b) shows that for a unit increment in NAE there will be 0.230 unit increments in Anxiety.

The equation for this will be AX = 8.920+.230(NAE)

Multiple Regression Analysis (Step-wise): Somatization as Dependent Variable

In this analysis Somatization is considered the dependent variable, and 6 Emotion Regulation difficulty variables, Health Related Quality of life (HQRL) and Self Esteem are considered Independent variables. Stepwise regression analysis is made to find out maximum possible variance in Somatization that can be explained with the help of each of the independent variables.

The summary of the multiple regression analysis is given in Table 27.

Table 27

Multiple Regression Analysis (Step-wise): Somatization as Dependent Variable

Independent Variable	Multiple Regression (R)	F-Value for R	R^2	S.E for R	Partial Regression Coefficient(b)	Constant	Beta Coefficient (β
DEG	0.336	17.778	0.113	3.143	0.355 (DEG)	7.148	0.336

The variable entered in the analysis is DEG (Difficulties engaging in goal directed behavior when experiencing negative Emotions.), which is the most important variable in the prediction of Somatization (SM). The multiple regression value (R) for this variable is 0.336 and the value is significant at 0.001 level (F=17.778, for 1and 140 df). The R signifies the strength of the interaction between dependent variable and independent variable and it is 33.6 % at this stage. The value of R^2 (0.113) proves that 11% of variance Somatization can be contributed by the variable, Difficulties engaging in goal directed behavior when experiencing negative Emotions. The partial regression coefficient (b) shows that for a unit increment in DEG there will be 0.355 unit increments in Somatization.

The equation for this will be SM= 7.148+.355 (DEG)

Multiple Regression Analysis (Step-wise): Catastrophizing as Dependent Variable

In this analysis Catastrophization is considered the dependent variable, and 6 Emotion Regulation difficulty variables, Health Related Quality of life and Self Esteem are considered Independent variables. Stepwise regression analysis is made to find out maximum possible variance in Catastrophization that can be explained with the help of each of the independent variables.

The summary of the multiple regression analysis is given in Table 28.

Table 28

Multiple Regression Analysis (Step-wise): Catastrophizing as Dependent Variable

Independent Variable	Multiple Regression (R)	F-Value for R	R S.E for R^2	S.E for R	Partial Regression Coefficient(b)	Constant	Beta Coefficient (β
DEG	0.257	9.903	0.066	3.082	0.257 (DEG)	8.595	0.257
LAE	0.306	7.183	0.094	3.047	0.303 (DEG) 0.172 (LAE)	9.892	0.334 -0.183

The first variable entered in the analysis is DEG(Difficulties engaging in goal directed behavior when experiencing negative emotions), which is the most important variable in the prediction of Catastrophization (CT). The multiple regression value (R) for this variable is.257and the value is significant at 0.001 level (F=9.903, for 1and 140 df). The R signifies the strength of the interaction between dependent variable and independent variable and it is 25.7% at this stage. The value of R^2 (.066) proves that 6% of variance in Catastrophization can be contributed by the variable, Difficulties engaging in goal directed behavior when experiencing negative emotions. The partial regression coefficient (b) shows that for a unit increment in DEG there will be 0.257 unit increments in Catastrophization.

The equation for this will be CT = 8.595+.257 (DEG)

The second most significant variable in the analysis is LAE (Lack of awareness of emotional response); with the R value 0.306 significant at 0.001 levels (F=7.183, for 2 and 139 df.). The strength of the interaction between the two independent variables put together to the dependent variable is 30.6 %, The value of

R^2 0.094 predicts the variance accounted for by DEG and LAE together to Catastrophization to be 9%. The proportion of contribution to the dependent variable by these independent variables is shown by the value of 'b' i.e, for every unit change in DEG and LAE respectively, there will be.303 and.172 unit changes in Catastrophization. The "b" value of LAE is positive which suggests that for every unit of increment in LAE there will be 0.172 unit increment in Catastrophization.

The equation at this point will be, CT = 9.892+0.303(DEG)+0.172(LAE)

Results of Regression Analysis: An Overview

The purpose of Multiple regression analysis is to get a clear idea about the variables that contribute to the Psychological distress of Irritable bowel syndrome Patients. The predictor variables subjected to the analysis include sub domains of Emotion regulation difficulties, Health related Quality of life and Self Esteem. Some of the variables that predict the Psychological Distress of patients with Irritable Bowel Syndrome are; Difficulties engaging in goal directed behavior when experiencing negative emotions, Lack of awareness of emotional response, Non acceptance of emotional responses and Health related Quality of life.

Moderated Regression Analysis

Moderated models are often used in a regression analysis when an independent variable influences a dependent variable. That is, they are used to identify factors that change the relationship between independent and dependent variables (Moss, 2010).

In the present study, moderated regression analysis is conducted to ascertain the precise relationship between (i) Health Related Quality of life and Difficulty in Emotion Regulation on Psychological distress and (ii) Self Esteem and Difficulty in Emotion Regulation on Psychological distress. To represent the interaction between Health Related Quality of life, Self Esteem and Difficulty in Emotion Regulation, the variables are first standardized and then multiplied together. This analysis clarifies whether Psychological distress depends on Health Related Quality of life and Difficulty in Emotion Regulation / Self Esteem and Difficulty in Emotion Regulation.

Model of the Study

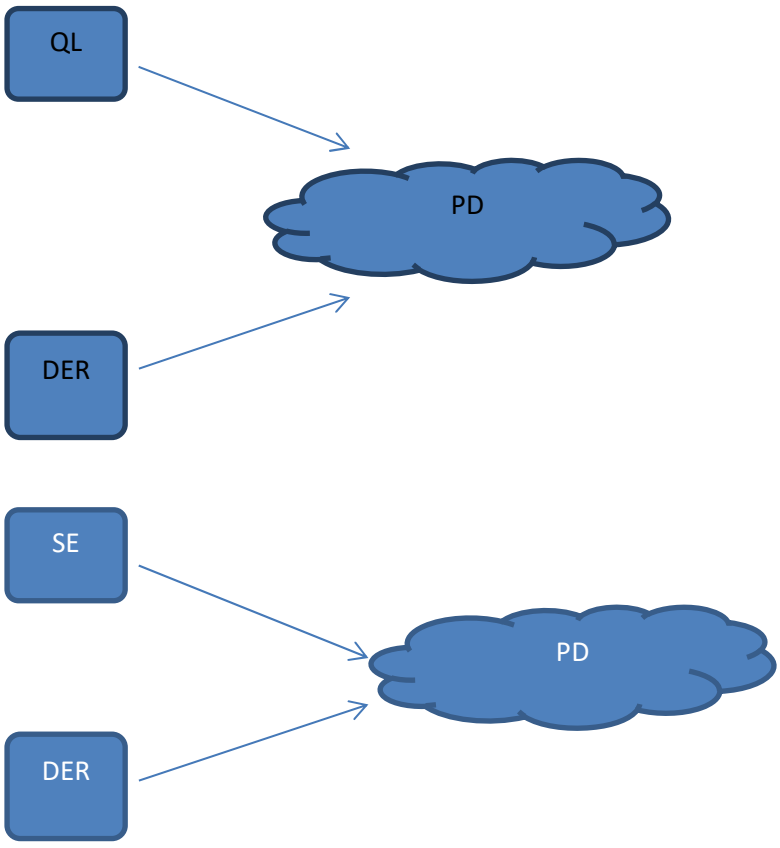


Table 29

Coefficients ((i) Health related quality of life and Emotion regulation difficulties on Psychological distress and (ii) Self Esteem and Emotion regulation difficulties on Psychological distress.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
(Constant)	65.348	1.170		55.863	0.000
Zscore(HRQL)	1.485	1.465	0.103	1.014	0.312
Zscore(SE)	1.084	1.361	0.075	0.796	0.427
Zscore(DER)	3.700	1.385	0.256	2.671	0.008
Z HQLxZDER	-1.249	0.857	-0.139	-1.458	0.147
Z SExZDER	0.001	0.005	0.072	0.157	0.875

Dependent Variable: Z score (PD)

Here, the p value that pertains to the ZHQL x Z DER exceeded 0.05 and it is not significant. And also the p value that pertains to Z SE x Z DER is greater than 0.05 and it is not significant. Hence these results indicate both the variables (HQL & SE) do not moderate the relation between Emotion regulation difficulties and Psychological distress.

There are studies indicating the following results contradicting the result obtained in the present study that lower self esteem is associated with more depressive symptoms and worse QoL. This implies that a feeling of low self esteem is an intermediate factor in inducing depressive symptoms and low QoL (Bonsaksen et al., 2015). In a study conducted in Norway argued that in chronic disorders, the duration of illness and the ability to cope with the symptoms are important factors influencing the feeling of self esteem. Thus, the annoying and sometimes embarrassing symptoms of IBS would be expected to negatively influence self esteem, with consequent negative impacts on the prevalence of depressive symptoms and on QoL (Juth, 2008).

CHAPTER 5

SUMMARY AND CONCLUSION

- STATEMENT OF THE PROBLEM
- VARIABLES OF THE STUDY
- OBJECTIVES OF THE STUDY
- HYPOTHESES OF THE STUDY
- PARTICIPANTS
- MEASURES USED
- STATISTICAL TECHNIQUES USED
- TENABILITY OF THE HYPOTHESES
- MAJOR FINDINGS OF THE STUDY
- IMPLICATIONS OF THE STUDY
- LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

A lot of investigations have conducted in Irritable Bowel Syndrome. But researchers have yet to discover any specific cause for IBS. One theory is that people who suffer from IBS have a colon, or large intestine, that is particularly sensitive and reactive to certain foods and stress. Recent research has reported that serotonin is linked with normal gastrointestinal (GI) functioning. Serotonin is a neurotransmitter, or chemical, that delivers messages from one part of our body to another. Ninety-five percent of the serotonin is located in the GI tract, and the other 5 percent is found in the brain. Cells that line the inside of the bowel work as transporters and carry the serotonin out of the GI tract. People with IBS, however, have diminished receptor activity, causing abnormal levels of serotonin to exist in the GI tract. As a result, they experience problems with bowel movement, motility, and sensation—having more sensitive pain receptors in their GI tract.

The Enteric Nervous System (ENS) is a subdivision of the peripheral nervous system that controls the gastrointestinal system (Burns & Thapar, 2006). It communicates with the Central Nervous System (CNS) via the parasympathetic (e.g. vagus nerve) and sympathetic (e.g. prevertebral or paravertebral ganglia) nervous systems and shares many neurotransmitters with the CNS like Cholecystokinin (CCK) or Substance P (Gershon,1999). It has been hypothesized by various authors

(Drossman 1998) that this close connection between ENS and CNS might be related to the close relationship between the events observed in both gut and psyche.

The brain-gut axis model proposed by Drossman (1998) proposes that key symptoms in IBS (altered motility, visceral hypersensitivity) are the result of the deregulation in the activity of one or more of the bidirectional communication pathways between ENS and CNS. This communication is influenced by inputs from the neuroendocrine and neuroimmunological systems that are themselves modulated by psychosocial factors.

A bio psychosocial model of IBS

At the end of the last millennium a new model of IBS started being proposed, heavily influenced by the bio psychosocial model of Engel (1980) and recent discoveries in the fields of psychosomatics and psychoneuroimmunology. Mayer et al.,(1999) proposed a model in which an interaction between cognitive, behavioral, emotional and physiological components would explain the development and maintenance of IBS symptoms. In the same year Drossman et al.,(1999) also proposed a bio psychosocial interpretation of IBS which is now recognized as one of the most complete and best fitting models for this illness.

One of the clearest examples of this brain-gut connection comes from the evidence collected by studies on the effect of stress in IBS. As previously mentioned, stress seems to have an impact both on motility and sensitivity of the colon (Drossman et al.,2003 ; Welgan et al.,1985). It is thought that many of the IBS manifestations are part of a response to internal and external stressors through the

integration of the hypothalamo-pituitary-adrenal (HPA) axis and the sympathetic nervous system. Life stressors, psychiatric illness, anxiety-provoking situations as well as psychological traits like somatization, anxiety and low mood have all been linked with an exaggerated HPA response which is thought to be in turn associated with the immune activation of the gut mucosa in IBS patients (Spiller et al., 2007).

Direct and indirect costs of IBS incur considerable societal economic burden. IBS negatively affects general health, vitality, social functioning, bodily pain, sexual functioning, sleep and is associated with lost time from work (Luskombe, 2000).

Due to the importance of psychological factors in the regulation of gut sensitivity and motility and their corresponding neurophysiologic correlates, (CNS and ENS), and subsequent development of Irritable bowel syndrome. So finding the root cause for effective intervention for a healthy better society is very important.

Mind and body are inter connected, any change in the mind makes its reflection in the body. A healthy mind is essential for the health of an individual. So health of mind is very important for a better society.

STATEMENT OF THE PROBLEM

To have a better understanding of Health related quality of life, Self esteem, Emotion regulation difficulties and Psychological distress among IBS patients. The present investigation aimed to study the relationship, interaction and predictive effect of these variables. So the problem for the investigation is

"**Health related quality of life and self esteem as moderators of Emotion regulation difficulties and psychological distress relationship in IBS "**

VARIABLES OF THE STUDY

The important purpose of this study was to find out the relationships between the psychological variables related to Irritable Bowel Syndrome. The variables included in this study are Health related quality of life, Self Esteem, Difficulties in Emotion Regulation (Lack of awareness of emotional responses, Lack of clarity of emotional responses, Non acceptance of emotional responses, Limited access of emotion regulation strategies, Difficulties controlling impulses when experiencing negative emotions, Difficulties engaging in goal directed behavior) and Psychological distress(Stress, Depression, Anxiety, Somatization and Catastrophizing). A personal data sheet (age, sex, marital status and religion) was also administered to the participants individually with the questionnaires.

Independent variable [IV]

Emotion regulation difficulties (DER) have been proposed as the independent variable for the present investigation.

The dependent variables were also analyzed in relation with other classificatory variables like Age, Sex, Marital status and Religion.

Dependent variable [DV]

Psychological distress is taken as dependent variable

Moderated variables

Two moderators of the present study are, Self esteem and Health related quality of life.

OBJECTIVES

Through review of literature, the importance of Health related Quality of life, self esteem and emotion regulation and its relation to Psychological Distress have been revealed. Research findings suggest that Psychological factors influence the development of IBS. Health related Quality of life, Self esteem and Emotion Regulation are the important Psychological Variables affecting the psychological distress of IBS patients. Investigating the role of the Health related Quality of life, self esteem and emotion regulation on the Psychological distress of IBS patients are helpful for mental health promotion as well as to develop preventive strategies for these patients. Based on the review of literature, the following objectives were formulated for the present study.

Objectives of the study

1) To have a general idea on the nature of distribution of the variables under Study through preliminary analysis.

2) To find out the role of demographic variables on Psychological distress of IBS patients.

    a) To find out the role of age on Psychological distress of IBS patients.

    b) To find out the role of sex on Psychological distress of IBS patients.

    c) To find out the role of marital status on Psychological distress of IBS patients.

3) To examine the nature and extent of the relationship among the dimensions of Health related quality of life, Self esteem, Difficulty in emotion regulation and Psychological distress.

4) To identify those variables (Health related quality of life, Self esteem and Difficulty in Emotion Regulation) which predict Psychological distress.

5) To find out whether there exists any influence of Health Related quality of life/Self Esteem as moderator on Emotion Regulation difficulties and Psychological Distress relationship.

HYPOTHESES

1) There will be normality on the nature of distribution of the variables under study through preliminary analysis.

2) There will be significant difference among demographic variables on Psychological Distress of IBS Patient.

   a) There will be significant difference among age groups on Psychological Distress of IBS Patient.

   b) There will be significant difference between sexes on Psychological Distress of IBS Patient.

   c) There will be significant difference between marital statuses on Psychological Distress of IBS Patient.

3) There will be significant relationship among the dimensions of Health Related Quality of life, Self esteem, Difficulty in emotion regulation (DERS) and Psychological Distress.

a) There will be significant relationship between Health Related Quality of life and Self esteem.

b) There will be significant relationship between Health Related Quality of life and DERS and its dimensions.

c) There will be significant relationship between Health Related Quality of life and Psychological Distress and its dimensions.

d) There will be significant relationship between Self Esteem and DERS and its dimensions.

e) There will be significant relationship between Self Esteem and Psychological Distress and its dimensions.

f) There will be significant relationship between DERS and Psychological Distress.

g) There will be significant relationship between the dimensions of psychological distress.

h) There will be significant relationship between the dimensions of Emotion regulation difficulties.

4) There will be significant predictor relationships between Variables Health Related Quality of life, Self esteem and Difficulty in Emotion Regulation on Psychological distress and its variables.

5) Health Related Quality of life and Self Esteem moderate Difficulty in emotion regulation and Psychological Distress relationship.

METHOD

The method used for the study is briefly described as follows;

Participants for the Study

Participants for the study consisted 142 IBS patients selected from Gastroenterology department of the Calicut Medical College. The sampling was done by judgmental sampling. Age of the patients in the present study ranges from 20yrs-70yrs.

Measures/Tools used

For the present study different tools were used to measure the different variables under investigation. The following measures were used to assess the variables under study.

1. IBS-36 Questionnaire by Groll (2002)
2. Self esteem inventory by Immanuel Thomas and Sam Sananda Raj (1995)
3. Revised Difficulty in Regulating Emotions Scale by Milu and Jayan (2011)
4. IBS -PD scale by Jasna and Jayan (2019)
5. Personal Data Sheet.

Procedure

The participants were approached individually during the consultation hours of Gastroenterology outpatient ward. The doctors identified and suggested Participants for taking part in the study. Participants were briefed about the purpose of the study and confidentiality was assured. The four questionnaires: (1)IBS-36, (2) Self Esteem Questionnaire, (3)DERS and (4) Psychological Distress Scale including the answer sheet and the Personal data sheet were given to the participants. Instructions were given. The responses were scored according to the norms and guidelines of each scale.

Statistical techniques

Computer analysis (SPSS version 23) was done to test the various hypotheses. The statistical analyses used were Independent Sample t-test, Preliminary analysis, Correlational analysis, Multiple Linear Regression Analysis, Analysis of variance or ANOVA and Moderated Regression Analysis.

TENABILITY OF HYPOTHESES

Four main hypotheses were formulated for the study. In the results of the study, the tenability of these hypotheses is tested;

The 1.a hypothesis states: There will be significant difference among the classificatory factors of Age (20-40 years, 41-65 years, 66 and above years) on Psychological distress and its variables.

From the results it is clear that Age is a significant factor on Psychological distress and its variables. High Psychological distress group belongs to Age Group 2 (ranges 41-65). Considering the dimensions of Psychological distress this age group has significantly higher stress, depression and catastrophizing than the other two groups. So the first hypothesis is accepted.

The 1.b hypothesis states: There will be significant difference between sex on Psychological Distress of IBS Patients.

On the basis of sex, it makes a significant difference only on the dimension Catastrophizing. Comparing mean, females have higher level of Catastrophizing. For the Variable Overall Psychological Distress and its dimensions like depression, anxiety and Somatization mean of Females is higher than the Males. Mean of male is higher than the females only for the dimension stress**.** The result shows the above hypothesis is confirmed.

The 1.c hypothesis states: There will be significant difference between marital status on Psychological Distress of IBS Patients.

From the results of the analysis, it is clear that Psychological distress is significantly differ between married and unmarried participants. Married participants have higher level of Psychological distress. Similarly on the dimensions of Psychological distress such as Stress, Depression, Somatization and Catastrophizing married and unmarried participants significantly differ each other. For all the dimensions of Psychological distress Married participants have higher mean than unmarried participants.

The 2.a hypothesis states: There will be significant relationship between Health Related Quality of life and Self esteem.

From the analysis it can be clear that self Esteem and health related quality of life are significantly correlated. Since the IBS-36 Questionnaire provide the impact of health related quality of life due to IBS, the correlation value is negative. So the hypothesis 2. a is accepted.

