



GHAPP

Gastroenterology & Hepatology
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Yoga as Complementary Medicine in Functional Gastrointestinal Disorders (FGIDs)

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Disclosures

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Objectives

At the end of this session participants will

- Recognize the importance of Yoga and Mindfulness in treating Disorders of Gut Brain Interaction (DGBI)
- Understand the role stress and anxiety play in Irritable Bowel Syndrome (IBS)
- Describe the role of the Enteric, Sympathetic, and Parasympathetic Nervous Systems in digestion
- List the benefits of yoga and mindfulness in the treatment of DGBI
- Describe how changing your response to stress may be a promising treatment for disorders of gut brain interaction

What Is Health?

- World Health Organization (WHO) defines health “as a state of complete physical, mental, and social well being and not merely the absence of disease or infirmity”
- The word “dis / ease” reminds us that illness is experienced in more than just the physical realm

Functional Gastrointestinal Disorders (FGIDs)

- Diagnosis based primarily on symptoms
- Lack of definitive biomarkers and no structural evidence of disease
- Often no uniform treatment
- Associated with decreased Quality of Life (QOL) and significant financial burden to both the patient and the health care system
- Multiple disorders fall under this umbrella (IBS, functional dyspepsia, abdominal pain, and nausea)

Structural vs Functional

Structural



Functional



Disorders of Gut-Brain Interaction (DGBI)

- With Rome IV (2016) there was a recognition that the term **functional** is nonspecific and can be stigmatizing
- FGIDs... New terminology...
disorders of gut-brain interaction

Mechanisms of Pathogenesis in DGBI

- Brain – Gut dysfunction (disturbance in bidirectional communication)
 - Dysmotility – improper regulation of muscle contractions of the GI tract
 - Visceral hypersensitivity – increased sensitivity of nerves in the gastrointestinal organs
 - Altered gut microbiota (dysbiosis)
 - Altered mucosal and immune function
- When communication is disrupted normal signals can be misinterpreted lowering the threshold for pain which over time leads to hypersensitivity and increased pain perception

Biopsychosocial Model for FGIDs

Disturbance of gut-brain axis

Genetics

Psychological factors

- Early life trauma

- Psychological state

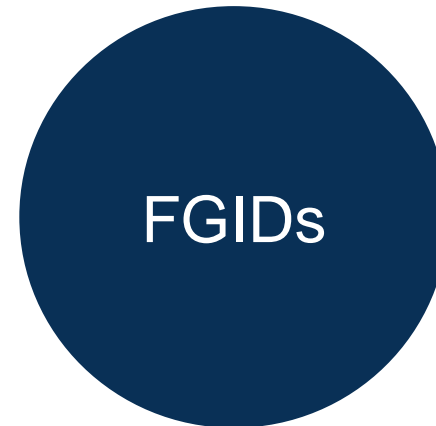
- Social support

Environmental stressors

- Infection

- Use of antibiotics

- Diet



Irritable Bowel Syndrome (IBS)

- Rome IV criteria
 - Recurrent abdominal pain on average at least 1 day/week during the previous 3 months that is associated with 2 or more of the following*
 - Related to defecation
 - Associated with a change in frequency of stool
 - Associated with a change in stool form or appearance

*Criterion fulfilled for the last 3 months with symptom onset at least 6 month prior to diagnosis

IBS

- Most common disorder of gut brain interaction
- Estimated 10-12% of adults in North America are affected
- More common in women and most commonly diagnosed in younger people (<50)
- Categorized into subtypes (IBS-C, IBS-D, IBS-M, and unclassified IBS)

Burden of IBS

- Impaired work-related activities
- Reduces QOL
- Patients with IBS had significantly more diagnostic test, imaging and surgery compared with patients without a diagnosis of IBS
- Direct medical costs attributed to IBS in the US, excluding prescription and over-the-counter medicines, were estimated at \$1.5 – 10 billion per year in 2005

“Gut Feelings”

- Have you ever felt butterflies in your stomach before you gave a presentation or went on a date?
- Have you ever felt bloated and full after eating a meal fast or after receiving a mean text from a friend?

