بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

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MONA MAGHRABY

Relation between Serum and Dietary Zinc Levels and Irritable Bowel Syndrome (IBS) in Medical Students of Ain Shams University.

Thesis

Submitted for the partial fulfillment of Master degree
In Clinical Nutrition

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Abstract

IBS is one of the most common Functional Gastrointestinal disorder (FGID) and diseases of brain–gut interaction, characterized by recurrent abdominal pain and disordered defecation. Recently, Rome IV criteria was used for diagnosis of IBS. Dietary manipulation was proposed effectively for treatment of IBS symptoms as low FODMOPs diet. But this elimination diet may cause malnutrition and micronutrients deficiency as zinc deficiency. Zinc is an essential trace element plays a key role in the development and maintenance of all tissues. Low Zn consumption and deficiency may lead to the damage of intestinal mucosa. The present work aimed to measure the proportion of IBS and its subtypes in medical students participated in NAMES/ASU project and to correlate dietary intake and serum level of Zn with IBS. This cross-sectional study of purposive sample involved 199 medical students (males and females) who had GIT symptoms for at least, the past 6 months. IBS and its subtypes clinical diagnosis were made according to Rome IV criteria, serum zinc was measured by colorimetric method and the dietary consumption of zinc rich food was analyzed and measured using food composition software analysis. The Proportion of IBS in NAMES/ASU students was 8.5% (104 students), with IBS-C was the commonest subtype. The serum zinc level and dietary zinc intake were low in IBS students with statistical significance difference. Serum zinc level and dietary zinc intake showed a positive significant correlation. Food frequency questionnaire (FFQ) analysis showed statistically significant difference regarding dietary consumption of milk and serum zinc level in IBS students. It is important to recommend and encourage young adults and IBS patients to consume the dietary allowance of zinc per day from zinc rich food as meat, milk and fish.

Key words: IBS, Zinc, Food frequency questionnaire (FFQ).

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- **BSFS:** Bristol Stool Form Scale.
- **DRI:** Dietary Reference Intakes.
- **FDA:** Food and Drug Administration.
- **FMT:** Fecal microbiota transplantation.
- **FGIDs:** Functional Gastrointestinal disorders.
- **FODMAP:** Fermentable Oligosaccharide, Disaccharide, Monosaccharide, And polyol.
- **GABA:** Gamma-aminobutyric acid
- **GI:** Gastrointestinal
- **HAPC:** High amplitude propagated colonic contractions.
- **IBD:** Inflammatory Bowel Diseases
- **IBS:** Irritable bowel syndrome
- **IBS-C:** Irritable bowel syndrome-Constipation
- **IBS-D:** Irritable bowel syndrome-Diarrhea
- **IBS-M:** Irritable bowel syndrome-Mixed
- **IBS-QOL:** Irritable Bowel Syndrome-Quality of Life.
- **IBS-U:** Irritable bowel syndrome-unclassified
- **5-HT:** 5-hydroxytryptamine (serotonin).
- **NAMS/ASU:** The Nutritional Assessment of Medical Students of Ain Shams University.
- **QOL:** Quality of life.
- **PR:** Protease's Receptors.
- **SD:** Standard deviation
- **SSRIs:** Selective serotonin reuptake inhibitors
- **SIBO:** Small intestinal bacterial overgrowth
- **SLC:** Solute-linked carrier families

- **Spp.:** Species.
- **TCAs:** Tricyclic antidepressants.
- **TLR-9:** Toll -like receptors 9.
- **TNFα:** Tumor necrosis factor alpha.
- **TNFSF15:** Tumor necrosis factor superfamily member 15.
- **VOMs:** Volatile organic molecules.
- **WC:** Waist circumference.
- **ZFP:** Zinc finger proteins.
- **ZIP:** Zrt- and Irt-like protein transporters.
- **ZnT:** Zinc transporters.

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Introduction

Irritable bowel syndrome (IBS) is a functional digestive disorder. It is a symptom-based condition characterized by abdominal pain or discomfort, with altered bowel habits, in the absence of any other disease to cause these sorts of symptoms, including gastrointestinal malignancies or inflammatory bowel diseases (IBD) **(Borghini *et al*., 2017).**

Its estimated prevalence is 10%–20% **(Longstreth *et al*., 2006)**. Arab countries are among the least studied populations in the world (Lovell and Ford, 2012). An Egyptian study conducted in Suez governorate had revealed high prevalence rate of 34.2% among the studied group **(Abdulmajeed *et al*., 2011)**. IBS is nearly twice more common in women than men **(Chey *et al*., 2016).**

Despite its often chronic and relapsing nature, the underlying pathophysiology of IBS remains incompletely understood (Kim et al., 2017). The etiology is multifactorial, involving dysregulation of the hypothalamic–pituitary–adrenal (HPA) axis, immune-activation, visceral hypersensitivity, disordered gut motility and chronic, low-grade, subclinical inflammation **(Barbara *et al*., 2011)**.

Food intolerance is very common in IBS, as many patients associate the ingestion of a wide range of foods with the development of abdominal bloating and pain **(Bohn *et al*., 2013)**, and 62% make dietary modifications, such as reduce consumption of dairy products, spicy foods, wheat, alcohol, and some fruits or vegetables rich in poorly absorbable, Fermentable, Oligosaccharides, Disaccharides, Monosaccharides and Polyols (FODMAPs) **(El-Salhy *et al*., 2012).**