The 2.b hypothesis states: There will be significant relationship between Health Related Quality of life and DERS and its dimensions.

The result for the analysis of the above hypothesis reveals that all the dimensions of Emotion regulation difficulties and overall emotion regulation difficulties have a significant positive correlation with health related quality of life. Hence the above hypothesis is confirmed.

The 2.c hypothesis states: There will be significant relationship between Health Related Quality of life and Psychological Distress and its dimensions.

The relationship between overall psychological distress and dimensions of Psychological distress like Stress, Depression, Anxiety and Somatization with Health related quality of life is significant. The dimension of Psychological distress Catastrophizing does not make a significant difference with Health related quality of life. The hypothesis is fairly accepted.

The 2.d hypothesis states: There will be significant relationship between Self Esteem and DERS and its dimensions.

Self –Esteem makes significant relationship between Emotion regulation difficulties and all its dimensions**.** Based on the result it can be stated that in the case of IBS patients when Self Esteem decreases Emotion regulation Difficulties increase. So the above hypothesis is established.

The 2.e hypothesis states: There will be significant relationship between Self Esteem and Psychological Distress and its dimensions.

When analyzing the relationship between Self Esteem and Psychological Distress and its dimensions the results indicate that only the dimension Somatization is significantly related with self –esteem. Result explains that when self esteem decreases all the problems related to Psychological distress increase. The above hypothesis is accepted.

The 2.f hypothesis states: There will be significant relationship between DERS and Psychological Distress.

Result shows 42 correlations among the dimensions of Psychological distress and dimensions of Emotion regulation difficulties. Out of 42 correlations 29 of them are significant. All the correlations are positive except the relationship between anxiety and LCE (Lack of clarity of emotional responses) and Catstrophizing and LAE (Limited access of emotion regulation strategies), which are negatively correlated. So the hypothesis is partially confirmed.

The 2.g hypothesis states: There will be significant relationship between the dimensions of psychological distress.

All the variables are positively correlated each other. The relationship between all variables except anxiety and depression are significantly correlated. The dimensions stress and depression shows greater correlation with the overall psychological distress**.** So the hypothesis is confirmed.

The 2.h hypothesis states: There will be significant relationship between the dimensions of Emotion regulation difficulties.

It has been found that all the dimensions of difficulty in regulating emotions are positively related to each other. Among 21 correlations 20 are significantly correlated. All the dimensions of Emotion regulation difficulties are highly correlated with Overall Emotion regulation difficulties. Thus the hypothesis is fairly accepted.

The 3rd hypothesis states: There will be significant predictor relationships between Variables Health Related Quality of life, Self esteem and Difficulty in Emotion Regulation on Psychological distress and its variables.

Regression equations show that among various predictor variables DEG (Difficulties engaging in goal directed behavior when experiencing negative emotions), HRQL (Health related quality of life), NAE(Non acceptance of emotional responses) and LAE (Lack of awareness of emotional response) have a positive impact on Psychological distress and its dimensions. Hence the third hypothesis is confirmed**.**

The 4th hypothesis states: Health Related Quality of life and Self Esteem moderate Difficulty in emotion regulation and Psychological Distress.

Results indicate both the variables (Health Related Quality of Life & Self Esteem) do not moderate the relation between Emotion regulation difficulties and Psychological distress. So the fourth hypothesis is not confirmed.

MAJOR FINDINGS OF THE STUDY

Major findings of the present investigation are

1. Age is a significant factor on Psychological distress and its variables.
2. High Psychological distress group is the Age Group 2 (ranges 41-65).
3. For the dimensions of Psychological distress like Stress, Depression and Catastrophizing the age group 41-65 is significantly higher than the other two age groups.
4. Females have higher level of Catastrophizing than males.
5. For the Variable Overall Psychological Distress and its dimensions like depression, anxiety and Somatization mean of Females is higher than the Males.
6. Mean score for the dimension stress is higher for males than females.
7. Psychological distress is different between married and unmarried participants.
8. Married participants have higher level of Psychological distress.

9. There is a difference between married and unmarried participants on the dimensions of Psychological distress such as Stress, Depression, Somatization and Catastrophizing.

10. For all the dimensions of Psychological distress Married participants have higher mean than unmarried participants.

11. There is a relationship between Self Esteem and health related quality of life.

12. All the dimensions of Emotion regulation difficulties and overall emotion regulation difficulties have a significant positive correlation with health related quality of life.

13. When Self Esteem decreases Emotion regulation Difficulties increase in IBS patients

14. There is a high positive interrelationship between Psychological distress variable with its sub-variables.

15. There is a high positive interrelationship between Emotion regulation difficulties variables with its sub- variables.

16. DEG (Difficulties engaging in goal directed behavior when experiencing negative emotions) and Health related quality of life are the most important variables in the prediction of Psychological distress. They together predict to Psychological distress to be 17%.

17. DEG (Difficulties engaging in goal directed behavior when experiencing negative emotions) and Health related quality of life are the most important

variables in the prediction of Stress. The strength of the interaction between these two variables put together to the dependent variable (stress) is 15. 4%.

18. DEG (Difficulties engaging in goal directed behavior when experiencing negative emotions) is the most important variable in the prediction of depression (DP). It predict Depression to be 9%.

19. NAE (Non acceptance of emotional responses), which is the most important variable in the prediction of Anxiety (AX). 5% of variance in Anxiety can be contributed by the variable, Non acceptance of emotional responses.

20. DEG (Difficulties engaging in goal directed behavior when experiencing negative Emotions.), is the most important variable in the prediction of Somatization (SM). It predict Somatization to be 11%.

21. The most significant variables in the prediction of Catastrophizing are DEG (Difficulties engaging in goal directed behavior when experiencing negative emotions) and LAE (Lack of awareness of emotional response). They together predict Catastrophizing to be 9%.

22. Health related Quality of life and self Esteem don't moderate Emotion regulation difficulties and Psychological distress in IBS.

CHAPTER 6

RECOMMENDATIONS

Implications of the study

The present investigation was designed to understand the influences of Health related quality of life and Self esteem in controlling the relationship between Difficulties in Emotion Regulation and Psychological Distress. The study also tried to find out the relationship among different variables related to IBS and to establish predictive relationships among these variables. The above findings of this study are very useful for the health professionals to design strategies for treating this disorder effectively.

It is hoped that these findings can be beneficial to the patient groups to improve their life condition. The knowledge about the relationship among various variables is of great importance and use for health professionals combining psychological therapies with the medical treatment for a better result.

The results of this study suggest that in the treatment of patients with IBS, special attention should be paid to the severity and prevalence of depression, anxiety, stress and emotion regulation difficulties. After accurately diagnosing and rejecting the organic causes, it is recommended to refer these patients to specialists in the psychological area so that they can take advantage of the effective psychological treatments along with drug treatments. It requires more cooperation between gastroenterologists, psychiatrists, and psychologists.

Limitations of the study

- Samples for this study were taken from only one institution.
- Long-term follow up of patients was not done.

Suggestions for further study

- Longitudinal study of IBS patients from the time of diagnosis till the completion of treatment will be beneficial to understand the psychosocial factors affecting the patients and which may be further useful in specifically identifying the psychological support to be provided.
- Intervention techniques and their efficacy in alleviating patients distress and improving Health related quality of life is worth studying.
- Qualitative study of psychological factors will be beneficial.

REFERENCES

Aaron, A., Cous, E.J., & Aron, E.N. (2006). Statistics for Psychology (6th ed). Pearson.

Adam, T. (2001. The mind–body problem: Circuits that link the cerebral cortex to the adrenal medulla. Gut, 23, 4, 2019. https://doi.org/10.1073/pnas.190229711.

Ali, H. S., Ibrahim, Y. Saati, A. A., Eldin, E. E.,Ibrahim, M., & Al Harbi, H. (2016). Prevalence of Irritable Bowel Syndrome and its Relation to Self esteem, Depression, and Quality of Life of Female Students in Health-Related Faculties at Umm Al-Qura University. *Journal of American Science,* 12(2). http://www.jofamericanscience.org

Ali, S. M., & Malik, A. A. (2014). Psychopathology and self esteem among students of University of Karachi. *International Journal of Innovation and Scientific Research,* 10(2), 387-9https://doi.org/10.24018/ejmed.2019.1.1.21.

American Psychiatric Association. (1994). Diagnostic and statistical manual of mental disorders (4th edn.). DC: Author.

Amouretti, M., Le Pen, C., Gaudin, A. F., Bommelaer, G., Frexinos, J., Ruszniewski, P., ... & El Hasnaoui, A. (2006). Impact of irritable bowel syndrome (IBS) on health-related quality of life (HRQOL). *Gastroenterologie clinique et biologique*, 30(2), 241-246. Doi: 10.1016/s0399-8320(06)73160-8.

Anastasi, A., & Urbina, S. (1997). Psychological Testing (7th ed.). Prentice Hall.

Andrews, G., & Slade, T. (2007). Interpreting scores on the Kessler Psychological Distress Scale (K10). *Australian and New Zeland Journal of Public Health*, 25, 494–7. https://doi.org/10.1111/j.1467-842X.2001.tb00310.x.

Ayres, R.C., Robertson, D. A., Naylr, K., & Smith,K. (1989). Stress and oesophageal motility in normal subjects and patients with irritable bowel syndrome. *International journal of Gastroenterology and Hepatology*, 30, 11,1540-1543. DOI: 10.1136/gut.30.11.1540.

Barbezat, G., Poulton, R., Milne, B., Howell, S., Fawcett, J. P., & Talley, N. (2002). Prevalence and correlates of irritable bowel symptoms in a New Zealand birth cohort. *The New Zealand Medical Journal* (Online), 115(1164). Doi 2002 Oct 25;115(1164):U220

Barkow, K., Heun, R., Ustün, T. B., Berger, M., Bermejo, I., & Gaebel, W. (2004). Identification of somatic and anxiety symptoms which contribute to the detection of depression in primary health care. *Europian Psychiatry,* 19(5), 250-7. DOI: https://doi.org/10.1016/j.eurpsy.2004.04.015.

Barlow, D. H., & Durand, V. M. (1999). Abnormal psychology: An integrative approach (2" ed.). Pacific Grove: BrooksICole.

Barlow, D. H., Raffa, S. D., & Cohen, E. M. (2002). Psychosocial treatments for panic disorders, phobias and generalized anxiety disorders. In P. E. Nathan & J. M. Gorman (Eds.), A guide to treatments that work (2nd ed., pp. 301–36). New York: Oxford University Press.

Baron, R.M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51(6), 1173-1182. DOI:10.1037//0022-3514.51.6.1173.

Beach, R. H., Fincham, F. D., & Katz, J. (1995). Marital therapy in the treatment of depression: toward a third generation of therapy, *Scandinavian Journal of Gastroenterology*, 01, 7. DOI: 10.1016/s0272-7358(98)00023-3.

Bean, K.L. (1953). Construction of educational and personnel tests. McGraw- Hill,Book Co.

Beck, A. T., Ward, C. H., & Erbaugh, J. (1961). An inventory for measuring depression. *Arch Gen Psychiatry*, 4, 561. DOI: 10.1001/archpsyc.1961.01710120031004.

Beesley, H., Rhodes, J., & Salmon, P. (2010). Anger and Childhood sexual abuse are independently associated with irritable bowel syndrome. *British Journal of Health psychology*, 15(2), 389-399. DOI: 10.1348/135910709X466496.

Bengtson, M. B., Ronning, T., Vatn, M. HY& Harris, J. R. (2006). Irritable bowel syndrome in twins: genes and environment,*Gut*, 55(12), 1754-9. DOI: 10.1136/gut.2006.097287.

Bengtsson, M., Sjöberg, K., Candamio, M., Lerman, A., & Ohlsson, B. (2013). Anxiety in close relationships is higher and self esteem lower in patients with irritable bowel syndrome compared to patients with inflammatory bowel disease. *Europian Journal of International Medicine*, 24, 266–72. OI: 10.1016/j.ejim.2012.11.011.x.

Bennett, M. K., Poirier, M. A., Xiao, W., Macosko, J. C., Chan, C., & Shin, Y. K.(1998). The synaptic SNARE complex is a parallel four-stranded helical bundle. *Nature structural biology*, 5(9), 765-769. Doi: 10.1038/1799

Binger, C. (1946). The Meaning of Psychosomatic Medicine. *The American Scholar*, 15(4), 416–424. http://www.jstor.org/stable/41204828.

Black, T. P., Manolakis, C. S., & Di Palma, J. A. (2012). " Red flag" evaluation yield in irritable bowel syn Tillisch, K., Mayer, E. A., & Labus, J. S. (2011). Quantitative meta-analysis identifies brain regions activated during rectal distension in irritable bowel syndrome. *Gastroenterology*, *140*(1), 91-100.drome. *Journal of Gastrointestinal & Liver Diseases*, *21*(2).

Blanchard, G., Makombu, J. G., & Kestemont, P. (2008). Influence of different dietary 18: 3n-3/18: 2n-6 ratio on growth performance, fatty acid composition and hepatic ultrastructure in Eurasian perch, Perca fluviatilis. *Aquaculture,* 284(1-4), 144-150. DOI:10.1016/j.aquaculture.2008.07.011

Blanchard, J. F., Bernstein, C. N., Kliewer, E., & Wajda, A. (2001). Cancer risk in patients with inflammatory bowel disease: a population-based study. *Cancer*, *91*(4), 854-862.

Blascovich, J., Tomaka, J., Robinson, J. P., Shaver, P. R., & Wrightsman, L. S. (1991). Measures of self-esteem. *Measures of personality and social psychological attitudes*, *1*, 115-160.

Bonsaksen, T., Lerdal, A., & Fagermoen, M. S. (2015). Trajectories of illness perceptions in persons with chronic illness: An explorative longitudinal study. *Journal of Health Psychology*, 20(7), 942–953. DOI: 10.1177/1359105313504235.

Bouras, N., & Holt, G. (2007). Psychiatric and Behavioral Disorders in Intellectual and Developmental Disabilities (2nd ed.). Cambridge University Press. ISBN 9781139461306.

Bowers, H., & Wroe, A. (2016). Beliefs about emotions mediate the relationship between emotional suppression and quality of life in irritable bowel syndrome. *Journal of Mental Health,* 25(2), 154-158. doi: 10.3109/09638237.2015.1101414

Bowling, N. N. I., & Brazier, J. (2016) "Quality of Life" in Social Science and Medicine, 41, 1337–8. DOI:10.1007/s40273-016-0389-9.

Branden, N. (1994). Six pillars of self-esteem. Bantam. Branden. N. (1969). what is self esteem. Retrieved from psychology. About. com >…. >psychology Glossary: S index.

Brody, A. S., Molina, P. L., Klein, J. S., Rothman, B. S., Ramagopal, M., & Swartz, D. R. (1999). High-resolution computed tomography of the chest in children with cystic fibrosis: support for use as an outcome surrogate. *Pediatric radiology,* 29(10), 731-735. DOI: 10.1007/s002470050684

Brody, F., Vaziri, K., Saddler, A., Ali, A., Drenon, E., Hanna, B., & Soffer, E. (2008). Gastric electrical stimulation for gastroparesis. Journal of the American College of Surgeons, 207(4), 533-538. https://doi.org/10.1016/j.jamcollsurg.2008.04.032

Brown, J. H., Cook, K. M., Ney, F. G., & Hatch, T. (1950). Influence of particle size upon the retention of particulate matter in the human lung. *American Journal of Public Health and the Nations Health*, 40(4), 450-480. Doi: 10.2105/ajph.40.4.450.

Bullinger, M. (1991). Quality of life – definition, conceptualization and implications – a methodologists view. *Theoretic Surgery,* 6, 143–149. Google Scholar.

Burnette, D., & Mui, A. C. (1997). Psychological well-being of the oldest-old Hispanics. *Journal of Clinical Geropsychology,* 3, 227-244. https://core.ac.uk/reader/188220320.

Burns, A. J., & Thapar, N. (2006). Advances in ontogeny of the enteric nervous system. *Neurogastroenterology & Motility,* 18(10), 876-887. https://doi.org/10.1111/j.1365-2982.2006.00806.x

Cairney, J., Veldhuizen, S., & Wade, T. J. (2007). Evaluation of 2 measures of psychological distress as screeners for depression in the general population. *CanadianJournalofPsychiatry,*52,11120.DOI:10.1177/070674370705200209

Calman, K. C. (1987). Quality of life in cancer patients--an hypothesis. *Journal of Medical Ethics*, 10(3), 124–127. DOI: 10.1136/jme.10.3.124.

Camilleri-Brennan, J., Ruta, D. A., & Steele, R. J. (2002). Patient generated index: new instrument for measuring quality of life in patients with rectal cancer. *World journal of surgery*, 26(11), 1354-1359. Doi: 10.1007/s00268-002-6360-2

Campos, J. J., Frankel, C. B., & Camras, L. (2004). On the nature of emotion regulation. *Child development,* 75(2), 377-394.https://doi.org/10.1111/j.1467-8624.2004.00681.x

Canavan. C., West. J., & Card. T. (2014). The epidemiology of irritable bowel syndrome. *PMC J*. 6, 71–80. doi: J10.2147/CLEP.S40245.

Carson, J.,Fagin, L., Leary, J., De Villiers, N., Bartlett, H., O'Malley, P., ... & Brown, D. (1996). Stress, coping and burnout in mental health nurses: findings from three research studies. *International journal of social psychiatry*, *42*(2), 102-111.

Cash, B., & Chey, w. (2004). Irritable bowel syndrome : a systematic review. *Gastroenterology* 6(3): 647-669. DOI:10.1016/j.cfp.2004.03.010

Chalfant, H. P., Heller, P. L., Roberts, A., Briones, D., Aguirre-Hochbaum, S., & Farr, W. (1990). The Clergy as a Resource for Those Encountering Psychological Distress. *Religious research,* 31, 3, 305-313. https://doi.org/10.2307/3511620.

Chandra, A. M. (2013). Can Anxiety or Depression Cause Irritable Bowel Syndrome (IBS)?. Pharma Science Monitor, 4, 2, 3844-3869. https://www.healthxchange.com.sg/healthyliving /SpecialFocus/Pages/Can-Anxiety-or Depression-Cause-Irritable-Bowel-SyndromeIBS.aspx.

Chang, L. (2004). Epidemiology and quality of life in functional gastrointestinal disorders. *Alimentary pharmacology & therapeutics*, *20*, 31-39.

Chang, L. (2011).The role of stress on physiologic responses and clinical symptoms in irritable bowel syndrome. *Gastroenterology,* 140, 761-765. doi: 10.1053/j.gastro.2011.01.032.

Chang, L., Lee, O. Y., Naliboff, B., Schmulson, M., & Mayer, E. A. (2001). Sensation of Bloating and Visible Abdominal Distension in Patients with Irritable Bowel Syndrome. *The American Journal of Gastroenterology,* 96, 3341-3347. http://dx.doi.org/10.1111/j.1572-0241.2001.05336.x.

Chang, Y. K.,Han, S. H., Lee, O. Y., Bae, S. C., Lee, S. H., Yang, S. Y., ... & Kim, T. H. (2006). Prevalence of irritable bowel syndrome in Korea: population-based survey using the Rome II criteria. *Journal of gastroenterology and hepatology*, *21*(11), 1687-1692.

Chaudhary, N. A., & Truelove, S. C. (1962). The irritable colon syndrome. Q J Med, 31, 307-22. PMID: 13878459.

Chilcot, J., & Moss-Morris, R. (2013). Changes in illness-related cognitions rather than distress mediate improvements in irritable bowel syndrome (IBS) symptoms and disability following a brief cognitive behavioural therapy intervention. *Behaviour Research and Therapy*, 51(10), 690-695. DOI: 10.1016/j.brat.2013.07.007.

Cicchetti, D., Ackerman, B. P., & Izard, C. E. (1995). Emotions and emotion regulation in developmental psychopathology. *Development and psychopathology,* 7(1), 1-10. https://doi.org/10.1017/S0954579400006301

Collins, S. M. (2001). The putative role of inflammation in the irritable bowel syndrome.