Autonomic Nervous System

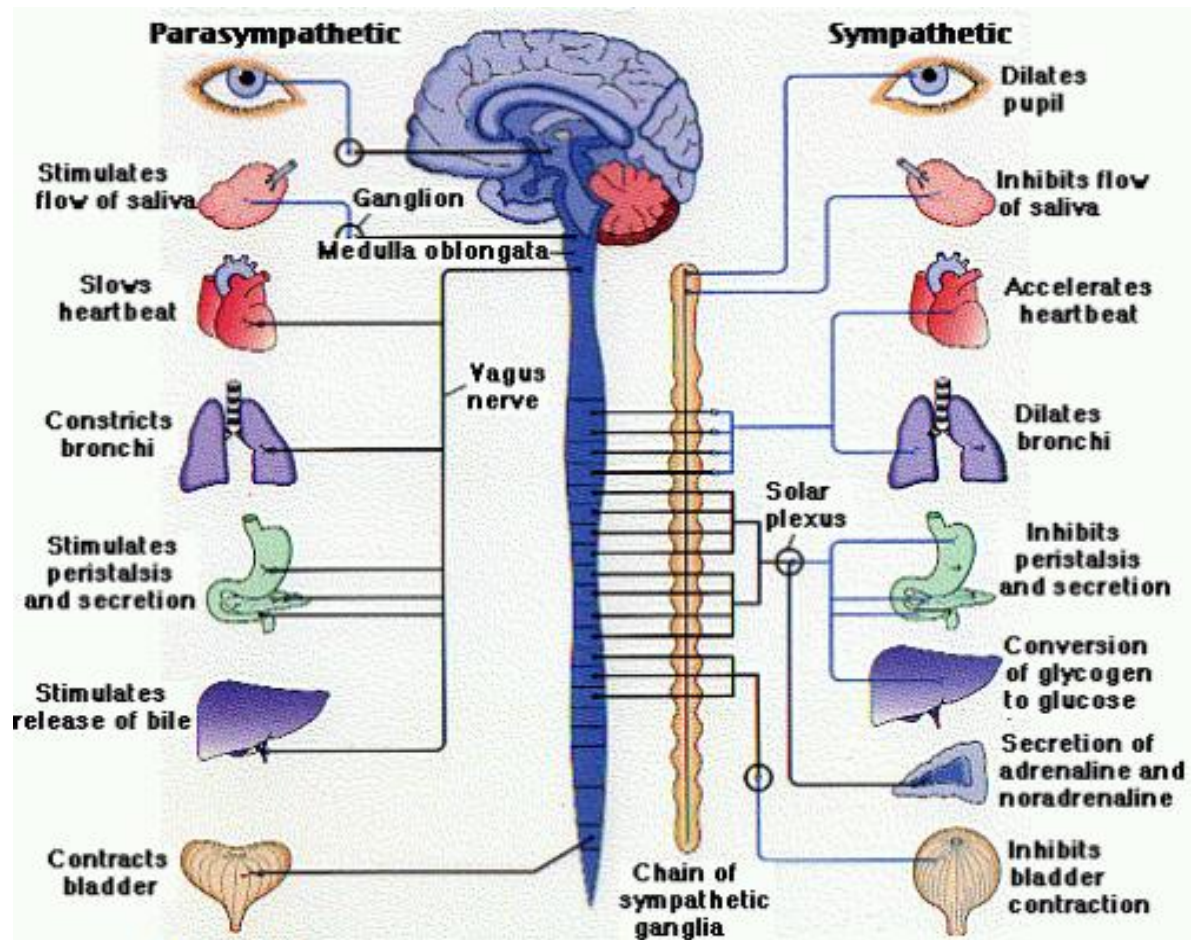
- Sympathetic Nervous System
- Parasympathetic Nervous System
- Enteric Nervous System

Enteric Nervous System

- Primary function of the ENS is to control digestion and motility in the GI tract
 - The GI tract contains more neurons than the spinal column and is where over 90% of serotonin is produced!
 - Two thin layers of more than 100 million nerve cells lining the GI tract from esophagus to rectum
- Information is bidirectional between brain in our gut and in our head
- Gut and brain communicate through nerve pathways (vagal nerve), hormones, neurotransmitters, and the immune system

STRESS or FIGHT or FLIGHT Response

- Stressors stimulate the Sympathetic Nervous System (SNS) “fight or flight” unleashes a cascade of stress hormones that result in physiologic changes
- SNS originally developed to allow us to react quickly to a threat (primitive brain)
- Can be activated by real or anticipated threat