Coopersmth, A. (1967). Self Esteem Inventory. *British Journal of Hematology,17*,I3,225229.https://doi.org/10.1111/j.13652141.1969.tb01366x

Corney, R. H., & Stanton, R. (1990). Physical symptoms severity, psychological social dysfunction in a series of outpatients with irritable bowel syndrome. *Journal of Psychosomatic Research*, 34(5), 483-491. DOI: 10.1016/0022-3999(90)90022-v.

Costello, E. J., Mustillo. S., Erkanli, A., Keeler, G., & Angold, A. (2003). Prevalence and development of psychiatric disorders in childhood and adolescence. *Archives of General psychiatry,* 60, 837-844. DOI: 10.1001/archpsyc.60.8.837

Creed F. (1999). Outcome of prenatal depression and risk factors associated with persistence in the first postnatal year: prospective study from Rawalpindi, *Pakistan. Journal of Affective Disorder*, 100(1-3), 115-21. DOI: 10.1016/j.jad.2006.10.004.

Creed, F. H., Levy, R., Bradley, L., Drossman, D. A., Francisconi, C., Naliboff, B. D.,& Olden, K. W. (2006). Psychosocial Aspects of Functional Gastrointestinal Disorders. In:

Creed, F., Ratcliffe, J., & Fernandez, L. (2001). Health-Related Quality of Life and Health Care Costs in Severe, Refractory Irritable Bowel Syndrome. *Annals of internal medicine,* 134, 9, 860-868. https://doi.org/10.7326/0003-4819-134-9_Part_2-200105011-00010.

Creed, F., Craig, T., & Farmer, R. (1988). Functional abdominal pain,Psychiatric illness,and life events. *Gut,* 29, 235-242. doi: 10.1136/gut.29.2.235.

Creed, F., Ratcliff, J., Fernandes, L., Palmer, S., Rigby, C., Tomenson, B., Guthrie, E., Read, N., &Thompson, D. G. (2005). Outcome in severe irritable bowel syndrome with and without accompanying depressive, panic and neurasthenic disorders. *British Journal of psychiatry,* 186, 507-515. DOI: 10.1192/bjp.186.6.507

Damasio, A. R., Grabowski, T. J., Bechara, A., Damasio, H., Ponto, L. L., Parvizi, J., & Hichwa, R. D. (2000). Subcortical and cortical brain activity during the feeling of self-generated emotions. *Nature neuroscience,* 3(10), 1049-1056. doi: 10.1038/79871

Daniel, W. W. (1977). Statistical significance versus practical significance. Science Education, 61, 3, 423-427. https://doi.org/10.1002/sce.3730610318.

Darkoh, C., Comer, L., Zewdie, G., Harold, S., Snyder, N., &Dupont, H., (2014). Chemotactic chemokines are important in the pathogenesis of irritable bowel

syndrome. PLoS One, 25, 9(3), 931-44. https://doi.org/10.1371/journal.pone.0093144.

Davidson, J. (2008). Bacterial Overgrowth and Mucosal Inflammation in Irritable Bowel Syndrome. *Gastroenterology,* 9, 7, 791-806. https://doi.org/10.1080/14649360802382586.

Davidson, R. J. (1998). Affective style and affective disorders: perspectives from affective neurosciences. Cognition and Emotion, 1998,307-330.

Davison, G. C. (2008). Abnormal Psychology. Veronica Visentin. ISBN 978-0-470-84072-6.

Derogatis, L. R., & Unger, R. (2010). The Corsini Encyclopedia of Psychology, Symptom Checklist-90-Revised. John Wiley & Sons, Inc.

Devanarayana, N. M., Mettananda, S., Liyanarachchi, C., Nanayakkara, N., Mendis, N., Perera, N., & Rajindrajith, S. (2011). Abdominal Pain-Predominant Functional Gastrointestinal Diseases in Children and Adolescents: Prevalence, Symptomatology, and Association with Emotional Stress. *Journal of Pediatric Gastroenterology and Nutrition,* 53, 659-665. DOI: 10.1097/MPG.0b013e3182296033.

Donnachie, E., Schneider, A., Mehring, M., Enck, P. (2017). Incidence of irritable bowel syndrome and chronic fatigue syndrome following gastrointestinal infection: a population-level study using routinely-collected claims data. *Gut.* https://doi.org/10.1136/gutjnl-2017-313713. PMID: 28601847

Drossman, D. A. (1998). Presidential address : gastrointestinal illness and biopsychosocial model. *Psychosomatic Medicine*. 60, 3, 258–267. DOI: 10.1097/00006842-199805000-00007.

Drossman, D. A. (2006). The Functional Gastrointestinal Disorders and the Rome III Process. In D. A. Drossman, E. Corazziari, M. Delvaux, R. Spiller, N. J. Talley, W. G. Thompson, & W. E. Whitehead (Eds.), Rome III: The Functional Gastrointestinal Disorders (3rd ed., pp. 1-30). McLean, VA: Degnon Associates Inc.

Drossman, D. A., & Dumitrascu, D. L. (2006). Rome III: New standard for functional gastrointestinal disorders. *Journal of gastrointestinal and liver diseases*, *15*(3), 237.

Drossman, D. A., Creed, F. H., Olden, K. W., Svedlund, J., Toner, B. B., & Whitehead, W. E. (1999). Psychosocial aspects of the functional gastrointestinal disorders. *Gut*, 45, 2, 25-30. DOI: 10.1136/gut.45.2008.ii25.

Drossman, D. A., Leserman, J., Li, Z., Keefe, F., Hu, Y. J., & Toomey, T. C. (2000). Effects of coping on health outcome among women with gastrointestinal disorders. *Psychosom Med*. 62(3):309– 318. DOI: 10.1097/00006842-200005000-00004.

Drossman, D. A., Mckee, D. C., Sandler, R. S., Mitchell, C. M., Cramer, E. M., Lowman, B. C,et al. (1988). Psychological factors in the irritable bowel syndrome. A multivariate study of patients and non-patients with irritable bowel syndrome. *Gastroenterology.* 95,701-8. DOI: 10.1016/s0016-5085(88)80017-9.

Drossman, D. A., Ringel, Y., Vogt, B. A., et al (2003). Alterations of brain activity associated with resolution of emotional distress and pain in a case of severe irritable bowel syndrome. *Gastroenterology*,124, 754- 761. DOI: 10.1053/gast.2003.50103.

Drossman, D.A., Camilleri, M., Mayer, E.A., & Whitehead, W.E. (2002). AGA technical review on irritable bowel syndrome. *Gastroenterology*, 123, 2108-2131. doi:10.1053/ gast.2002.37095

Drossman, D.A., Chang, L., Schneck, S., Blackman, C., Norton, W.F., & Norton, N.J. (2009). A focus group assessment of patient perspectives on irritable bowel syndrome and illness severity. *Digestive Diseases and Sciences*, 54, 1532-1541. doi:10.1007/s10620-009- 0792-6

Drossman, D.A., Morris, C.B., Hu, Y., Toner, B.B., Diamant, N., Whitehead, W.E.,& Bangdiwala, S.I. (2007). Characterization of health related quality of life (HRQOL) for patients with functional bowel disorder (FBD) and its response to treatment. *American Journal of Gastroenterology,* 102, 1442- 1453. doi:10.1111/j.1572-0241.2007.01283.x

Dumic, I., Nordin, T., Jecmenica, M., Stojkovic Lalosevic, M., Milosavljevic, T., & Milovanovic, T. (2019). Gastrointestinal tract disorders in older age. *Canadian Journal of Gastroenterology and Hepatology*, *2019*.

Earls, F. (1987). Sex differences in psychiatric disorders: origins and developmental influences. *Psychiatric Develoments,*5, 1-23. PMID: 3601929

Ebrahim, S. (1995). Clinical and public health perspectives and applications of health-related quality of life measurement. *Social Science and Medicine*, 41, 1383–94. https://doi.org/10.1016/0277-9536(95)00116-O

Edwards, R. R., Bingham, C. O, Bathon, J., & Haythornthwaite. (2006). Catastrophizing and pain in arthritis, fbromyalgia, and other rheumatic diseases. *Arthritis and rheumatism*, 55(2), 325–332. doi:10.1002/art.21865.

Ekman, P. (1992). An argument for basic emotions. Cognition and Emotion, 6, 169- 200.

Elsenbruch, S., Rosenberger, C., Bingel, U., Forsting, M., Schedlowski, M., & Zizewski, E. R. (2010). Patients with irritable bowel syndrome have altered emotional modulation of neural responses to visceral stimuli. *Gastroenterology*, 139, 1310–1319. https://doi.org/10.1053/j.gastro.2010.06.054 PMID: 20600024

El-Serag, H. B., Olden, K., & Bjorkman, D. (2002). Health-related quality of life among persons with irritable bowel syndrome: a systematic review. *Alimentary pharmacology & therapeutics,* 16(6), 1171-1185. Doi: 10.1046/j.1365-2036.2002.01290.x

Elyse Swallow,Chen, S., M. P. P., Jarvis, J., Ohashi, E., Kelley, C., Xie, J., & Wu, E. (2016). Cost impact of switching from metoprolol to nebivolol for hypertension. *The American Journal of Pharmacy Benefits*, *8*(3).

Emler, N. (2001). *Self esteem: The costs and causes of low self worth*. York Publishing Services.

Enck, P., Aziz, Q., Barbara, G., Farmer, A. D., Fukudo, S., Mayer, E. A, & et. al., (2016). Irritable bowel syndrome. *National Review of Disease Primer*s, 2, 16014. https://doi.org/10.1038/nrdp.2016.14 PMID: 27159638.

Engel, G. L. (1980). The clinical application of the bio psycho social model. *American Journal of Psychiatry,* 137(5), 535-544. doi: 10.1176/ajp.137.5.535.

Erikson, E. M., Andeen, K. I., Kurlberg, G. K., & Eriksson, H. T. (2015). Aspects of the non-pharmacological treatment of IBS. *World Journal of Gastroenterology*, 21(40). doi: 10.3748/wjg.v21.i40.11439

Eriksson, E. M., Andrén, K. I., Eriksson, H. T., & Kurlberg, G. K. (2008). Irritable bowel syndrome subtypes differ in body awareness, psychological symptoms and biochemical stress markers. *World journal of gastroenterology: WJG*, *14*(31), 4889.

Esler, M. D., & Goulstone, K. J. (1973). Levels of anxiety in colonic disorders. *New England Journal of Medicine,* 288, 16-20. DOI: 10.1056/NEJM197301042880104.

Extremera, N., & Rey, L. (2014). Health-related quality of life and cognitive emotion regulation strategies in the unemployed: a cross sectional survey. *Health and quality of life outcomes*, 1, 5. https://idp.springer.com/authorize?response_type=cookie&client_id=springerlink&redirect_uri.

Fadgyas-Stanculete, M., Buga, A. M., Popa-Wagner, A., & Dumitrascu, D. L. (2014). The relationship between irritable bowel syndrome and psychiatric disorders: from molecular changes to clinical manifestations. *Journal of molecular psychiatry*, 2(1), 4. https://doi.org/10.1186/2049-9256-2-4.

Fairholme, C. P., Boisseeau, C. L., Ellard, Ehrenreich, J. T., & Barlow, D. H. (2010). Emotions, Emotion Regulation and Psychological Treatment: A unified perspective. In A. M. Kring & D. M. Sloan (Eds). Emotion Regulation and Psychopathology: A transdiagnostic approach to etiology and treatment (pp. 283-309). New York: Guilford Press.

Faresjö, Å., Anastasiou, F., Lionis, C., Johansson, S., Wallander, M. A., & Faresjö, T. (2006). Health-related quality of life of irritable bowel syndrome patients in different cultural settings. *Health and Quality of Life Outcomes*, *4*(1), 1-7.

Fayers, P.M. & Machin, D. (2000). Quality of life: Assessment, analysis and interpretation. John Wiley & Sons Ltd.

Fergusson, I. L. (1981). Major common problems: genital prolapsed. British *Journal of Hospital Medicine*, 26(1):67-72. PMID: 7272551.

Fichna, J., & Martin, A. (2012). Storr Brain-Gut Interactions in IBS. *Frontier Pharmacology*, 3, 5, 127. DOI: 10.3389/fphar.2012.00127.

Fond, G., Loundou, A., Hamdani, N., Boukouaci, W., Dargel, A., Oliveira, J., & Boyer, L. (2014). Anxiety and depression co morbidities in irritable bowel syndrome (IBS): a systematic review and meta-analysis. *European Archives o f Psychiatry Clinical Neuroscience*, 264(8), 651-660. doi: 10.1007/s00406014-0502-z.

Ford, A. C., & Talley, N. J. (2012). Laxatives for chronic constipation in adults. *BMJ*, *345*.

Ford, M. J., Miller, P. M., Eastwood, J. E. N. N. Y., & Eastwood, M. A. (1987). Life events, psychiatric illness and the irritable bowel syndrome. *Gut*, *28*(2), 160-165.

Frank, L., Kleinman, L., Rentz, A., Ciesla, G., Kim, J. J., & Zacker, C. (2002). Health-related quality of life associated with irritable bowel syndrome: comparison with other chronic diseases. *Clinical and Pharmacological Therapy*. 24, 675–89. https://doi.org/10.1016/S0149-2918(02)85143-8.

Frijda, N. H. (1986). The emotions. Cambridge, England: Cambridge University Press.

Frissora, C. L., & Koch, K. L. (2005). Symptom overlap and comorbidity of irritable bowel syndrome with other conditions. *Current gastroenterology reports*, *7*(4), 264-271.

Fujii, Y., & Nomura, S. (2008). A Prospective Study of the Psycho-Behavioral Factors Responsible for a Change from NonPatient Irritable Bowel Syndrome to IBS Patient Status. *Biopsychosocial Medicine*, 2, 16. https://bpsmedicine.biomedcentral.com/articles/10.1186/1751-0759-2-16.

Furukawa, T. A., Kawakami, N., Saitoh, M., et. al., (2008). The performance of the Japanese version of the K6 and K10 in the World Mental Health Survey Japan. *International Journal of Methods in Psychiatric Research*, 17,152–8. https://doi.org/10.1002/mpr.257.

Garlnek, I. M., Hays, R. D., Kilbourne, A., Naliboff, B., & Mayer. E. A. (2000).The impact of irritable bowel syndrome on health-related quality of life.*Gastroenterology.*119, 654-660.https://doi.org/10.1053/gast.2000.16484.

Garnefski N, Legerstee J, Kraaij V, Van den Kommer T& Teerds.(2002) J: Cognitive coping strategies and symptoms of depression and anxiety: a comparison between adolescents and adults. *J Adolescence*,(25):603–611. https://doi.org/10.1006/jado.2002.0507.

Garnefski, N., & Kraaij, V.(2006). Relationships between cognitive emotion regulation strategies and depressive symptoms: a comparative study of five specific samples. *Pers Indiv Differ*, 40, 1659–1669. https://doi.org/10.1016/j.paid.2005.12.009.

Garnefski, N., Kraaij, V., & Spinhoven, P. (2001) Negative life events, cognitive emotion regulation and depression. *Personality and Individual Differences*, 30,1311–1327. https://doi.org/10.1016/S0191-8869(00)00113-6.

Gershon, M. D. (1999). Roles played by 5-hydroxytryptamine in the physiology of the bowel. *Alimentary pharmacology & therapeutics*, 13, 15-30. https://doi.org/10.1046/j.1365-2036.1999.00002.x-i2

Ghoshal, U. C., Gwee, K. A., & Chen, M. (2018). Irritable bowel syndrome in Asia: pathogenesis, natural history, epidemiology, and management. *Journal of gastroenterology and hepatology*, *33*(1), 99-110.

Gold, M. R, Patrick, D. L, Torrance, G. W, Fryback, D., Hadorn, D. C., Kamlet, M, et al. (1996). Identifying and valuing outcomes and Cost-effectiveness in health and medicine. In: Gold, M. R., Siegel, J. E., Russell, L. B., & Weinstein, M. C, (1996). Oxford: Oxford University Press.

Goldberg, D. P., Gater, R., Sartorius, N., Ustun, T. B., Piccinelli, M., Gureje, O. & Rutter, C. (1997). The validity of two versions of the GHQ in the WHO study of mental illness in general health care. *Psychological Medicine*, 27(1), 191-197. DOI: https://doi.org/10.1017/S0033291796004242.

Goldberg, D. P.,Williams, P, A. (2010). Health related quality of life in female veterans.*Aliment pharmacol Theray,* 10, 31, 261-273.

Gonsalkorale, W. M., Miller, V., Afzal, A., & Whorwell, P. J. (2003). Long term benefits of hypnotherapy for irritable bowel syndrome. *Gut*, 52, 1623-1629. http://dx.doi.org/10.1136/gut.52.11.1623

Goshal, G. (2008). Effect of Continuous Ultrasound on the Morphology and Cytoskeletal Architecture of Chondrocytes Maintained In 3-D Matrices. American Psychiatric Association .

Graham, B. T., Kashikar-Zuck, S., Johnston, M., Ting, T. V., Lynch-Jordan, A. M., Verkamp, E., ... & Lovell, D. (2010). Relationship between school absenteeism and depressive symptoms among adolescents with juvenile fibromyalgia. *Journal of Pediatric Psychology*, *35*(9), 996-1004.

Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of personality and social psychology*, *96*(5), 1029.

Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of psychopathology and behavioral assessment*, *26*(1), 41-54.

Greenberg AS, Coleman M. Depressed 5-Hydroxyindole Levels Associated With Hyperactive and Aggressive Behavior: Relationship to Drug Response. *Arch Gen Psychiatry.* 1976;33(3):331–336. doi:10.1001/archpsyc.1976.01770030045006

Grodzinsky, E., Walter, S., Viktorsson, L., Carlsson, A. K., Jones, M. P., & Faresjö, A(2015). More negative self esteem and inferior coping strategies among patients diagnosed with IBS compared with patients without IBS - a case–control study. *BMC Family Practice*, 16, 6, DOI 10.1186/s12875-015-0225-x.

Groll, A. H., & Walsh, T. J. (2002). Antifungal chemotherapy: advances and perspectives. *Swiss Medicine Weekly*, 2, 132:303–311. •

Gross, J. J. (2002). Emotion regulation: affective, cognitive, and social consequences. *Psychophysiology*, 39(3), 281-291. doi: 10.1017.S0048577201393198.

Gross, J. J., & Munoz, R. F (1995).Emotion regulation and mental health. *Clinical Psychology*-SCI PR, 2(2), 151–164. https://doi.org/10.1111/j.1468-2850.1995.tb00036.x.

Gross, J.J. (2001). Emotion Regulation in Adulthood: Timing Is Everything. *Current Directions in Psychological Science*, 10, 214-219. http://

Grundmann, O., & Yoon, S. L. (2010). Irritable bowel syndrome: Epidemiology, diagnosis and treatment: An update for health-care practitioners. *Journal of gastroenterology and hepatology*, *25*(4), 691-699.

Gupta, N. (1989). Are financial incentives related to performance? A meta-analytic review of empirical research. *Journal of Applied Psychology,* 83(5), 777–787. https://doi.org/10.1037/0021-9010.83.5.777.

Guthrie, E., Creed, F., Fernandes, L., Ratcliffe, J., Van Der Jagt, J., Martin, J., ... & Tomenson, B. (2003). Cluster analysis of symptoms and health seeking behaviour differentiates subgroups of patients with severe irritable bowel syndrome. *Gut*, *52*(11), 1616-1622.

Gwee, K. A., Leong, Y. L., Graham, C., McKendrick, M. W., Collins, S. M, Walters, S. J., et al. (1999). The role of psychological and biological factors in postinfective gut dysfunction.*Gut*, 44: 400–406. PMID: 10026328.

Hahn, B. A., Yan, S., & Strassels, S. (1999). Impact of irritable bowel syndrome on quality of life and resource use in the United States and United Kingdom. *Digestion*, *60*(1), 77-81.

Halder, S. L. S., Locke III, G. R., Talley, N. J., Fett, S. L., Zinsmeister, A. R., & Melton III, L. J. (2004). Impact of functional gastrointestinal disorders on health-related quality of life: a population-based case–control study. *Alimentary pharmacology & therapeutics*, *19*(2), 233-242.

Halligan, S. L., Cooper, P. J., Fearson, P., Wheeler, S. L., Crosby, M., & Murray, L. (2013). The longitudinal development of emotion regulation capacities in children at risk for externalizing disorders. Development and Psychopathology, 25, 391-406

Han, B. (2013). Correlation between gastrointestinal hormones and anxiety-depressive states in irritable bowel syndrome. *Experimental and Therapeutic Medicine*, 6(3), 715-720. doi: 10.3892/etm.2013.1211.

Han, S. H., Lee, O. Y., Bae, S. C., Lee, S. H., Chang, Y. K., Yang, S. Y., ... & Kim, T. H. (2006). Prevalence of irritable bowel syndrome in Korea: population-based survey using the Rome II criteria. *Journal of gastroenterology and hepatology*, *21*(11), 1687-1692.

Hannesdottir, D. K., Doxie, J., Bell, M. A., Ollendick, T. H., & Wolfe, C. D. (2010). A longitudinal study of emotion regulation and anxiety in middle childhood: Associations with Frontal EEG Asymmetry in early childhood. Wiley Interscience publication.

Hannesdottir, D.K., & Ollendick,T.H.(2007). The Role of Emotion Regulation in the Treatment of Child Anxiety Disorders. Clinical Child and Family Psychology Review ,10, 275–293.

Harter, S. (1993). Causes and consequences of low self-esteem in children and adolescents. In *Self-esteem* (pp. 87-116). Springer, Boston, MA.

Haug, T. T., Mykletun, A., & Dahl, A. A. (2004). The association between anxiety, depression, and somatic symptoms in a large population: the HUNT-II study. *Psychosomatic Medicine*, 6, 845-851. doi: 10.1097/01.psy.0000145823.85658.0.

Hayes, S. C., Follette, V. M., & Linehan, M. (Eds.). (2004). *Mindfulness and acceptance: Expanding the cognitive-behavioral tradition*. Guilford Press.

Hays, R. D., & Reeve, B. B. (2010). Measurement and Modeling of Health-Related Quality of Life. In: Killewo, J., Heggenhougen, H. K., Quah, S. R, editors. *Epidemiology and Demography in Public Health.* Academic Press, 195–205. https://escholarship.org/content/qt70x7m955/qt70x7m955_noSplash_9b64e23432241ff97780c48308397c96.pdf?t=q2whex.

Heitkemper, M., Jarrett, M., Burr, R., cain, K. C., Landis, C., &Lentz, M (2005). Subjective and objective sleep indices in women with irritable bowel syndrome. *Neurogastroenterology &Motility,* 17, 4, 523-530. doi: 10.1111/j.1365-2982.2005.00700.x.

Herschbach, P., Henrich, G., & Von Rad, M. (1999). Psychological factors in functional gastrointestinal disorders: characteristics of the disorders or off the illness behaviour ? *Psychosome Medicine*, 61, 148-53. doi: 10.1097/00006842-199903000-00005.

Hertig, V. L., Cain, K. C., Jarrett, M. E., Burr, R. L., & Heitkemper, M. M. (2007). Daily stress and gastrointestinal symptoms in women with irritable bowel syndrome. *Nursing research*, *56*(6), 399-406.

Heymen, S., Maixner, W., Whitehead, W. E, Klatzkin, R. R, Mechlin, B., & Light, K. C. (2010). Central processing of noxious somatic stimuli in patients with irritable bowel syndrome compared with healthy controls.*Clinical JournalofPain*26,104109.10.1097/AJP.0b013e3181bff800.

Hislop, I. G. (1971). Psychological significance of the irritable colon syndrome. *Gut ,* 12, 452-7. doi: 10.1136/gut.12.6.452.

Hommes, N. G Arp, D. J., &. Sayavedra-Soto, L. A., (2002). Molecular biology and biochemistry of ammonia oxidation by Nitrosomonas europaea. *Archives of microbiology*, *178*(4), 250-255.

Honkalampi, K., Saarinen, P., Hintikka, J., Virtanen, V., & Viinamäki, H. (1999). Factors associated with alexithymia in patients suffering from depression. *Psychotherapy and psychosomatics*, *68*(5), 270-275.

Huselid, R. F., & Cooper, M. L. (1992). Gender roles as mediators of sex differences in adolescent alcohol use and abuse. *Journal of Health and Social Behavior*, 33. 348-362. https://doi.org/10.2307/2137313.

Hutchison, R. (1927). A British Medical Association Lecture On Asthma In Childhood. *British Medical Journal*, *1*(3460), 783.

Jafari, P., Asadollahi, Z., Moini, M., & Mirzaire, M. (2013). Health related quality of life in Iranian Patients with irritable bowel syndrome: Reliability and validity of the Persian version of the IBS-QoL. *Iran Red Crescent Medicine*, 15, 8, 723-728. doi: 10.5812/ircmj.4605.

Jamali, A. R., Jamali, M., Poorrahnama, et. al., (2014). Evaluation of health related quality of life in irritable bowel syndrome patients, *World Journal of Gastroenterology*, 20, 2499-2514. Doi:10.3748/wjg.v20.i10.2499.

James, W., Burkhardt, F., Bowers, F., & Skrupskelis, I. K. (1890). *The principles of psychology* (Vol. 1, No. 2). London: Macmillan.

Jensen, I., Nygren, A., Gamberale, F., Goldie, I., & Westerholm, P. (1994). Coping with long term musculoskeletal pain and its consequences: Is gender a factor? Pain, 57, 167-172. doi: 10.1016/0304-3959(94)90220-8.

Jerndal, P., Ringstrom, G., Agerforz, P., Karpefors, M., Akkermans, L. M., Bayati, A., simren, M. (2010). Gastrointestinal Specific anxiety :an important factor for severity of GI symptoms and Quality of life in IBS. *Neurogastroenterol Motility,* 22, 646-e179. DOI: 10.1111/j.1365-2982.2010.01493.x.

Johansena, S. G., Jensenb, E.N., Jo, S., Beach, R. H., Fincham, F. D., & Katz, J (2022). Marital therapy in the treatment of depression: toward a third generation of therapy and research, *Clinical Psychology Review*,18. DOI: 10.1016/s0272-7358(98)00023-3.

Jones, J., Boorman, J., Cann, P., Forbes, A., Gomborone, J., Heaton, K., ... & Whorwell, P. (2000). British Society of Gastroenterology guidelines for the management of the irritable bowel syndrome. *Gut*, *47*(suppl 2), ii1-ii19.

Jones, M. P., Dilley, J. B., Drossman, D., & Crowell, M. D. (2006). Brain-Gut Connections in Functional GI Disorders: Anatomic and Physiologic Relationships. *Journal of Neurogastroenterology and Motillity,* 18, 91-103. doi: 10.1111/j.1365-2982.2005.00730.x.

Jones, M., Koloski, N., Boyce, P., & Talley, N. J. (2011).Pathways connecting cognitive behavioral therapy and change in bowel symptoms of IBS. *Journal of Psychosomatic Research*, 70(3), 278-285. doi: DOI 10.1016/j.jpsychores.2010.10.004.

Jones, M.P., Wessinger, S., & Crowell, M.D. (2006).Coping strategies and interpersonal support in patients with irritable bowel syndrome and inflammatory bowel disease. *Clinical Gastroenterology and Hepatology*, 4, 474- 481. doi:10.1016/j.cgh.2005.12.012.

Jones, R., Latinovic, R., Charlton, J.,& Gulliford, M. (2006). Physical and psychological co-morbidity in irritable bowel syndrome: a matched cohort study using the General practice Research Database. *Alimentary Pharmacology &Therapeutics*, 24, 5, 879-886. DOI: 10.1111/j.1365-2036.2006.03044.x.

Juth, V., Smyth, J. M, & Santuzzi, A. M., (2008). How do you feel? Self esteem predicts affect, stress, social interaction, and symptom severity during daily life in patients with chronic illness. *Journal of Health Psychology,* 13(7), 884-94. DOI: 10.1177/1359105308095062.

Kaji, M., Fujiwara, Y., Shiba, M., Kohata, Y., Yamagami, H., Tanigawa,T., et al., (2010). Prevalence of overlaps between GERD ,FD and IBS and impact on health –related quality of life. *Journal of Gastroenterology and Hepatology*, 25, 6, 1151-1156. DOI: 10.1111/j.1440-1746.2010.06249.x.

Kaplan ,HI.,& Sadock, BJ., (1998) Other disorders of infancy, childhood, or adolescence. In: Kaplan and Sadock's Synopsis of Psychiatry: Behavioral Sciences, Clinical

Psychiatry. 9th ed. Hong Kong: William and Wilkinsons publications,; Chapter 47. p. 1244-48

Kearney, D. J., McDermott, K., Martinez, M., & Simpson, T .L. (2011). Association of participation in a mindfulness programme with bowel symptoms, gastrointestinal symptoms-specific anxiety and quality of life, *alimentary Pharmacology &Therapeutics*, 34, 3, 363-373. DOI: 10.1111/j.1365-2036.2011.04731.x.

Keefe, F. J., Brown, G. K., Wallston, K. A., & Caldwell, D. S. (1989). Coping with rheumatoid arthritis pain: Catastrophizing as a maladaptive strategy.*Pain*,37(1),51–56. doi:10.1016/0304-3959(89)90152-8.

Kellner, R. (1991). Psychosomatic syndromes and somatic symptoms. DC: American Psychiatric Press.

Kennedy, P. J., Clarke, G., Quigley, E.M, Groeger, J. A., Dinan, T. G., Cryan, J. F. (2011)Gut memories: towards a cognitive neurobiology of irritable bowel syndrome. *Neuroscientific Biobehavioral Review*. 36(1), 310–40. DOI: 10.1016/j.neubiorev.2011.07.001.

Keogh, E., & Asmundson, G. J. (2004). Negative affectivity, catastrophyzing and anxiety sensitivity. In: Asmundson, G. J., Vlaeyen, J. W. S, Crombezet, al. eds. Understanding and treating fear of pain. Oxford University Press, 91–117.

Kessler, R. C., Barker, P. R., Colpe, L. J, Epstein, J. F, Gfroerer, J. C, Hiripi, E, et. al., (2003). Screening for serious mental illness in the general population. *Archives of General Psychiatry*, 60(2), 184-9. doi: 10.1001/archpsyc.60.2.184.

Kessler, R.C., Andrews, G., Colpe, L. J, et. al., (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine ,* 32, 959–76. DOI: 10.1017/s0033291702006074.

Kiliaan, A. J., Saunders, P. R., & Bijlsma, P. B. (1998) Stress stimulates transepithelial macromolecular uptake in rat jejunum. *American Journal of Physiology,* 275(5 Pt 1):G1037–G1044.

Kleinman, A. (1991). Rethinking Psychiatry. From Cultural Category to Personal Experience. The Free Press

Kline, T. (2005). Psychological testing: A practical approach to design and evaluation. Sage Publications India, Pvt. Ltd.

Knight, G., (2008). Geoffrey‘s hypnosis articles "Irritable Bowel Syndrome".From:http://www.geoffreyknight.com/hypnosisarticles/hypnosis-for-irritable-bowel syndrome.html (Access18-5-2014).

Koloski, N. A., Jones, M., Kalantar, J., Weltman, M., Zaguirre, J., Talley, N. J. (2011). The brain--gut pathway in functional gastrointestinal disorders is bidirectional: a 12-year prospective population-based study. *Gut,* 61, 9. DOI: 10.1136/gutjnl-2011-300474.

Korevaar, J.C., Jansen, M.A., Merkus, M.P., Dekker, F.W., Boeschoten, E.W. & Krediet, R.T. (2000). Quality of life in predialysis end-stage renal disease patients at the initiation of dialysis therapy. Peritoneal Dialysis International. *Journal of the International Society for Peritoneal Dialysis,* 20(1), 69-75. PMID: 10716587.

Kothari, C.R. (1985). Research Methodology—Methods and Techniques. Wiley Eastern Limited.

Labus, J. S., Bolus, R., Chang, L., Wiklund, I., Naesdal, J., Mayer, E. A, Naliboff, B. D. (2007). The visceral sensitivity index: development and validation of a gastrointestinal symptom specific anxiety scale .*Aliment pharmacological Theray*, 20, 89-97. DOI: 10.1111/j.1365-2036.2004.02007.x.

Lackner JM, Quigley BM & Blanchard EB (2004). Depression and abdominal pain in IBS patients: the mediating role of catastrophizing. *Psychosomatic Medicine*, 66, 435-441. DOI: 10.1097/01.psy.0000126195.82317.46.

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

Lackner, J. M., Gudleski, G. D., Firth, R., Keefer, L., Brenner, D. M, Guy, K, et. al., (2013) Negative aspects of close relationships are more strongly associated than supportive personal relationships with illness burden of irritable bowel syndrome. *Journal psychosomatic Research*, 74 (6), 493-500. doi: 10.1016/j.jpsychores.

Lackner, J. M., Gurtman, M. B. (2004). Pain catastrophizing and interpersonal problems: a circumplex analysis of the communal coping model. *Pain*, 110, 597-604. DOI: 10.1016/j.pain.2004.04.011.

Lackner, J. M., Jaccard, J., Krasner, S. S., Katz, L. A., Gudleski, G. D., & Blanchard, E. B. (2007). How does cognitive behavior therapy for irritable bowel syndrome work? A mediational analysis of a randomized clinical trial. *Gastroenterology,* 133(2), 433-444. doi: DOI 10.1053/j.gastro.2007.05.014.

Lackner, J., Jaccard, J., Baum, C., et. al., (2011). Patient-reported outcomes for irritable bowel syndrome are associated with patients' ratings of symptoms and non-clinical factors. *Clinical Gastroenterology and Hepatology*, 9, 957–964. doi: 10.1016/j.cgh.2011.06.014.

Lacy, B. E., Chey, W.D., & Lembo, A. J. (2015). New and Emerging Treatment Options for Irritable Bowel Syndrome. *Gastroenterol Hepatol,;* 11(4/2):1–19. 2. PMCID: PMC4612133.

Lazarus, R. S. (1966). Psychological Stress and the Coping Process. NY: McGraw Hill.

Lea, R., & Whorwell, P J. (2001). Quality of life in irritable bowel syndrome. *Pharmacoeconomics*, 19(6), 643-653. DOI: 10.2165/00019053-200119060-00003.

Lee, B. O., Chaboyer, W., & Wallis, M. (2008). Predictors of health-related quality of life 3 months after traumatic injury. *Journal of Nursing Scholarship*, *40*(1), 83-90.

Lee, S., Wu, J., Ma, Y. L., Tsang, A., Guo, W. J&Sung, J. (2009). Irritable bowel Syndrome is strongly associated with generalized anxiety disorder: a community study. *Aliment Pharmacological Theray,* 30, 643-651. DOI: 10.1111/j.1365-2036.2009.04074.x.

Lembo, A. J., Conboy, L., & Kelly, J. M., et al. (2009)."A Treatment Trial of Acupuncture in IBS Patients." *American Journal of Gastroenterology,* 104, 1489-497. DOI: 10.1038/ajg.2009.156.

Lerutla, D. M. (2000). *Psychological stress experienced by black adolescent girls prior to induced abortion* (Doctoral dissertation, Medunsa).

Leung, L. (2012). Pain catastrophizing : an updated review. *Indian journal of psychological medicine,* 34(3), 204–217. https://doi.org/10.4103/0253-7176.106012.

Levy, R. L., Olden, K. W., Naliboff, B. D., Bradley, L. A., Francisconi, C., Drossman, D A, et al. (2006). Psychosocial aspects of the functional gastrointestinal disorders. *Gastroenterology*, 130(5), 1447-58. doi: 10.1053/j.gastro.2005.11.057.

Lipowski, Z. J. (1968). Review of consultation psychiatry and psychosomatic medicine, III: theoretical issues. *Psychosomatic Medicine,* 30, 395-422. doi: 10.1097/00006842-196807000-00005.

Liss, J. L., Alpers, D., & Woodruff, R. A. (1973). The irritable colon syndrome and psychiatric illness. *Diseases of the Nervous System*.

Liverant, G. I., Brown, T. A., Barlow, D. H., & Roemer, L. (2008). Emotion regulation in unipolar depression: The effects of acceptance and suppression of subjective emotional experience on the intensity and duration of sadness and negative affect. *Behaviour research and therapy*, *46*(11), 1201-1209.

Ljotsson, B., Hesser, H., Andersson, E., Lindfors, P., Hursti, T., Ruck, C&Hedman, E. (2013). Mechanisms of change in an exposure-based treatment for irritable bowel syndrome. *Journal of Consultant Clinical Psychology*, 81(6), 1113-1126. doi: 10.1037/a0033439.

Lovell, R. M., & Ford, A. C. (2012). Effect of gender on prevalence of irritable bowel syndrome in the community: systematic review and meta-analysis. *American Journal of Gastroenterology*, 107, 991-1000. DOI: 10.1038/ajg.2012.131.

Luskombe, F. A. (2000). Health-related quality of life and associated psychosocial factors in irritable bowel syndrome: a review. *Quality of Life Research,* 23, 3, 144 – 156.

Macdonald, A. J., Bouchier, P. A. D. (1980). Non-organic gastrointestinal illness: a medical and psychiatric study. *British Journal of Psychiatry*, 136, 276-83. DOI:10.1192/bjp.136.3.276.

Makharia, G. K., Verma, A. K., Amarchand, R., Goswami, A., Singh, P., Agnihotri, A., ... & Krishnan, A. (2011). Prevalence of irritable bowel syndrome: a community based study from northern India. *Journal of neurogastroenterology and motility*, *17*(1), 82.

Mann, M., Hosman, C. M., Schaalma, H. P., & de Vries, N. K. (2004). Self esteem in a broad-spectrum approach for mental health promotion. *Health Education Research,* 19, 357–372. https://doi.org/10.1093/her/cyg041.

Martin, R.C.,&Dahlen, E. R. (2005). Cognitive emotion regulation and the prediction of depression, anxiety, stress, and anger. Personality Individual Differences, 39, 1249–1260. https://www.who.int/publications/i/item/9789240003927?gclid.

Mathew, P., & Bhatia, S. J. (2009). "Pathogenesis and Management of Irritable Bowel Syndrome."*Tropical Gastroenterology*, 30, 19-25. PMID: 19624083.

Mauss, I. B., Levenson, R. W., McCarter, L., Wilhem, F. H., & Gross, J. J. (2005). The tie that binds?: Coherence among emotion experience, behavior, and physiology. Emotion, 5(2), 175-190

MAYER EAThe neurobiology of stress and gastrointestinal disease

Mayer, E. A. Schmulson, M., Lee, O. Y., Chang, L., Naliboff, B., & (1999). Symptom differences in moderate to severe IBS patients based on predominant bowel habit. *The American journal of gastroenterology*, *94*(10), 2929-2935.

Mayer, E. A., Naliboff, B. D., Chang, L., & Coutinho, S. V. (2001). V. Stress and irritable bowel syndrome. *American Journal of Physiology-Gastrointestinal and Liver Physiology*, *280*(4), G519-G524.

Mayer, J. D., Salovey, P., Caruso, D. R., & Sitarenios, G. (2001). Emotional intelligence as a standard intelligence.

Medeiros, M. T. G., Carvalho, A. F., de Oliveira Lima, J. W., Dos Santos, A. A., de Oliveira, R. B., & e Souza, M. Â. N. (2008). Impact of depressive symptoms on visceral sensitivity among patients with different subtypes of irritable bowel syndrome. *The Journal of nervous and mental disease*, *196*(9), 711-714.

Mendeloff, A. I., Monk, M., Siegel, C. I., Lilienfeld, A. (1970). Illness experiences and life stresses in patients with irritable colon and with ulcerative colitis. An epidemiological study of ulcerative colitis and regional enteritis in Baltimore, 1960-1964. N *England Journal of Medicine,* 282, 147. DOI: 10.1056/NEJM197001012820104.