Anxiety

- Fear that is out of control
- Anxiety and depression are major comorbidities in Functional GI disorders
- Over time the brain misinterprets normal signals as threats
- Stress is your response to a threat not the threat itself

Spiral of Anxiety

AMYGDALA PATHWAY (threat that is a hard wired reaction or a learned association)

THREAT → Thalamus →
Amygdala → Hypothalamus →
Adrenal glands → Adrenaline →
increase HR, BP, muscle tension
→ fight or flight → if stress
prolonged → HPA → cortisol

CORTEX PATHWAY... A check on the Amygdala

ANTICIPATION OF THREAT →
cortex anticipates stress and looks
for an explanation sometimes
triggering a spiral of worry →
Amygdala engages and triggers
fight-or-flight reaction

Long-Term Effects of Chronic Stress

- Elevated blood pressure
- Dyslipidemia
- Obesity
- Elevated blood sugar and Diabetes
- Autoimmune disease
- Depression and anxiety
- Insomnia

What Can We Do?

- What if there was a medicine that could decrease pain perception, improve the functioning of the parasympathetic nervous system, improve sleep, increase flexibility and strength, improve focus and help you know yourself and feel joy?



Yoga

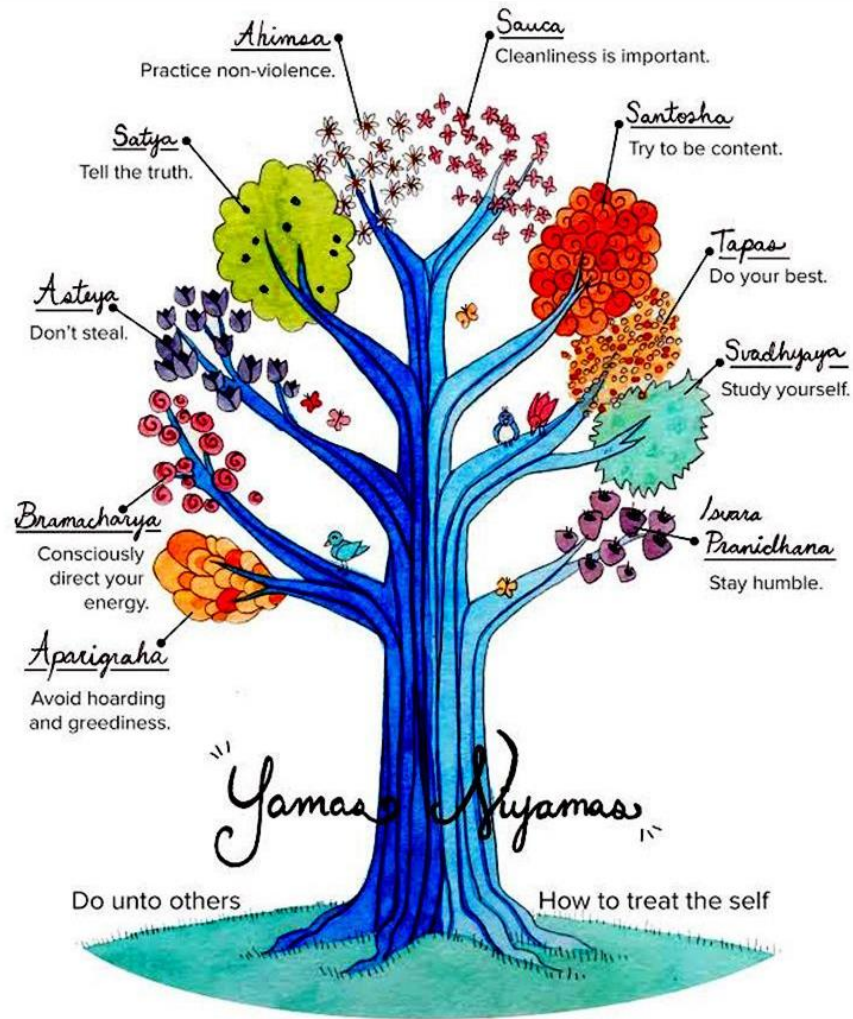
- Yoga... From the Sanskrit “yaj” translated as union or yoking
- The state of yoga is a state of knowing your true nature and no longer being a slave to the fluctuations of the mind. To know yourself, self-regulate, and recognize your connection to something greater than the individual self. In yoga... Called samadhi (oneness / connection).
 - Being “in the flow” or “in the zone”
- The practice of yoga offers techniques to liberate the self from habitual patterns and bring you back to your true Self