Mennin,D.S., Heimberg,R.G., Turk,C.L.,& Fresco,D.M.(2005). Preliminary Evidence for an Emotion Dysregulation Model of Generalized Anxiety Disorder. Behaviour Research and Therapy ,43 ,1281–1310.

Merriam, G., & Merriam, C. (2012). Encyclopædia Britannica, Inc.merriam-webster.com

Mikocka-Walus, A. A., Turnbull, D. A., Andrews, J. M., Moulding, N. T., Wilson, I. G., Harley, H. A., ... & Holtmann, G. J. (2008). Psychological problems in gastroenterology outpatients: A South Australian experience. Psychological co-morbidity in IBD, IBS and hepatitis C. *Clinical Practice and Epidemiology in Mental Health*, *4*(1), 1-8.

Milu, M. & Jayan, C. (2014). Revised Difficulty in Emotion Regulation Scale. Unpublished Thesis. Calicut: University of Calicut. Mineka, S., & Sulton, S. K. (1994). Cognitive biases and the emotional disorders. Psychological Science, 3(1) 65-69.

Mira, J. J., Guilabert, M., Sempere, L., Almenta, M., Palazón, J. M., et al., (2015). The irritable bowel syndrome care process from the patients' and professionals' views. Rev Esp Enferm Dig Madrid, 107(4), 202-10. PMID: 25824918.

Mirowsky, J., and C.E. Ross. (2002). "Selecting outcomes for the sociology of mental health: Issues of measurement and dimensionality." *Journal of Health and Social Behavior,* 43,152-170.

https://www.google.com/search?q=Mirowsky%2C+J.%2C+and+C.E.+Ross.+(2002).

Monnikes, H. (2011). Quality of life in patients with irritable bowel syndrome. *Journal of Clinical Gastroenterology,* 45, S98- S101. doi:10.1097/MCG.0b013e31821fbf.

Mönnikes, H., Tebbe, J. J., Hildebrandt, M., Arck, P., Osmanoglou, E., Rose, M., Klapp, B., Wiedenmann, B., & Heymann-Mönnikes, I. (2001). Role of Stress in Functional Gastrointestinal Disorders. *Digestive Disease*, 19, 201–211. https://doi.org/10.1159/000050681.

Mora G. Man, Mind & Medicine: The Doctors' Education. *JAMA*. 1968;205(5):315–316. doi:10.1001/jama.1968.03140310073031

Mruk, C. (1999). Self-esteem research, theory and practice. Free Association Books. London

Mueen, B., Khurshid, M., & Hassan, I. (2006). Relationship of Depression and Assertiveness in Normal Population and Depressed Individuals. Internet Journal of Medical Update, 1(2):10-17. https://www.akspublication.com/paper03_jul-dec2006.htm.

Mulak, A., Taché, Y., Larauche, M. (2014). Sex hormones in the modulation of irritable bowel syndrome. *World Journal of Gastroenterology*, 20, 2433-2448. DOI: 10.3748/wjg.v20.i10.2433.

Muscatello, M. R. A., Bruno, A., Scimeca, G., et. al., (2014). Role of negative effects in pathophysiology and clinical expression of irritable bowel syndrome. *World Journal of Gastroenterology*, 20(24), 7570–7586. DOI: 10.3748/wjg.v20.i24.7570.

Nabavizaeh, F., Vahedian, M., Sahraei, H., & Adeli, S.(2011). Physical and psychological stress have similar effects on gastric acid and pepsin secretions in rat. *Journal of Stress Physiology & Biochemistry*, 7, 2, 164-174. I 542be6fe0cf277d58e8a5147.pdf.

Nagaonkar, S. N., Singh, V. S., Kangule, D. T., & Sadhanala, S. (2018). A study of prevalence and determinants of irritable bowel syndrome in an urban slum community in Mumbai. *Journal of Datta Meghe Institute of Medical Sciences University*, *13*(2), 87.

Nagasako, K. C., Montes, G. C., Lorena, S. L., & Mesquita, M. A. Irritable bowel syndrome subtypes: clinical and psychological features, body mass index and comorbidities. Rev Esp Enferm Dig,108, 59-64. DOI: 10.17235/reed.2015.3979/2015.

Nicholas, C. W., Williams, C., Lakomy, H. K., Phillips, G., & Nowitz. A. (1995). Influence of ingesting a carbohydrate-electrolyte solution on endurance capacity during intermittent, high-intensity shuttle running. *Journal of Sorts science*, 13(4), 283-90. DOI: 10.1080/02640419508732241.

Nicholl, B. I., Halder, S. L., Macfarlane, G. J., Thompson, D. G., O'brien, S., Musleh, M. & Mcbeth, J. 2008. Psychosocial risk markers for new onset irritable bowel syndrome – Results of a large prospective population-based study. *PAIN,* 137, 147-155. DOI: 10.1016/j.pain.2007.08.029.

Nunnally, J. C. (1959). Tests and measurements assessment and prediction. Mcgraw-hill.

Oatley, K., & Johnson-Laird, P. N. (1987). Towards a cognitive theoryd of emotions. Cognition and emotion, 1(1), 29-50. DOI:10.1016/*j.aquaculture.*2008.07.011

Orth, U., & Robins, R. W. (2013).Understanding the link between low self esteem and depression. *Current Directions in Psychological Science*, 22, 455-460. https://doi.org/10.1177/0963721413492763.

Osman, A., Barrios, F., Copper, B., Hauptmann, W., Jones, J., & O'Neill, E. (1997). Factor structure, reliability, and validity of the Pain Catastrophizing Scale. *Journal of Behavioural Medicine*, 20,589-605. DOI: 10.1023/a:1025570508954.

Oudenhove L. V, Vandenberghe J, Vos R., Holvoet L.&Tack J. (2011). Factors associated with co-morbid irritable bowel syndrome and chronic fatigue-like symptoms in functional dyspepsia. Neurogastroenterology & Motility, 23, 6, 524-e202. https://doi.org/10.1111/j.1365-2982.2010.01667.x.

Oudenhove, V. L., Vandenberghe, J., Demyttenaere, K., & Tack, J. (2010). Psychosocial Factors, Psychiatric Illness and Functional Gastrointestinal Disorders: A Historical Perspective. *Digestion*, 82, 201-210. DOI: 10.1159/000269822.

Palmer, R. L., Stonehill, E.,Crisp, A. H., Waller, S. L., Misieweiz, J. J. (1974). Psychological charecteristics of patients with the Irritable bowel Syndrome. *Postgraduate Medical Journal,* 416-419. DOI: 10.1136/pgmj.50.585.416.

Palsson, O. S., & Drossman, D. A. (2005). Psychiatric and Psychological Dysfunction in Irritable Bowel Syndrome and the Role of Psychological Treatments. *Gastroenterology Clinics of North America*, 34, 281-303. DOI: 10.1016/j.gtc.2005.02.004.

Panskepp, J. (1982). Toward a general psychobiological theory of emotions. Behavioral and Brain Sciences, 5, 407-467.

Park, H. J., Jarrett, M., Cain, K., & Heitkemper, M. (2008). Psychological distress and GI symptoms are related to severity of bloating in women with irritable bowel syndrome, *Research in Nursing & Health*, 31(2), 98-107. https://doi.org/10.1002/nur.20237.

Parkitny, L., & McAuley, J.(2010). The depression anxiety stress Scale (DASS). *Journal of Physiotherapy*, 56, 204–04. DOI: 10.1016/s1836-9553(10)70030-8.

Parthi, K., & Rohilla, S. S. (2017). A Study of Mental Health, Perceived Stress, and Self esteem among Students in Higher Education. *The International Journal of Indian Psychology*, 4 (4). DOI: 10.25215/0404.016.

Patel, A., Hasak, S., Cassell, B., Ciorba, M.A., Vivio, E.E., Kumar, M & Sayuk, G.S. (2016). Effects of disturbed sleep on gastrointestinal and somatic pain symptoms in irritable bowel syndrome. *Alimentary Pharmacology and Therapy*, 44, 246-258. DOI: 10.1111/apt.13677.

Patrick, D. L., & Drossman,. A. (1998). Quality of life in persons with irritable bowel syndrome: Development and validation of a new measure. *Digestive Diseases and Sciences,* 43(2), 400-411.DOI:10.1023/A:1018831127942

Peasgood, T., Brazier, J., Mukuria, C., & Rowen, D. (2014). A conceptual comparison of well-being measures used in the UK. Policy Research Unit in Economic Evaluation of Health and Care Interventions. Policy paper document, 01, 09. https://www.google.com/search?q=Peasgood%2C+T.%2C.

Pitchel, T., Ducrotte, P., Sabate, J. M., Coffin, B., Zerbib, F., Dapoigny, M., et. al., (2010). Impact of functional bowel symptoms on quality of life and fatigue in quiescent crohn disease and irritable bowel syndrome. *Neurogastroenterology & Motility*, 22(6), 626-e174. DOI: 10.1111/j.1365-2982.2010.01502.x.

Plante,T.G.,Lawson,C.L., Kinney ,F.,&Mello,K.(2007).Physiological Stress Responsivity and Perceived stress among subjects with Irritable Bowel Syndrome. *Journal of applied Biobehaviourall Research*, 3 (2), 96-109. https://doi.org/10.1111/j.1751-9861.1998.tb00047.x.

Pohl, C. (2015). Effect of ethanol extract from Morus alba leaves supplementation on gastric tissue glutathione level in indomethacin induced ulcers in rats. *International Journal of Pharmaceutical Sciences and Research* (IJPSR), 6, 12, 5308-5312 ref.41. https://www.cabdirect.org/cabdirect/abstract/20153431119.

Portincasa, P., Moschetta, A., Baldassarre, G., Altomare, D. F., & Palasciano, G. (2003). Pan-enteric dysmotility, impaired quality of life and alexithymia in a large group of patients meeting ROME II criteria for irritable bowel syndrome. *World journal of gastroenterology*, *9*(10), 2293.

Qin, H. Y., Cheng, C. W., Tang, X. D., & Bian, Z. X. (2014). Impact of psychological stress on irritable bowel syndrome. *World journal of gastroenterology: WJG*, *20*(39), 14126.

Quartana, P. J., Campbell, C. M., & Edwards, R. R. (2009). Pain catastrophizing: a critical review. *Expert review of neurotherapeutics*, 9(5), 745–758. https://doi.org/10.1586/ern.09.34.

Quigley, E. M. M. (2005). Irritable bowel syndrome and inflammatory bowel disease: interrelated diseases?. *Chinese Journal of Digestive Diseases*, 6, 3, 122–132, 2005. https://doi.org/10.1111/j.1443-9573.2005.00202.x

Quigley., Thomas., Anusha., & Eamonn, M. M. (2015). *Diet and irritable bowel syndrome. Gastroenterology,* 31, 2, 166-171. DOI: 10.1097/MOG.0000000000000158.

Rahman, M. N. (2017). Review on risk factors related to lower back disorders at workplace. *Materials Science and Engineering,* 226, 6–17. ttps://iopscience.iop.org/article/10.1088/1757-899X/226/1/012035/meta.

Reme, S. E., Stahl, D., Kennedy, T., Jones, R., Darnley, S., & Chalder, T. (2011). Mediators of change in cognitive behaviour therapy and mebeverine for irritable bowel syndrome. *Psychology Medicine*, 41(12), 2669-2679. doi: 10.1017/S0033291711000328.

Revicki, D. A. (1989). Health-related quality of life in the evaluation of medical therapy for chronic illness. *J Fam Pract*, *29*(4), 377-80.

Rey, E., & Talley, N. J. (2009). Irritable Bowel Syndrome: Novel Views on the Epidemiology and Potential Risk Factors. *Digestive Liver Disease*, 41, 772-80. DOI: 10.1016/j.dld.2009.07.005.

Riedl., Christoph., Leimeister., Jan Marco., Krcmar., & Helmut. (2009). New Service Development for Electronic Services – A Literature Review. 2009. - 15th Americas Conference On Information Systems (AMCIS 2009). http://aisel.aisnet.org/amcis2009/606.

Ringel, I., Kubek, M. J., & Domb, A. J. (2001). Issues related to intranasal delivery of neuropeptides to temporal lobe targets. In *Blood—Brain Barrier* (pp. 323-350). Springer, Boston, MA.

Rolls, B. J., Morris, E. L., & Roe, L. S. (2002). Portion size of food affects energy intake in normal-weight and overweight men and women. *American Journal of Clinical Nutrition*, 6(6), 1207-13. DOI: 10.1093/ajcn/76.6.1207.

Rottenberg, J., & Gross, J. J. (2003). When emotion goes wrong: realizing the promising of affection science. Clinical Psychology. Science and Practise, 10, 227-232

Rude, S. S., & McCarthy, C. T. (2003). Emotional functioning in depressed and depression-vulnerable college students. *Cognition and Emotion*.

Runyan, D., Zerger,R.,& Marchetti, K. (1996). A Content Analysis of Safety Behaviors of Television Characters: Implications for Children's Safety and Injury, *Journal of Pediatric Psychology,* 21, 4, 517–528, https://doi.org/10.1093/jpepsy/21.4.517.

Rutter, C. L., & Rutter, D. (2002). Illness representation, coping and outcome in irritable bowel syndrome (IBS). *British Journal of Health Psychology* , 7, 377-391.DOI:10.1348/135910702320645372.

Salters-Pedneault, K., Roemer, L., Tull, M. T., Rucker, L., & Mennin, D. S. (2006). Evidence of broad deficits in emotion regulation associated with chronic worry and generalized anxiety disorder. *Cognitive Therapy and Research*, *30*(4), 469-480.

Sarkisian, C. A., Hays, R. D., Mangione, C. M. (2005). Development of the 12-Item Expectations Regarding Aging Survey, *The Gerontologist*, 45, 2, 240–248. https://doi.org/10.1093/geront/45.2.240.

Savas, L. S., White, D. L., Wieman, M., Dari, K., Fitzgerald, S., Smith, L. S., Tan, G., Graham, D. P.,Cully, J. A., EI-Serag, H. B. (2009). Irritable bowel syndrome and dyspepsia among women veterans : Prevalence and association with psychological distress. *Aliment pharmacological Therapy*, 29, 115-125. DOI: 10.1111/j.1365-2036.2008.03847.x.

Schroevers, M. J., Kraaij, V., Garnefski. (2007). Goal disturbance, cognitive coping strategies, and psychological adjustment to different types of stressful life event. *Personality and Individual Differences*, 43, 413–423. DOI:10.1016/J.PAID.2006.12.009.

Schwartz, D., & Proctor, L. J. (2000). Community violence exposure and children's social adjustment in the school peer group: the mediating roles of emotion regulation and social cognition. *Journal of Consulting and Clinical Psychology*, 68, 4, 670–683. PMID: 10965642.

Schwarz, N., & Clore, G. L. (1983). Mood, misattribution, and judgments of wellbeing: Informative and directive functions of affective states. Journal of Personality and Social Psychology, 45, 513-523.

Schwille-Kiuntke, J., Enck, P., Polster, A. V., Gaile, M., Kremsner, P. G., & Zanger, P. (2015). Postinfectious irritable bowel syndrome after travelers' diarrhea–a cohort study. *Neurogastroenterology & Motility*, *27*(8), 1147-1155.

Seres, G., Kovács, Z., Kovács, A. (2008). Different associations of health related quality of life with pain, psychological distress and coping strategies in patients with irritable bowel syndrome and inflammatory bowel disorder. *Journal of Clinical Psychology in Medical Settings,* 15, 287-295. doi: 10.1007/ s10880-008-9132-9, 2.

Shah, S. S., Bhatia, S. J., Mistry, F. P. (2001). Epidemiology of dyspepsia in the general population in Mumbai. *Indian Journal of Gastroenterology,* 20, 103-106 [PMID: 11400800].

Shen, L. (2009). Prevalence of irritable bowel syndrome and its relationship with psychological stress status in Chinese university students. *Gastroenterology and hematology*, 24, 12, 1885-1890. https://doi.org/10.1111/j.1440-1746.2009.05943.x.

Simren, M., Abrahamsson, H., Svedlund, J., & Björnsson, E. S. (2001). Quality of life in patients with irritable bowel syndrome seen in referral centers versus primary care: the impact of gender and predominant bowel pattern. *Scandinavian journal of gastroenterology*, *36*(5), 545-552.

Simren, M., Ringström, G., Björnsson, E. S., & Abrahamsson, H. (2004). Treatment with hypnotherapy reduces the sensory and motor component of the gastrocolonic response in irritable bowel syndrome. Psychosomatic.*Medicine,* 66, 233-8. DOI: 10.1097/01.psy.0000116964.76529.6e.

Singh, S. M., Murphy, B., & O'Reilly, R. (2002). Epigenetic contributors to the discordance of monozygotic twins. *Clinical Genetics,* 62, 2, 97-103. https://doi.org/10.1034/j.1399-0004.2002.620201.x.

Smith, G. D., Steinke, D. T., Penny, K., Kinnear, M., & Penman, I. D. (2010). Health related quality of life and symptom classification in patients with irritable bowel syndrome. *journal of Nursing and Healthcare of Chronic Illness,* 2(1), 4-12.

Sperber, A. D., Friger, M., Shvartzman, P., Abu-Rabia, M., Abu Rabia, R., Abu –Rashid, M., Albedour, K., Alkranawi, O., Eisenberg, A., Kazanoviz, A., Mazinger, L., & Fich, A. (2005). Rates of functional bowel disorders among Israeli Bedowins in rural areas compared with those who moved to permanent town. *Clinical Gastroenterological Hepatology*, 3, 342-348. google.com/search?q=Sperber%2C+A.+D.%2C.

Spiegel, B. M., Gralnek, I. M., Bolus, R., Chang, L., Dulai, G. S., Mayer, E. A., & Naliboff, B. (2004). Clinical determinants of health-related quality of life in patients with irritable bowel syndrome. *Archives of internal medicine*, *164*(16), 1773-1780.

Spiegel, B., Strickland, A., Naliboff, B. D., Mayer, E. A., & Chang, L. (2008). Predictors of patient-assessed illness severity in irritable bowel syndrome. *The American journal of gastroenterology*, *103*(10), 2536.

Spilker, B. (1996). Quality of life and pharmacoeconomics in clinical trials. Lippincott-Raven.

Spiller, R., Aziz, Q., Creed, F., Emmanuel, A., Houghton, L., Hungin, P. (2007). Clinical Services Committee of The British Society of, Gastroenterology. Guidelines on the irritable bowel syndrome: mechanisms and practical management. *Gut*, 56(12), 1770-1798. doi: 10.1136/gut.2007.119446.

Stanculete, M. F., Pojoga, C., & Dumitraşcu, D. L. (2014). Experience of anger in patients with irritable bowel syndrome in Romania. *Clujul Medical*, *87*(2), 98.

Sugawara, N. (2017). Depressive symptoms and coping behaviours among individuals with irritable bowel syndrome in Japan. International Medicine, 56, 493-498. doi: 10.2169/*internalmedicine*.56.7695.

Sugaya, N., & Nomura, S. (2008). "Relationship between cognitive appraisals of symptoms and negative mood for subtypes of irritable bowel syndrome," *BioPsychoSocial Medicine*, 2, 9, 2008. doi: 10.1186/1751-0759-2-9.

Sullivan, M. J. L., Bishop, S., & Pivik, J. (1995). The Pain Catastrophizing Scale: Development and validation. Psychological Assessment, 7, 524-532. https://doi.org/10.1037/1040-3590.7.4.524

Sullivan, M. J., Thorn, B., Haythornthwaite, J. A., Keefe, F., Martin, M., Bradley, L. A., et al. (2001).Theoretical perspectives on the relation between catastrophizing and pain. *The Clinical journal of pain,* 17(1), 52–64, doi: 10.1097/00002508-200103000-00008

Sunderland, M., Mahoney, A., & Andrews, G. (2012). Investigating the factor structure of the Kessler Psychological Distress Scale in Community and clinical samples of the Australian Population. *Journal of Psychopathology and Behavioural Assessment,* 34, 253–9. DOI:10.1007/s10862-012-9276-7

Surdea-Blaga, T., Băban, A.,& Dumitrascu, D. L. (2012). Psychosocial determinants of irritable bowel syndrome. *World Journal of Gastroenterology,* 18(7), 616–26. doi: 10.3748/wjg.v18.i7.616.

Sykes, M. A., Blanchard, E. B., Lackner, J., Keefer, L., & Krasner, S. (2003). Psychopathology in irritable bowel syndrome : support for a psychophysiological model. *Journal of Behavioural Medicine*, 26, 361-372. DOI: 10.1023/a:1024209111909.

Taft,T., Keefer.L., Artz, C., Bratten ,J., Jones, M. (2011). Perceptions of illness stigma in patients with inflammatory bowel disease and IBS. *Quality of life Research*, 1391-9. https://www.google.com/search?q=Gastroenterology%2C+15%2C.

Talley, N. J., Fett, S. L., Zinsmeister, A. R., Solmaz, M., Kavuk, I., & Sayar, K. (2003). Psychological factors in the irritable bowel syndrome. *Europian Journal of Medical Research*, 8, 549-56. PMID: 14711602.

Talley, N., & Spiller, R. (2002). Irritable bowel syndrome: A little understood organic bowel disease? The Lancet, 360 (9332), 555-64. DOI:10.1016/S0140-6736(02)09712-X.

Testa, M. A., & Simonson, D.C. (1996) Assessment of Quality-of-Life Outcomes. *New England Journal of Medicine*, 334, 835-840. http://dx.doi.org/10.1056/NEJM199603283341306.

Thompson, J. J., Elsenbruch, S., Harnish, M. J., & Orr, W. C. (2002). Autonomic functioning during REM sleep differentiates IBS symptom subgroups. *The American journal of gastroenterology*, *97*(12), 3147-3153.

Thompson, W. G., Heaton, K. W., Smyth, G. T., & Smyth, C. (2000). Irritable bowel syndrome in general practice: prevalence, characteristics, and referral. *Gut*, *46*(1), 78-82.

Tilburg, M. A. L., Palsson, O. S., & Whitehead, W. E. (2013). Which psychological factors exacerbate irritable bowel syndrome? Development of a comprehensive model. *Journal of Psychosomatic Research*, 74(6), 486–492, doi:10.1016/j. jpsychores.2013.03.004.

Tobiasz-Adamczyk, B. (2013). The genesis of health: evolution of the concept of health-related quality of life. In *Health-related quality of life in cardiovascular patients* (pp. 1-8). Springer, Milano.

Toner, B. B., & Akman, D. (2000). Gender role and irritable bowel syndrome. Literature review and hypothesis. *American journal of Gastroenterology,* 9, 11-16. DOI: 10.1111/j.1572-0241.2000.01698.x.

Tooby, J., & Cosmides, L. (1990). The past explains the present: emotional adaptations and the structure of ancestral environments. Ethology and sociobiology, 11, 375-424.

Torrance, G. W. (1987). Utility approach to measuring health-related quality of life. *Journal of Chronic Diseases*, 593–600. DOI: 10.1016/0021-9681(87)90019-1

Tosic-Golubovic, S., Miljkovic, S., Nagorni, A., Lazarevic, D. & Nikolic, G. (2010). Irritable Bowel Syndrome, Anxiety, Depression and Personality Characteristics. Psychiatr Danub, 22, (3), 418–24. Available at: https://hrcak.srce.hr/file/113438.

Tosun, O., Dabak, R., Sargin, M., Dolapcioglu, C., & Ahishali, E. (2016): Frequency of Irritable Bowel Syndrome among Healthcare Personnel. *Gastroenterol Nurs*, 39(3), 227-31. https://www.researchgate.net/publication/30377717

Trikas, P., Vlachonikolis, I., Fragkiadakis.,Vasilakis, S., Manousos, O., & Paritsis, N. (1999). Core Mental State in irritable Bowel syndrome. *Journal of Biobehavioral Medicine*, 61, 781-788. https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.541.3146&rep=rep1&type=pdf.

Verma, S.K., Wig, N.N., & Pershad, M. (1985). Some Experiments with a Neuroticism Scale Indian Psychological Review, 12, 17-21. https://www.google.com/search?q.

Voth, J., & Sirois, F. M. (2009). The role of self-blame and responsibility in adjustment to inflammatory bowel disease. Rehabilitation Psychology. 54, 99–108. DOI: 10.1037/a0014739.

Walter, S. A., Jones, M. P., Talley, N. J., Kjellström, L., Nyhlin, H., Andreasson, A. N., & Agréus, L. (2013). Abdominal pain is associated with anxiety and depression scores

in a sample of the general adult population with no signs of organic gastrointestinal disease. *Neurogastroenterology & Motility*, *25*(9), 741-e576.

Wang, Z. H., & Guo, D.J. (2003). Review of the Research on the Process and Strategy of Gross Emotion Regulation. *Progress in Psychological Science*, 6, 629-634. DOI: 10.4236/jss.2016.42020

Weaver, T. L., & Clum, G. A. (1995). Psychological distress associated with interpersonal violence: A meta-analysis. *Clinical psychology review*, *15*(2), 115-140.

Weinrach, S. G. (1988). Cognitive therapist: A dialogue with Aaron Beck. *Journal of Counseling & Development*, *67*(3), 159-164.

Welgan, P., Meshkinpour, H., & Hoehler, F.(1985). The effect of stress on colon motor and electrical activity in irritable bowel syndrome. *Psychosomatic Medicine*, 47, 139 – 149. DOI: 10.1097/00006842-198503000-00005.

Werner, K., Goldin, P.R., Ball, T.M., Heimberg, R.G., & Gross, J.J. (2011). Assessing Emotion Regulation in Social Anxiety Disorder: The Emotion References 282 Regulation Interview. Journal of Psychopathology and Behavioral Assessment, 33, 346-354.

Wessely, S., Nimnuan, C&Sharpe, M. (1999). Functional somatic syndromes: one or many? Lancet, 11, 354, 936–939. https://doi.org/10.1016/S0140-6736(98)08320-2 PMID: 10489969 6.

White, D. L., Savas, L.S., Daci, K., Elserag, R., Graham, D. P., Fitzgerald, S. J., Smith, S. L., Tan, G., & EI Serag, H. B. (2010). Trauma history and risk of the irritable bowel syndrome in women veterans. *Aliment pharmacological Therapy*, 32, 551-561. DOI: 10.1111/j.1365-2036.2010.04387.x.

Whitehead, W. E., Palsson, O. S., Levy, R. R., Feld, A. D., Turner, M., & Von Korf, M. (2007). Comorbidity in irritable bowel syndrome. *The American journal of gastroenterology*, 102(12), 2767–2776. DOI: 10.1111/j.1572-0241.2007.01540.x.

Whitehead, W.E., Palsson, O., & Jones, K.R. (2002). Systematic review of the comorbidity of irritable bowel syndrome with other disorders: What are the causes and implications? *Gastroenterology*, 122, 1140-1156. doi:10.1053/gast.2002.32392.

Wilson D. C., & Cairns P. (1988). Randomised controlled trial of an aggressive nutritional regimen in sick very low birthweight infants. *Archives of Disease in Childhood - Fetal and Neonatal Edition,* 7, 77, F4-F11. https://fn.bmj.com/content/77/1/F4.short.

Wilson, I. B., & Cleary, P. D. (1995). Linking clinical variables with health-related quality of life. A conceptual model of patient outcomes. *JAMA : the journal of the American Medical Association*, 273, 59–65. https://pubmed.ncbi.nlm.nih.gov/7996652/.

Wong, R., Drossman, D., Weinland, S., Morris, C., Leserman, J., Hu Y., Kelapure, R., & Bangdiwala, S., (2013).Partner burden in irritable bowel syndrome. *Clin Gastroenterol Hepatol*. 11, 151, 155. DOI: 10.1016/j.cgh.2012.07.019.

World Health Organization. (1998). The World Health Report 1998: Life in the 21st century a vision for all. In The world health report 1998: life in the 21st century A vision for all (pp. 241-241).pOoJhg:1656465556051&q.

Zdankiewicz-Ścigała, E., Ścigała, D., Sikora, J., Kwaterniak, W., & Longobardi, C. (2021). Relationship between interoceptive sensibility and somatoform disorders in adults with autism spectrum traits. *The mediating role of alexithymia and emotional dysregulation*. PLoS ONE, 16(8), e0255460. https://doi.org/10.1371/journal.pone.0255460

Zigmond, A. S., & Snaith, R. P. (1983). The hospital anxiety and depression scale. *Acta Psychiatr Scand*, 67, 361–70. DOI: 10.1111/j.1600-0447.1983.tb09716.x.

APPENDICES

മുഖ്യഗവേഷകന്റെ പേര്:.....

.....വിഭാഗം

ഗവ: മെഡിക്കൽ കോളേജ്, കോഴിക്കോട്.

ഗവേഷണ പഠനശീർഷകം :.....

.....

സമ്മതപത്രം

ഈ ഗവേഷണ പഠനത്തെപറ്റി, എനിക്ക് സ്വന്തം ഭാഷയിൽ രേഖപ്പെടുത്തി, വിശദീകരിച്ച് തന്നിട്ടുണ്ട്. പഠനവുമായി ബന്ധപ്പെട്ട കാര്യങ്ങൾ ചോദിച്ചു മനസ്സിലാക്കാനും സംശയ നിവാരണത്തിനും എനിക്ക് അവസരം ലഭിച്ചിട്ടുള്ളതിനാൽ ഗവേഷണ പഠനത്തിന്റെ രീതിയെക്കുറിച്ചും, ഫലങ്ങളെക്കുറിച്ചും ഞാൻ പൂർണ്ണബോധവാനാണ്. പ്രസ്തുത പഠനത്തിൽ എന്റെ പങ്കാളിത്തം സ്വമേധയാ ഉള്ളതാണെന്നും, ആശുപത്രിയിൽ നിന്ന് ലഭിക്കുന്ന ചികിത്സയെ ബാധിക്കാത്ത വിധം, യാതൊരു ഉപാധിയും കൂടാതെ ഈ പഠനത്തിൽ നിന്നും പിന്മാറാൻ എനിക്ക് സ്വാതന്ത്ര്യമുണ്ടെന്നും ഞാൻ മനസ്സിലാക്കുന്നു. ഒരു പരിമിതിയും ഇല്ലാതെ എന്നിൽ നിന്നും ശേഖരിച്ച വിവരങ്ങളും അതിൽ നിന്നും എത്തിച്ചേർന്നനിഗമനങ്ങളും ഗവേഷണ സംബന്ധമായ ആവശ്യങ്ങൾക്കായി ഉപയോഗിക്കുന്നതിന് എനിക്ക് സമ്മതമാണ്.

പഠനത്തിന്റെ വിശദവിവരങ്ങൾ പ്രതിപാദിക്കുന്ന ലഘുലേഖ എനിക്ക് നൽകി–യിട്ടുണ്ട്. പഠനത്തിൽ ഭാഗവാക്കാകുന്നതിന് എനിക്ക് പൂർണ്ണ സമ്മതമാണെന്ന് ഞാൻ ഇതിനാൽ സാക്ഷ്യപ്പെടുത്തുന്നു.

(എന്നിൽ നിന്നും/എന്റെ ബന്ധുവിൽ നിന്നും ശേഖരിച്ചു വെച്ചിട്ടുള്ള അവയവഭാഗങ്ങളും മറ്റു ജൈവവസ്തുക്കളും ഭാവിയിലും ഗവേഷണത്തിനായി ഉപയോഗിക്കുന്നതിന് എനിക്ക് സമ്മതമാണ്/ സമ്മതമല്ല) *(ആവശ്യമാണെങ്കിൽ മാത്രം)*

പഠനത്തിൽ പങ്കെടുക്കുന്ന ആളിന്റെ/രോഗിയുടെ പേര് :

മേൽവിലാസം :

(ഒപ്പ്)

സാക്ഷ്യപ്പെടുത്തുന്ന ആളിന്റെ പേര് :

മേൽവിലാസം :

(ഒപ്പ്)

തീയ്യതി: *മുഖ്യ ഗവേഷകന്റെ ഒപ്പ് :*

PERSONAL DATA SHEET

1. നിങ്ങളുടെ ജില്ല..... 2. വയസ്സ്..... 3. ആൺ/പെൺ

4. മതം .....5. ഉദ്യോഗത്തിന്റെ പേര്.....

6. വിദ്യാഭ്യാസയോഗ്യത .....

7. വിവാഹിതൻ/വിവാഹിത/അവിവാഹിതൻ/അവിവാഹിത

ഭാര്യയുടെ/ ഭർത്താവിന്റെ ജോലി : .....

മാസവരുമാനം : 10,000-ൽ താഴെ ☐ 10,000-50,000 ☐ 50,000 മുകളിൽ ☐

കുട്ടികൾ എത്ര? ..... ആൺ ..... പെൺ .....

8. നിങ്ങൾക്ക് എന്തെങ്കിലും മാനസിക/ശാരീരിക വൈകല്യങ്ങൾ ഉണ്ടോ?

മാനസികം : ഉണ്ട്/ഇല്ല ശാരീരികം : ഉണ്ട്/ഇല്ല

ഉണ്ടെങ്കിൽ വിവരിക്കുക ..... ഉണ്ടെങ്കിൽ വിവരിക്കുക .....

9. മറ്റ് ശാരീരിക രോഗങ്ങൾ എന്തെങ്കിലും .....

.....

10.

കുടുംബാരോഗ്യപശ്ചാത്തലം	മാനസികം	ശാരീരികം
ഭാര്യ	.....	.....
മക്കൾ	.....	.....
അമ്മ	.....	.....
അച്ഛൻ	.....	.....
സഹോദരങ്ങൾ	.....	.....

11. കുടുംബത്തിൽ ആർക്കെങ്കിലും പാരമ്പര്യമായിട്ട് മാനസികപ്രശ്നങ്ങൾ/രോഗങ്ങൾ ഉണ്ടായിട്ടുണ്ടോ? ഉണ്ട്/ഇല്ല

ഉണ്ടെങ്കിൽ വിവരിക്കുക .....

12.

മദ്യപാനശീലം	തുടർച്ചയായി/ ഇടയ്ക്കിടക്ക്/ വല്ലപ്പോഴും/ തീരെയില്ല
പുകവലി ശീലം	തുടർച്ചയായി/ ഇടയ്ക്കിടക്ക്/ വല്ലപ്പോഴും/ തീരെയില്ല
മറ്റ് മയക്കുമരുന്നുകൾ	തുടർച്ചയായി/ ഇടയ്ക്കിടക്ക്/ വല്ലപ്പോഴും/ തീരെയില്ല

13. നിങ്ങളുടെ കുട്ടിക്കാലത്തുതന്നെ മാതാപിതാക്കൾ നഷ്ടപ്പെട്ടിട്ടുണ്ടോ? ഉണ്ട്/ഇല്ല

ഉണ്ടെങ്കിൽ അച്ഛൻ/അമ്മ എത്രാമത്തെ വയസ്സിൽ .....

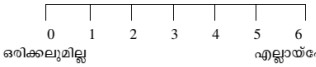
APPENDIX A

IBS – 36
(Draft)

കഴിഞ്ഞ രണ്ടു മാസത്തെ താങ്കളുടെ അവസ്ഥകളെ പരിഗണിച്ച് താഴെ കൊടുത്തിരിക്കുന്ന പ്രസ്താവനകൾ താങ്കളെ സംബന്ധിച്ച് എത്രത്തോളം ശരിയാണ് എന്ന് രേഖപ്പെടുത്തുക. ഏതെങ്കിലും പ്രസ്താവന താങ്കളെ ബാധിക്കുന്നില്ല എങ്കിൽ, ബാധകമല്ല എന്നിടത്ത് അടയാളപ്പെടുത്തുക.

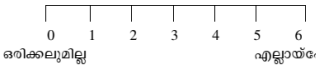
ക്രമ നമ്പർ		
1.	പുറത്തുപോയി ഭക്ഷണം കഴിക്കുന്നത് വയറിന്റെ അസ്വസ്ഥതയ്ക്ക് കാരണമാവുമെന്ന് കരുതി ഒഴിവാക്കാറുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
2.	താങ്കളുടെ വയറിന്റെ അസ്വസ്ഥത മൂലം താങ്കൾ ദേഷ്യപ്പെടാറുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
3.	വയറിലെ അസ്വസ്ഥതമൂലം വളരെ ധൃതിപ്പെട്ട് മലവിസർജ്ജനത്തിന് പോവേണ്ടിവന്നിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
4.	താങ്കളുടെ വയറിന്റെ അസ്വസ്ഥത മക്കളുമായോ ഇണയുമായോ ഉള്ള ബന്ധത്തെ ബാധിച്ചിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
5.	വയർ അസ്വസ്ഥമാവുമെന്ന് ഭയന്ന് താങ്കൾ ഇഷ്ടഭക്ഷണം ഒഴിവാക്കിയിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
6.	വയറിന്റെ അസ്വസ്ഥത താങ്കളുടെ ജോലി/ വിദ്യാഭ്യാസം/ ദൈനംദിന ജീവിതം ഇവയെ സാരമായി ബാധിച്ചിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
7.	വയറിന്റെ അസ്വസ്ഥത കാരണം, താങ്കൾക്ക് സങ്കടമോ, അമർഷമോ തോന്നാറുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
8.	താങ്കളുടെ വയറിന്റെ അസ്വസ്ഥത കൂട്ടുകാരും കുടുംബക്കാരും കാര്യമായി എടുക്കുന്നില്ല (അവർ അത് വിശ്വസിക്കുന്നില്ല) എന്ന് തോന്നിയിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
9.	വിനോദമോ, കായികമോ ആയ പ്രവർത്തികളിൽ ഏർപ്പെടുമ്പോൾ വയറിന്റെ അസ്വസ്ഥത മൂലം എപ്പോഴെങ്കിലും അത് നിർത്തേണ്ടിവന്നിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
10.	താങ്കളുടെ രോഗാവസ്ഥയിൽ ഒരു പുരോഗമനവും കാണാത്തതിനാൽ താങ്കൾക്ക് ഉത്കണ്ഠയോ, വിഷമമോ ഉണ്ടായിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല

11. താങ്കളുടെ ഈ പ്രശ്നം നിമിത്തം താങ്കൾക്ക് ജോലി/സ്കൂൾ/ദൈനം ദിന പ്രവർത്തനങ്ങൾ എന്നിവ തടസ്സ പ്പെട്ടിട്ടുണ്ടോ?



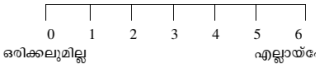
ബാധകമല്ല

12. വയറിന്റെ അസ്വസ്ഥത താങ്കളുടെ ഏകാഗ്രതയെ സാരമായി ബാധിച്ചി ട്ടുണ്ടോ?



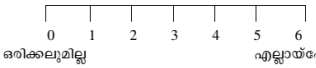
ബാധകമല്ല

13. താങ്കളുടെ വയറിന്റെ പ്രശ്നം നിമിത്തം കുടുംബങ്ങളിൽനിന്നും ഒറ്റ പപെട്ടതായി തോന്നാറുണ്ടോ?



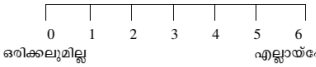
ബാധകമല്ല

14. വയറിന്റെ അസ്വസ്ഥത താങ്കളെ അപ മാനിതനാക്കാറുണ്ടോ?



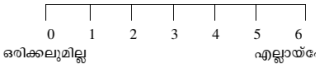
ബാധകമല്ല

15. വയറുവേദന നിമിത്തം താങ്കൾ ബുദ്ധിമുട്ടാറുണ്ടോ?



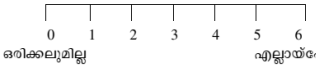
ബാധകമല്ല

16. വയറിന്റെ അസ്വസ്ഥത കൂടുതൽ സങ്കീർണ്ണമാവുകയാണെന്ന പേടി തോന്നാറുണ്ടോ?