Yoga

- Developed in India thousands of years ago and evolved from diverse cultures in India
- Patanjali wrote the Yoga Sutras around 200 BCE to organize the central themes of yoga and provide a road map inward
- Yoga sutra I.2 “Yoga citta vritti nirodhah” (Yoga is the setting aside of the agitations/fluctuations of the mind)
 - Outward focus, our habits, and the stories we tell ourselves are the fluctuations of the mind

8 Limbs of Yoga

- Yamas (right action)
- Niyamas (self-discipline)
- Asana (postures)
- Pranayama (breathwork)
- Pratyahara (sense withdrawal)
- Dharana (concentration)
- Dhyana (meditation)
- Samadhi (union)



Mindful of “Mind Full”?

- Mindfulness meditation defined as “nonjudgmental acceptance and interested awareness of moment-to-moment experience of sensations, perceptions, emotions, and other forms of mental activity”
- Paying attention and developing awareness
 - On purpose
 - In the present moment
 - Nonjudgmental

Benefits of Yoga and Mindfulness for Functional Bowel Disorders

Yoga and mindfulness breathing practice activate the parasympathetic nervous system leading to improved digestion

Improves circulation to the gut

Improves vagal tone

Gentle pulse of compression and stretching helps restore motility

Strengthens the muscular support to the abdominal organs

Yoga helps you tolerate discomfort and shifts the focus away from pain

Breaks habitual patterns of responding to stress

Increased awareness and overall well being

Mindfulness-Based Stress Reduction (MBSR)

Founded by Dr. Jon Kabat-Zinn

- Professor of Medicine at the University of Massachusetts Medical School
- Founded the Center for Mindfulness
- Author of multiple books on mindfulness
 - *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain and Illness*
 - *Wherever You Go, There You Are: Mindfulness Meditation in everyday Life*
 - *Falling Awake*



**“YOU CAN’T STOP THE
WAVES FROM COMING,
BUT YOU CAN LEARN
TO SURF” ... JON
KABAT-ZINN**

Brain on Mindfulness 😊

Amygdala Pathway

- Less likely to react to threat or trigger as strong a fight-or-flight response
- Amygdala is smaller and less reactive in people who practice mindfulness consistently

Cortex Pathway

- Cortex not as likely to anticipate threat
- Mindfulness strengthens awareness and attention centers of cortex
- Negative thoughts are less likely to trigger the amygdala

WARNING: Yoga and Mindfulness May Benefit Your Health and Bring on Feelings of BLISS!

- Improves strength, flexibility, and range of motion
- Decreases pulse and respiration
- Improves sleep and energy levels
- Improves glucose and lipid panel
- Decreases pain
- Stimulates Parasympathetic Nervous system
- Increases awareness of body and mind
- Reduces stress, anxiety, and depression
- Creates overall feeling of well being
- Increases intimacy with yourself and others

Evidence

- Decrease in abdominal pain severity was significantly greater in the mindfulness group than in the social support group at post-treatment ($P=.013$) and at 3 months ($P=.015$)
- At 3-month follow-up, a significantly greater reduction in abdominal pain frequency and life interference was seen in the mindfulness group compared with the social support group ($P=.007$ and $P=.037$ respectively)
- Greater improvement in IBS-QOL compared with the social support group at the 3 month follow-up ($P=.027$) but not immediately post-treatment

More Evidence

- 6 randomized controlled trials with a total of 273 patients were included in the qualitative analysis
 - Evidence on benefit with yogic intervention over conventional treatment in IBS, with significantly decreased bowel symptoms, IBS severity, and anxiety
- Significant improvements in QOL, global improvement, and physical functioning after yoga compared with no treatment

Yoga vs Low-FODMAP Diet in IBS

Hatha yoga beneficial to IBS patients with similar results to a low-FODMAP diet

- **Why stress management is crucial for a healthy gut.** At times, we all experience stress in our lives. Have you ever noticed that when you're stressed, you often feel queasy? That's because the brain and the gut are closely connected. Stress can cause more contractions in the intestines and increase sensitivity. So it's crucial to manage your stress as best as you can. Yoga is one way to help with tension buildup in your body. The experts at Harvard also recommend five additional stress-busting techniques that can help calm you down and reduce your IBS symptoms.



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Trusted advice for a healthier life

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