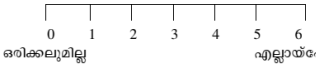
ബാധകമല്ല

17. മലബന്ധം മൂലം താങ്കൾ ബുദ്ധിമുട്ടാ റുണ്ടോ ?



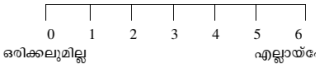
ബാധകമല്ല

18. തലേ ദിവസത്തെ ഭക്ഷണം വയറിന് അസ്വസ്ഥതയുണ്ടാക്കുമോ എന്ന് നിരീക്ഷിച്ചിട്ടുണ്ടോ?



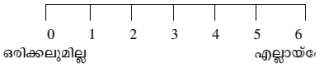
ബാധകമല്ല

19 വയറിന്റെ അസ്വസ്ഥത കാരണം, താങ്കൾ ഇഷ്ട യാത്രകൾ ഒഴിവാക്കി യിട്ടുണ്ടോ?



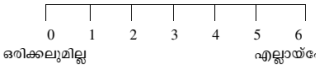
ബാധകമല്ല

20. താങ്കളുടെ വയറിന്റെ അസ്വസ്ഥത ദൈനം ദിന പ്രവർത്തനങ്ങളെ ബാധി ക്കാറുണ്ടോ?



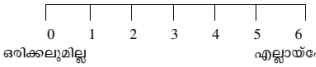
ബാധകമല്ല

21. വയറിന്റെ അസ്വസ്ഥത താങ്കളുടെ സുഖകരമായ ഉറക്കത്തിന് ഭംഗം വരു ത്താറുണ്ടോ?



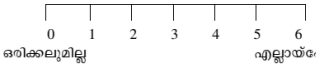
ബാധകമല്ല

22. വയറിളക്കം താങ്കളെ അസ്വസ്ഥനാ ക്കാറുണ്ടോ?



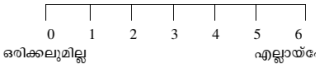
ബാധകമല്ല

23. വയറിന്റെ അസ്വസ്ഥത, താങ്കളുടെ ലൈംഗികബന്ധത്തിന് പ്രയാസമു ണ്ടാക്കാറുണ്ടോ?



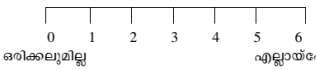
ബാധകമല്ല

24. ഗ്യാസ് നിറഞ്ഞ് വയറുവീർക്കുന്നത്, താങ്കളെ ബുദ്ധിമുട്ടിക്കുന്നുണ്ടോ?



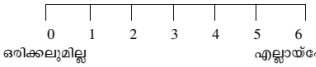
ബാധകമല്ല

25. വയറുസംബന്ധമായ അസ്വസ്ഥത കൾ, താങ്കളുടെ വിനോദമോ, കായി കമോ ആയ പ്രവർത്തനങ്ങളെ ബാധി ക്കാറുണ്ടോ?



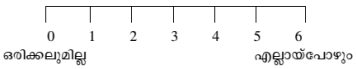
ബാധകമല്ല

26. കൂടുതലായിട്ടുള്ള വയറു ക്ഷോഭം താങ്കളെ അലട്ടുന്നുണ്ടോ?



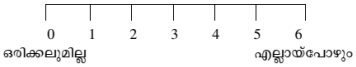
ബാധകമല്ല

27. ക്യാൻസർ മൂലമാവാം വയറിന്റെ അസ്വസ്ഥതകൾ എന്ന് താങ്കൾക്ക് തോന്നാറുണ്ടോ?



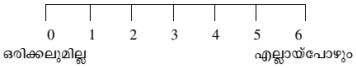
ബാധകമല്ല

28. വയറിന്റെ അസ്വസ്ഥത കാരണം, സാമൂഹികമായ ഒത്തുചേരൽ താങ്കൾ വൈകിപ്പിക്കുകയോ, ഒഴിവാക്കുകയോ ചെയ്തിട്ടുണ്ടോ?



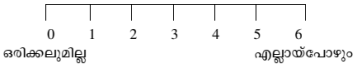
ബാധകമല്ല

29. വയറു സംബന്ധമായ പ്രശ്നം മൂലം രാവിലെ ക്ഷീണിതനാവാറുണ്ടോ?



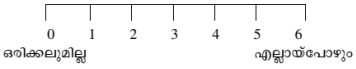
ബാധകമല്ല

30. ഇണയുമായുള്ള ശാരീരിക ബന്ധത്തിനുള്ള ആഗ്രഹത്തെ താങ്കളുടെ വയറിന്റെ അസ്വസ്ഥതകൾ ബാധിച്ചിട്ടുണ്ടോ?



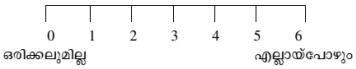
ബാധകമല്ല

31. വയറു കാലിയാണെങ്കിലും ടോയ്ലറിൽ പോവണമെന്ന തോന്നലുണ്ടാവാറുണ്ടോ?



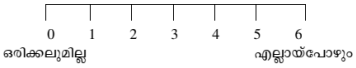
ബാധകമല്ല

32. നിങ്ങളുടെ പ്രയാസങ്ങൾ യാഥാർത്ഥ്യമാണെന്ന് നിങ്ങളുടെ ഡോക്ടർ വിശ്വസിക്കുന്നില്ല എന്ന് തോന്നിയിട്ടുണ്ടോ?



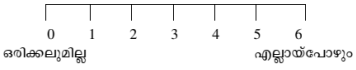
ബാധകമല്ല

33. പുതിയ സ്ഥലങ്ങളിൽ എത്തുമ്പോൾ എത്രയും പെട്ടെന്ന് ടോയ്ലറ്റ് കണ്ടെത്തേണ്ട ഗതികേട് ഉണ്ടാവാറുണ്ടോ?



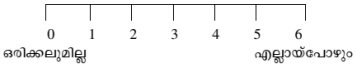
ബാധകമല്ല

34. വയറിന്റെ അസ്വസ്ഥതകൾ എങ്ങനെയാവുമെന്ന് ചിന്തിച്ച് ഭാവി കാര്യങ്ങൾ ആസൂത്രണം ചെയ്യുന്നത് താങ്കൾ ഒഴിവാക്കിയിട്ടുണ്ടോ?



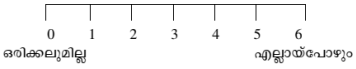
ബാധകമല്ല

35. ഓർക്കാപുറത്തുള്ള മലവിസർജ്ജനം താങ്കളെ പ്രയാസപ്പെടുത്താറുണ്ടോ?



ബാധകമല്ല

36. വയറിന്റെ അസ്വസ്ഥത കാരണം ജോലിയും മറ്റു ദൈനം ദിന പ്രവർത്തനങ്ങളും താങ്കൾ വൈകിപ്പിച്ചിട്ടുണ്ടോ?



ബാധകമല്ല

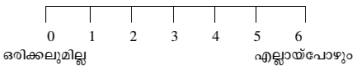
APPENDIX B

IBS – 36
(Final)

കഴിഞ്ഞ രണ്ടു മാസത്തെ താങ്കളുടെ അവസ്ഥകളെ പരിഗണിച്ച് താഴെ കൊടുത്തിരിക്കുന്ന പ്രസ്താവനകൾ താങ്കളെ സംബന്ധിച്ച് എത്രത്തോളം ശരിയാണ് എന്ന് രേഖപ്പെടുത്തുക. ഏതെങ്കിലും പ്രസ്താവന താങ്കളെ ബാധിക്കുന്നില്ല എങ്കിൽ, ബാധകമല്ല എന്നിടത്ത് അടയാളപ്പെടുത്തുക.

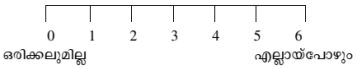
ക്രമ നമ്പർ		
1.	പുറത്തുപോയി ഭക്ഷണം കഴിക്കുന്നത് വയറിന്റെ അസ്വസ്ഥതയ്ക്ക് കാരണമാവുമെന്ന് കരുതി ഒഴിവാക്കാറുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
2.	താങ്കളുടെ വയറിന്റെ അസ്വസ്ഥത മൂലം താങ്കൾ ദേഷ്യപ്പെടാറുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
3.	വയറിലെ അസ്വസ്ഥതമൂലം വളരെ ധൃതിപ്പെട്ട് മലവിസർജ്ജനത്തിന് പോവേണ്ടിവന്നിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
4.	താങ്കളുടെ വയറിന്റെ അസ്വസ്ഥത മക്കളുമായോ ഇണയുമായോ ഉള്ള ബന്ധത്തെ ബാധിച്ചിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
5.	വയർ അസ്വസ്ഥമാവുമെന്ന് ഭയന്ന താങ്കൾ ഇഷ്ടഭക്ഷണം ഒഴിവാക്കിയിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
6.	വയറിന്റെ അസ്വസ്ഥത താങ്കളുടോ ജോലി/ വിദ്യാഭ്യാസം/ ദൈനംദിന ജീവിതം ഇവയെ സാരമായി ബാധിച്ചിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
7.	വയറിന്റെ അസ്വസ്ഥത കാരണം, താങ്കൾക്ക് സങ്കടമോ, അമർഷമോ തോന്നാറുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
8.	താങ്കളുടെ വയറിന്റെ അസ്വസ്ഥത കൂട്ടുകാരും കുടുംബക്കാരും കാര്യമായി എടുക്കുന്നില്ല (അവർ അത് വിശ്വസിക്കുന്നില്ല) എന്ന് തോന്നിയിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
9.	വിനോദമോ, കായികമോ ആയ പ്രവർത്തികളിൽ ഏർപ്പെടുമ്പോൾ വയറിന്റെ അസ്വസ്ഥത മൂലം എപ്പോഴെങ്കിലും അത് നിർത്തേണ്ടിവന്നിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല
10.	താങ്കളുടെ ഈ പ്രശ്നം നിമിത്തം താങ്കൾക്ക് ജോലി/സ്കൂൾ/ദൈനംദിന പ്രവർത്തനങ്ങൾ എന്നിവ തടസ്സപ്പെട്ടിട്ടുണ്ടോ?	0 1 2 3 4 5 6 ഒരിക്കലുമില്ല എല്ലായ്പോഴും ബാധകമല്ല

11. വയറിന്റെ അസ്വസ്ഥത താങ്കളുടെ ഏകാഗ്രതയെ സാരമായി ബാധിച്ചിട്ടുണ്ടോ?



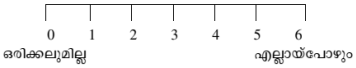
ബാധകമല്ല

12. താങ്കളുടെ വയറിന്റെ പ്രശ്നം നിമിത്തം കുടുംബങ്ങളിൽനിന്നും ഒറ്റപപെട്ടതായി തോന്നാറുണ്ടോ?



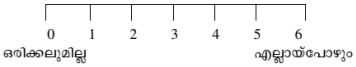
ബാധകമല്ല

13. വയറിന്റെ അസ്വസ്ഥത താങ്കളെ അപമാനിതനാക്കാറുണ്ടോ?



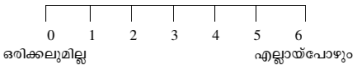
ബാധകമല്ല

14. വയറുവേദന നിമിത്തം താങ്കൾ ബുദ്ധിമുട്ടാറുണ്ടോ?



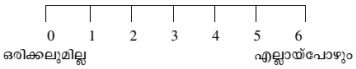
ബാധകമല്ല

15. വയറിന്റെ അസ്വസ്ഥത കൂടുതൽ സങ്കീർണ്ണമാവുകയാണെന്ന പേടി തോന്നാറുണ്ടോ?



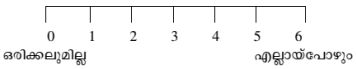
ബാധകമല്ല

16. വയറിന്റെ അസ്വസ്ഥത കാരണം, താങ്കൾ ഇഷ്ട യാത്രകൾ ഒഴിവാക്കിയിട്ടുണ്ടോ?



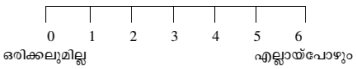
ബാധകമല്ല

17. താങ്കളുടെ വയറിന്റെ അസ്വസ്ഥത ദൈനം ദിന പ്രവർത്തനങ്ങളെ ബാധിക്കാറുണ്ടോ?



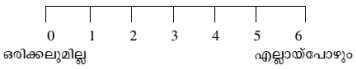
ബാധകമല്ല

18. വയറിളക്കം താങ്കളെ അസ്വസ്ഥനാക്കാറുണ്ടോ?



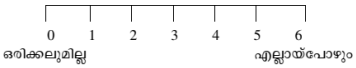
ബാധകമല്ല

19 വയറിന്റെ അസ്വസ്ഥത, താങ്കളുടെ ലൈംഗികബന്ധത്തിന് പ്രയാസമുണ്ടാക്കാറുണ്ടോ?



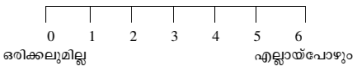
ബാധകമല്ല

20. ഗ്യാസ് നിറഞ്ഞ് വയറുവീർക്കുന്നത്, താങ്കളെ ബുദ്ധിമുട്ടിക്കുന്നുണ്ടോ?



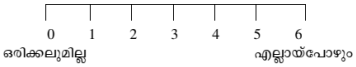
ബാധകമല്ല

21. വയറുസംബന്ധമായ അസ്വസ്ഥതകൾ, താങ്കളുടെ വിനോദമോ, കായികമോ ആയ പ്രവർത്തനങ്ങളെ ബാധിക്കാറുണ്ടോ?



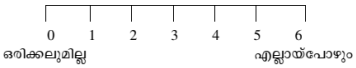
ബാധകമല്ല

22. കൂടുതലായിട്ടുള്ള വയറു ക്ഷോഭം താങ്കളെ അലട്ടുന്നുണ്ടോ?



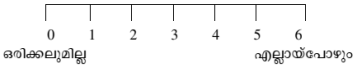
ബാധകമല്ല

23. വയറിന്റെ അസ്വസ്ഥത കാരണം, സാമൂഹികമായ ഒത്തുചേരൽ താങ്കൾ വൈകിപ്പിക്കുകയോ, ഒഴിവാക്കുകയോ ചെയ്തിട്ടുണ്ടോ?



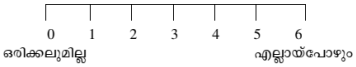
ബാധകമല്ല

24. ഇണയുമായുള്ള ശാരീരിക ബന്ധത്തിനുള്ള ആഗ്രഹത്തെ താങ്കളുടെ വയറിന്റെ അസ്വസ്ഥതകൾ ബാധിച്ചിട്ടുണ്ടോ?



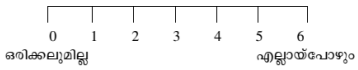
ബാധകമല്ല

25. നിങ്ങളുടെ പ്രയാസങ്ങൾ യാഥാർത്ഥ്യമാണെന്ന് നിങ്ങളുടെ ഡോക്ടർ വിശ്വസിക്കുന്നില്ല എന്ന് തോന്നിയിട്ടുണ്ടോ?



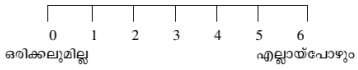
ബാധകമല്ല

26. വയറിന്റെ അസ്വസ്ഥതകൾ എങ്ങനെയാവുമെന്ന് ചിന്തിച്ച് ഭാവി കാര്യങ്ങൾ ആസൂത്രണം ചെയ്യുന്നത് താങ്കൾ ഒഴിവാക്കിയിട്ടുണ്ടോ?



ബാധകമല്ല

27. വയറിന്റെ അസ്വസ്ഥത കാരണം ജോലിയും മറ്റു ദൈനം ദിന പ്രവർത്തനങ്ങളും താങ്കൾ വൈകിപ്പിച്ചിട്ടുണ്ടോ?



ബാധകമല്ല

APPENDIX C

SELF ESTEEM INVENTORY

ക്രമ നമ്പർ		ശക്തിയായി യോജിക്കുന്നു	യോജിക്കുന്നു	വ്യക്തമായ ഉത്തരമില്ല	വിയോജിക്കുന്നു	ശക്തിയായി വിയോജിക്കുന്നു
		A	B	C	D	E
1	വിഡ്ഢിത്തം കാണിക്കുകയോ, അമളി പിണയുകയേ ചെയ്താൽ പിന്നെ ഞാൻ അതിനെ കുറിച്ചു തന്നെ ഓർത്ത് വളരെ വിഷമിക്കാറുണ്ട്.					
2	പലപ്പോഴും എന്നെക്കുറിച്ച് എനിക്ക് ലജ്ജ തോന്നാറുണ്ട്					
3	മറ്റുള്ളവരെപോലെ തന്നെ കാര്യങ്ങൾ ഭംഗിയായി ചെയ്യുവാൻ എനിക്ക് കഴിയും					
4	മറ്റ് ആളുകളുടെ മുന്നിൽ എന്ത് സംസാരിക്കണം എന്ന് നിശ്ചയമില്ലാതെ ഞാൻ പലപ്പോഴും വിഷമിക്കാറുണ്ട്.					
5	ആകെക്കൂടി എനിക്ക് എന്നെക്കുറിച്ച് നല്ല തൃപ്തിയാണ്					
6	ഞാൻ കൂടെയുള്ളത് മറ്റുള്ളവർക്ക് ഇഷ്ടമാവുന്നുണ്ടോ എന്ന ചിന്ത മിക്കപ്പോഴും എനിക്ക് ഉണ്ടാകാറുണ്ട്					
7	എന്നെക്കാളധികം മറ്റുള്ളവരെയാണ് കൂടുതൽ ആളുകളും ഇഷ്ടപ്പെടുന്നത്					
8	എനിക്കെന്തെങ്കിലും പറയാനുള്ളപ്പോൾ സാധാരണയായി ഞാൻ അത് പറയാറുണ്ട്.					
9	ചില ആളുകൾക്കെങ്കിലും എന്നെക്കുറിച്ച് അത്ര നല്ല അഭിപ്രായം ഉണ്ടായിരിക്കാനിടയില്ല എന്ന തോന്നൽ എന്നെ പലപ്പോഴും വിഷമിപ്പിക്കാറുണ്ട്.					
10	പുതുമയുള്ളതും പ്രയാസമേറിയതുമായ കാര്യങ്ങൾ ചെയ്യാനാണ് ഞാൻ കൂടുതൽ ഇഷ്ടപ്പെടുന്നത്					

ക്രമ നമ്പർ		ശക്തിയായി യോജിക്കുന്നു	യോജിക്കുന്നു	വ്യക്തമായ ഉത്തരമില്ല	വിയോജിക്കുന്നു	ശക്തിയായി വിയോജിക്കുന്നു
		A	B	C	D	E
11	എന്റെ ജീവിതം പ്രയോജനമില്ലാത്തതാണെന്ന് മിക്കപ്പോഴും എനിക്ക് തോന്നാറുണ്ട്.					
12	ആളുകളെ പരിചയപ്പെടുമ്പോൾ അങ്ങോട്ട് സംസാരിക്കുവാൻ എനിക്ക് വിഷമം അനുഭവപ്പെടാറുണ്ട്					
13	എന്റെ കഴിവുകളെക്കുറിച്ച് എനിക്ക് പൂർണ്ണമായ വിശ്വാസമുണ്ട്.					
14	സ്വയം അഭിമാനിക്കത്തക്കതായി എനിക്ക് വളരെയൊന്നുമില്ല					
15	എനിക്ക് തീരുമാനങ്ങളെടുക്കാനും അവയിൽ തന്നെ ഉറച്ചുനിൽക്കാനുമുള്ള കഴിവുണ്ട്.					
16	എനിക്ക് എന്നെക്കുറിച്ച് നല്ല മതിപ്പാണ്					
17	ഞാൻ വേറെ ഒരാളായിരുന്നുവെങ്കിൽ എന്ന് പലപ്പോഴും ആഗ്രഹിക്കാറുണ്ട്					
18	എന്നെ എളുപ്പത്തിൽ എല്ലാവർക്കും ഇഷ്ടപ്പെടാൻ കഴിയും.					
19	എന്റെ കാര്യങ്ങൾ സ്വയം നോക്കാൻ സാധാരണ എനിക്ക് കഴിയാറുണ്ട്.					
20	കഴിയുന്നിടത്തോളം നന്നായി എല്ലാ പ്രവർത്തികളും ഞാൻ ചെയ്യും					

APPENDIX D

DERS

ക്രമ നമ്പർ		എല്ലായ്പ്പോഴും ശരിയാണ്	മിക്കപ്പോഴും ശരിയാണ്	ചിലപ്പോൾ ശരിയാണ്	അപൂർവ്വമായി ശരിയാണ്	ഒരിക്കലും ശരിയല്ല
1	എന്റെ വികാരങ്ങളെക്കുറിച്ച് ഞാൻ ശ്രദ്ധിക്കാറുണ്ട്	☐	☐	☐	☐	☐
2	എന്റെ വികാരങ്ങൾ നിയന്ത്രണാതീതവും ആവശ്യത്തിലധികവുമായി എനിക്ക് തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐
3	എനിക്ക് എന്ത് തോന്നുന്നു എന്നതിനെക്കുറിച്ച് എനിക്ക് യാതൊരു ധാരണയുമില്ല	☐	☐	☐	☐	☐
4	എന്റെ വികാരങ്ങളെ നിയന്ത്രിച്ചെടുക്കുമ്പോൾ എനിക്ക് പ്രയാസം തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐
5	എന്റെ വികാരങ്ങളെക്കുറിച്ച് എനിക്ക് ആശയക്കുഴപ്പമുണ്ട്	☐	☐	☐	☐	☐
6	എന്റെ അസ്വസ്ഥമായ അവസ്ഥകളെ എനിക്ക് നന്നായി അറിയാം	☐	☐	☐	☐	☐
7	എന്റെ അസ്വസ്ഥതയെക്കുറിച്ച് എനിക്ക് എന്നോടു തന്നെ ദേഷ്യം തോന്നാറുണ്ട്	☐	☐	☐	☐	☐
8	എന്റെ അവസ്ഥയെക്കുറിച്ച് എനിക്ക് നാണക്കേട് തോന്നാറുണ്ട്	☐	☐	☐	☐	☐
9	അസ്വസ്ഥമായിരിക്കുമ്പോൾ എനിക്ക് ജോലി ചെയ്യാൻ ബുദ്ധിമുട്ട് അനുഭവപ്പെടാറുണ്ട്.	☐	☐	☐	☐	☐
10	അസ്വസ്ഥമായിരിക്കുമ്പോൾ എനിക്ക് എന്നെ നിയന്ത്രിക്കാനാകാറില്ല	☐	☐	☐	☐	☐
11	അസ്വസ്ഥമായിരിക്കുമ്പോഴെല്ലാം ഞാൻ ആ അവസ്ഥയിൽ കുറേ സമയമിരിക്കുമെന്ന് എനിക്ക് തോന്നാറുണ്ട്	☐	☐	☐	☐	☐
12	ഞാൻ അസ്വസ്ഥമാകുമ്പോഴെല്ലാം ഞാൻ തീർത്തും വിഷാദാവസ്ഥയിലാണ്.	☐	☐	☐	☐	☐
13	എന്റെ വികാരങ്ങൾ പ്രധാനപ്പെട്ടതും പ്രസക്തവുമാണെന്ന് ഞാൻ വിശ്വസിക്കുന്നു.	☐	☐	☐	☐	☐

ക്രമ നമ്പർ		എപ്പോഴും ശരിയാണ്	മിക്കപ്പോഴും ശരിയാണ്	ചിലപ്പോൾ ശരിയാണ്	അപൂർവ്വമായി ശരിയാണ്	ഒരിക്കലും ശരിയല്ല
14	ഞാൻ അസ്വസ്ഥമാകുമ്പോഴെല്ലാം എനിക്ക് മറ്റു കാര്യങ്ങളിൽ ശ്രദ്ധ ചെലുത്താൻ ബുദ്ധിമുട്ട് തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐
15	ഞാൻ അസ്വസ്ഥമായിരിക്കുമ്പോഴെല്ലാം എനിക്ക് എന്നെ നിയന്ത്രിക്കാൻ സാധിക്കാറില്ല	☐	☐	☐	☐	☐
16	ഞാൻ അസ്വസ്ഥമായിരിക്കുമ്പോൾ ആ അവസ്ഥയിൽ ആയതിനാൽ എനിക്ക് നാണക്കേട് തോന്നാറുണ്ട്	☐	☐	☐	☐	☐
17	ഞാൻ അസ്വസ്ഥമായിരിക്കുമ്പോൾ എന്റെ ശക്തി ക്ഷയിക്കുന്നതായി തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐
18	ഞാൻ അസ്വസ്ഥമായിരിക്കുമ്പോൾ അതിൽ എനിക്ക് കുറ്റബോധം തോന്നാറുണ്ട്	☐	☐	☐	☐	☐
19	ഞാൻ അസ്വസ്ഥമായിരിക്കുമ്പോൾ എനിക്ക് ഒന്നിനും ഏകാഗ്രത ലഭിക്കാറില്ല	☐	☐	☐	☐	☐
20	അസ്വസ്ഥമായിരിക്കുമ്പോൾ എന്റെ പ്രവർത്തികളെ നിയന്ത്രിക്കുവാൻ എനിക്ക് ബുദ്ധിമുട്ടുണ്ടാവാറുണ്ട്	☐	☐	☐	☐	☐
21	അസ്വസ്ഥമായിരിക്കുമ്പോൾ ഇനിയന്തു ചെയ്താലും എന്റെ അവസ്ഥ മെച്ചപ്പെടില്ല എന്ന് എനിക്ക് തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐
22	അസ്വസ്ഥമായിരിക്കുമ്പോൾ എനിക്ക് ആ അവസ്ഥയെക്കുറിച്ച് അലോസരം തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐
23	അസ്വസ്ഥമായിരിക്കുമ്പോൾ എനിക്ക് എന്നെ കുറിച്ച് മോശമായി തോന്നാറുണ്ട്	☐	☐	☐	☐	☐
24	അസ്വസ്ഥമായിരിക്കുമ്പോൾ അതിൽ ഊഴ്ന്നു കിടക്കാൻ മാത്രമേ എനിക്ക് കഴിയൂ എന്ന് തോന്നാറുണ്ട്	☐	☐	☐	☐	☐
25	അസ്വസ്ഥമായിരിക്കുമ്പോൾ എന്റെ പ്രവർത്തികളുടെ മേൽ എനിക്കു നിയന്തണമുണ്ടാകാറില്ല	☐	☐	☐	☐	☐

ക്രമ നമ്പർ		എപ്പോഴും ശരിയാണ്	മിക്കപ്പോഴും ശരിയാണ്	ചിലപ്പോൾ ശരിയാണ്	അപൂർവ്വമായി ശരിയാണ്	ഒരിക്കലും ശരിയല്ല
26	അസ്വസ്ഥമായിരിക്കുമ്പോൾ എനിക്ക് മറ്റൊന്നിനെ കുറിച്ചും ചിന്തിക്കാൻ സാധിക്കാറില്ല	☐	☐	☐	☐	☐
27	അസ്വസ്ഥമായിരിക്കുമ്പോൾ എന്റെ വികാരങ്ങളെ തിരിച്ചറിയാൻ എനിക്ക് കുറേ സമയം വേണ്ടി വരാറുണ്ട്	☐	☐	☐	☐	☐
28	അസ്വസ്ഥമായിരിക്കുമ്പോൾ അതിനെ തരണം ചെയ്യാൻ ഞാൻ കുറെ സമയം എടുക്കാറുണ്ട്	☐	☐	☐	☐	☐
29	അസ്വസ്ഥമായിരിക്കുമ്പോൾ എന്റെ വികാരങ്ങളെ ആവശ്യത്തിലധികമാവാറുണ്ട്	☐	☐	☐	☐	☐

APPENDIX E

IBS-PD Scale

Department of Psychology, University of Calicut – 2019
(Draft)

നിത്യജീവിതത്തിൽ നാം അനുഭവിക്കാനിടയുള്ള ഏതാനും പ്രശ്നങ്ങളെ ക്കുറിച്ചുള്ള പ്രസ്താവനകളാണ് താഴെ കൊടുത്തിരിക്കുന്നത്. ഓരോ പ്രസ്താവ നയും താങ്കളെ സംബന്ധിച്ച് എത്രമാത്രം ശരിയാണ് എന്ന് രേഖപ്പെടുത്തുക. എല്ലാ പ്രസ്താവനക്കും ഉത്തരം നൽകാന ശ്രമിക്കുക. നിങ്ങളുടെ ഉത്തരങ്ങൾ രഹസ്യമായി സൂക്ഷിക്കുന്നതും ഗവേഷണസംബന്ധമായ ആവശ്യങ്ങൾക്കുമാത്രം ഉപയോഗിക്കുന്നതുമാണ്.

		എല്ലായ്പോഴും ശരിയാണ്	മിക്കപ്പോഴും ശരിയാണ്	ചിലപ്പോൾ ശരിയാണ്	അപൂർവ്വമായി ശരിയാണ്	ഒരിക്കലും ശരിയല്ല
I.						
1.	ജീവിതചുറ്റുപാടുകൾ എന്നെ അലോസര പ്പെടുത്താറുണ്ട്.	☐	☐	☐	☐	☐
2.	വിചാരിച്ചതുപോലെ കാര്യങ്ങൾ നടക്കാ തിരിക്കുമ്പോൾ ഞാൻ അസ്വസ്ഥനാണ്.	☐	☐	☐	☐	☐
3.	മാനസിക പിരിമുറുക്കമുള്ള അന്തരീക്ഷ ത്തിലാണ് ഞാൻ ജീവിക്കുന്നത്.	☐	☐	☐	☐	☐
4.	ജീവിതത്തിലെ പ്രശ്നങ്ങൾ എന്റെ നിയ ന്ത്രണത്തിനപ്പുറമാണ്.	☐	☐	☐	☐	☐
5.	വികാരങ്ങളും ആശയങ്ങളും തുറന്നു പ്രകടിപ്പിക്കാനുള്ള അവസരങ്ങൾ ഇല്ലാ ത്തതിനാൽ ഞാൻ ബുദ്ധിമുട്ടാറുണ്ട്.	☐	☐	☐	☐	☐
II.						
6.	ഭയപ്പെടുത്തുന്ന ചില ചിന്തകൾ എന്നെ അലട്ടാറുണ്ട്.	☐	☐	☐	☐	☐
7.	സംഭവിക്കാനിടയുള്ള ചില പ്രശ്ന ങ്ങളെയോർത്ത് ഞാൻ ആകുലപ്പെടാറു ണ്ട്.	☐	☐	☐	☐	☐
8.	അബദ്ധങ്ങൾ സംഭവക്കുമോ എന്നോർത്ത് വിഷമിക്കാറുണ്ട്.	☐	☐	☐	☐	☐
9.	എന്റെ കൈകൾ വിയർക്കാറുണ്ട്.	☐	☐	☐	☐	☐
10.	രാത്രി ഉറക്കം വരാൻ ബുദ്ധിമുട്ടാറുണ്ട്.	☐	☐	☐	☐	☐
11.	മറ്റുള്ളവർ എന്നെക്കുറിച്ച് എന്ത് ചിന്തി ക്കുന്നു എന്ന് ഞാൻ ആകുലപ്പെടുന്നു.	☐	☐	☐	☐	☐

		ഏറ്റവുമധികം ശരിയാണ്	മിക്കപ്പോഴും ശരിയാണ്	ചിലപ്പോൾ ശരിയാണ്	അപൂർവമായി ശരിയാണ്	ഒരിക്കലും ശരിയല്ല
III.						
12.	എന്നെക്കൊണ്ട് ഒരു ഉപകാരവുമില്ലെന്ന് എനിക്ക് തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐
13.	എനിക്ക് നിസ്സഹായത അനുഭവപ്പെടാറുണ്ട്.	☐	☐	☐	☐	☐
14.	എനിക്ക് ഉന്മേഷക്കുറവ് അനുഭവപ്പെടാറുണ്ട്.	☐	☐	☐	☐	☐
15.	കാര്യങ്ങൾ വിചാരിച്ചതുപോലെ നടക്കാതിരിക്കുമ്പോൾ ഞാൻ സ്വയം കുറ്റപ്പെടുത്താറുണ്ട്.	☐	☐	☐	☐	☐
16.	എനിക്ക് എല്ലാത്തിനോടും ഒരു അസംതൃപ്തിയാണ്.	☐	☐	☐	☐	☐
IV.						
17.	എന്റെ അവസ്ഥ എത്രമാത്രം പ്രയാസകരമാണ് എന്ന് ഞാൻ ചിന്തിക്കുന്നു.	☐	☐	☐	☐	☐
18.	എന്റെ ഇപ്പോഴത്തെ അവസ്ഥ കൂടുതൽ മോശമാവുമെന്ന് ഞാൻ ഭയപ്പെടുന്നു.	☐	☐	☐	☐	☐
19.	എന്റെ അവസ്ഥ ഒരിക്കലും മെച്ചപ്പെടില്ലെന്ന് ഞാൻ കരുതുന്നു.	☐	☐	☐	☐	☐
20.	എന്റെ അവസ്ഥയെ കുറിച്ചുള്ള ചിന്തകൾ എപ്പോഴും മനസ്സിൽ വന്നുകൊണ്ടിരിക്കുന്നു.	☐	☐	☐	☐	☐
21.	ഗുരുതരമായ എന്തെങ്കിലും സംഭവിക്കുമോ എന്ന് ഞാൻ ചിന്തിക്കുന്നു.	☐	☐	☐	☐	☐
V.						
22.	എന്റെ ഹൃദയമിടിപ്പ് അധികമായി അനുഭവപ്പെടാറുണ്ട്.	☐	☐	☐	☐	☐
23.	എനിക്ക് തലകറക്കം അനുഭവപ്പെടാറുണ്ട്.	☐	☐	☐	☐	☐
24.	എനിക്ക് തലവേദന ഉണ്ടാവാറുണ്ട്.	☐	☐	☐	☐	☐
25.	എനിക്ക് ശ്വാസമെടുക്കുമ്പോൾ പ്രയാസം തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐
26.	എനിക്ക് ക്ഷീണം തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐

APPENDIX F

IBS-PD Scale

Department of Psychology, University of Calicut – 2019 (Final)

നിത്യജീവിതത്തിൽ നാം അനുഭവിക്കാനിടയുള്ള ഏതാനും പ്രശ്നങ്ങളെ ക്കുറിച്ചുള്ള പ്രസ്താവനകളാണ് താഴെ കൊടുത്തിരിക്കുന്നത്. ഓരോ പ്രസ്താവ നയും താങ്കളെ സംബന്ധിച്ച് എത്രമാത്രം ശരിയാണ് എന്ന് രേഖപ്പെടുത്തുക. എല്ലാ പ്രസ്താവനക്കും ഉത്തരം നൽകാന ശ്രമിക്കുക. നിങ്ങളുടെ ഉത്തരങ്ങൾ രഹസ്യമായി സൂക്ഷിക്കുന്നതും ഗവേഷണസംബന്ധമായ ആവശ്യങ്ങൾക്കുമാത്രം ഉപയോഗിക്കുന്നതുമാണ്.

		എല്ലായ്പോഴും ശരിയാണ്	മിക്കപ്പോഴും ശരിയാണ്	ചിലപ്പോൾ ശരിയാണ്	അപൂർവ്വമായി ശരിയാണ്	ഒരിക്കലും ശരിയല്ല
I.						
1.	ജീവിതചുറ്റുപാടുകൾ എന്നെ അലോസര പ്പെടുത്താറുണ്ട്.	☐	☐	☐	☐	☐
2.	വിചാരിച്ചതുപോലെ കാര്യങ്ങൾ നടക്കാ തിരിക്കുമ്പോൾ ഞാൻ അസ്വസ്ഥനാണ്.	☐	☐	☐	☐	☐
3.	മാനസിക പിരിമുറുക്കമുള്ള അന്തരീക്ഷ ത്തിലാണ് ഞാൻ ജീവിക്കുന്നത്.	☐	☐	☐	☐	☐
4.	ജീവിതത്തിലെ പ്രശ്നങ്ങൾ എന്റെ നിയ ന്ത്രണത്തിനപ്പുറമാണ്.	☐	☐	☐	☐	☐
5.	വികാരങ്ങളും ആശയങ്ങളും തുറന്നു പ്രകടിപ്പിക്കാനുള്ള അവസരങ്ങൾ ഇല്ലാ ത്തതിനാൽ ഞാൻ ബുദ്ധിമുട്ടാറുണ്ട്.	☐	☐	☐	☐	☐
II.						
6.	ഭയപ്പെടുത്തുന്ന ചില ചിന്തകൾ എന്നെ അലട്ടാറുണ്ട്.	☐	☐	☐	☐	☐
7.	സംഭവിക്കാനിടയുള്ള ചില പ്രശ്ന ങ്ങളെയോർത്ത് ഞാൻ ആകുലപ്പെടാറു ണ്ട്.	☐	☐	☐	☐	☐
8.	അബദ്ധങ്ങൾ സംഭവക്കുമോ എന്നോർത്ത് വിഷമിക്കാറുണ്ട്.	☐	☐	☐	☐	☐
9.	രാത്രി ഉറക്കം വരാൻ ബുദ്ധിമുട്ടാറുണ്ട്.	☐	☐	☐	☐	☐
10.	മറ്റുള്ളവർ എന്നെക്കുറിച്ച് എന്ത് ചിന്തി ക്കുന്നു എന്ന് ഞാൻ ആകുലപ്പെടുന്നു.	☐	☐	☐	☐	☐

		ഏറ്റവുംകൂടുതൽ ശരിയാണ്	മിക്കപ്പോഴും ശരിയാണ്	ചിലപ്പോൾ ശരിയാണ്	അപൂർവമായി ശരിയാണ്	ഒരിക്കലും ശരിയല്ല
III.						
11.	എന്നെക്കൊണ്ട് ഒരു ഉപകാരവുമില്ലെന്ന് എനിക്ക് തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐
12.	എനിക്ക് നിസ്സഹായത അനുഭവപ്പെടാറുണ്ട്.	☐	☐	☐	☐	☐
13.	എനിക്ക് ഉന്മേഷക്കുറവ് അനുഭവപ്പെടാറുണ്ട്.	☐	☐	☐	☐	☐
IV.						
14.	എന്റെ അവസ്ഥ എത്രമാത്രം പ്രയാസകരമാണ് എന്ന് ഞാൻ ചിന്തിക്കുന്നു.	☐	☐	☐	☐	☐
15.	എന്റെ ഇപ്പോഴത്തെ അവസ്ഥ കൂടുതൽ മോശമാവുമെന്ന് ഞാൻ ഭയപ്പെടുന്നു.	☐	☐	☐	☐	☐
16.	എന്റെ അവസ്ഥ ഒരിക്കലും മെച്ചപ്പെടില്ലെന്ന് ഞാൻ കരുതുന്നു.	☐	☐	☐	☐	☐
17.	എന്റെ അവസ്ഥയെ കുറിച്ചുള്ള ചിന്തകൾ എപ്പോഴും മനസ്സിൽ വന്നുകൊണ്ടിരിക്കുന്നു.	☐	☐	☐	☐	☐
V.						
18.	എന്റെ ഹൃദയമിടിപ്പ് അധികമായി അനുഭവപ്പെടാറുണ്ട്.	☐	☐	☐	☐	☐
19.	എനിക്ക് തലവേദന ഉണ്ടാവാറുണ്ട്.	☐	☐	☐	☐	☐
20.	എനിക്ക് ശ്വാസമെടുക്കുമ്പോൾ പ്രയാസം തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐
21.	എനിക്ക് ക്ഷീണം തോന്നാറുണ്ട്.	☐	☐	☐	☐	☐