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BOWEL NO 1 - FUNCTIONAL GASTRO-INTESTINAL DISORDERS V DYSFUNCTIONAL HUMAN BEINGS; EVOLUTIONAL FACTORS OF MILIEU INTERIOR — *TRIAL DE NOVO*

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ABSTRACT

Humans are suffering from Nonorganic GastroIntestinal Disorders (NGIDs) classified as "Functional Gastro-Intestinal Disorders (FGIDs). Question is raised about need of animal protein for humans. Ancestrally human beings were herbivores turned omnivores or even carnivores in modern times with very little interest in vegetable diet. Historical discovery of the terminology of dyspepsia to functional dyspepsia including discovery of Helicobacter Pylori is traced. Author is trying to trace inceptual genealogy of FGIDs started apparently after World War I (WW I) with *Great Depression* and scarcity in global food supply. This economic situation continued even around WW II. Evolutionary and historical aspects are addressed resulting in NGIDs cum FGIDs including lessons learnt from historical scenario. Western sociocultural mores are dealt compared with and Eastern mores.

KEYWORDS: Disorders of Gastro-Intestinal Interactions (DGBIs), Diverticular Disease of Colon (DD), Functional Gastro-Intestinal Disorders (FGIDs), Gastro (O)esophageal Reflux Disease (GERD/GORD), Irritable Bowel Syndrome (IBS), WWs I and II.

(1) INTRODUCTION

Humans are suffering from bowel disorders viz, Functional Gastro-Intestinal Disorders (FGIDs) aka Disorders of Gut-Brain Interactions (DGBIs). Henceafter, only FGIDs will be stated. There is no pathological, biophysiological, organic evidence for FGIDs. Author has tried to trace the genealogy of FGIDs starting with World War I, leading to socioeconomic disaster, poor lifestyle with food scarcity, meagre medical facilities, etc; appear harbingers of FGIDs. Modern dietary habits, socioreligious practice differences between Western and Eastern society are also addressed. Importance of ignoring the advice of peers in last midcentury, nay Paleoanthropologically, is stressed costing heavily through their sobbing Gut.

Photo – Social Humans 1

A Gorilla Primate Ape ironically addressing her successor – Homo Sapiens Sapiens.

(2) Human Evolutionary Dietary Legend

Humans are highest evolutionary creatures as Homo sapiens sapiens. The more we have evolved and

developed in civilisation and social anthropology; more have we devolved and drifted away from 'Mother Nature'; is the leading cause of FGIDs. A recipe to design perfect food for all is not yet available. Menne[1] states, "Paleoanthropologist Kindler, meanwhile, believes that tastes and food sources are handed down which are more of a social issue than one of physiological evolution. So if people were to return more to the diet of their ancestors, eat more local fruits and vegetables, and eat significantly less meat, it would be good news for their health – and for our planet. After all, humans' enormous adaptability and insatiable appetite for meat today is one thing above all: an ecological disaster Unquote." Menne[1] continues, "The question remains whether we still need animal proteins and the micronutrients contained in meat today. As nutritionist Hauner (Prof. Dr. Hans Hauner; Nutritional Medicine, TUM School of Medicine and Health; Technical University of Munich) points out that today there are quite competitive sportsmen who nourish themselves through a purely vegetarian or vegan diet. So you can also optimally supply your muscles and brain with vegetable proteins. The introduction of soy-based foods in a diet does not necessarily determine equol production, suggesting an important role of the individual composition of gut microbiota and its functional capability on equol production. Interestingly, more than 60% of Asian residents were found as equol producers from soy isoflavones, while only 30% of the Western populations display the same functionality. Indeed, Westernization could be the cause of loss of the equol-producing ability, as a consequence of different gut microbiome structures and different dietary patterns consumed. Accordingly, Wu and co-worker found that less than 50% of recruited Western vegans produced *equol* Unquote" Kindler et al[2] pointed out, "Diet played a key role in human evolution, making the study of past diet and subsistence strategies a crucial research topic within paleoanthropology. Lipids are a crucial resource for hunter-gatherers, especially for foragers whose diet is based heavily on animal foods Unquote." They[2] also quote, "Neanderthals intensively processed a minimum of 172 large mammals for grease and marrow fat, 125,000 years ago Unquote."

Equol is a nonsteroidal estrogen that is produced in intestines by bacteria from isoflavone *daidzein*, which is a naturally occurring isoflavone and is a phytoestrogen with a chemical structure similar to mammalian estrogens. Its side effects are allergic reactions to daidzein causing itching, rash, hives, swelling, and difficulty breathing (Setchell and Clerici[3]). Equol, produced from daidzein, is the isoflavone-derived metabolite with greatest estrogenic and antioxidant activity. Consequently, equol has been endorsed as having many beneficial effects on human health. The conversion of daidzein into equol takes place in intestine via action of reductase enzymes belonging to incompletely characterized members of gut microbiota. Epidemiological data suggest that regular intake of isoflavones from soy reduces incidence of estrogen-dependent and aging-associated disorders, such as menopause symptoms in women, osteoporosis, cardiovascular diseases and cancer (Mayo et al[4]). Ercolini and Fogliano[5] observed, "The connection of microbiota wellness with functioning of liver is obvious: microbiota metabolites are carried to liver through portal vein, and microbial dysbiosis is often the cause of liver inflammatory status. Similarly, for all parameters connected to circulatory system: mounting evidence indicates that signal triggered by gut microbes and their metabolites is directly responsible for low-density lipoprotein (LDL) and endothelium functionality as well as many factors connected to glucose-managing capability. Finally, current trends in gut–brain axis science recognize the role of gut microbiome interacting with brain Unquote." They[5] continued, "Psychobiotics have been recently defined as any substance that exerts a microbiome-mediated psychological effect and are thus not limited to probiotics and prebiotics. Psychobiotics exert anxiolytic and antidepressant effects characterized by changes in emotional, cognitive, systemic, and neural indices. For example, bacteria crucially affect the metabolism of tryptophan into serotonin, whose effect on mood is recognized. In addition, the potential anti-inflammatory activity of gut microbes upon fiber degradation and short chain fatty acids (SCFA) production can stimulate positive responses at systemic level and be involved in emotional responses. In light of this, it is tantalizing to imagine food designed to act as a psychobiotic, which may be enriched with prebiotic fiber or probiotics with a recognized effect on human behavior. Indeed in first evidence on humans, supplying Bimuno-galactooligosaccharide (B-GOS) determined a significant reduction of waking-cortisol response, with possible consequent decrease in emotional disturbances. However, the message that we can take from available knowledge is that, beyond having desired nutritional, technological, sensory and health properties, the design of novel foods should take care of availability of nutrients for host and its microbes. Ingredient formulation and processing technology tailoring the bioavailability of nutrients on specific need of each individual and especially our powerful symbionts will be the starting point to enter new era of personalized nutrition Unquote." This observation excites careful study involving varied dietary pattern.

(3) Historical perspectives about dyspepsia to FGIDs: Tally and Choung[6] summarised historical viewpoint on dyspepsia that have been recognized since the birth of medicine. However, after Baillie's description of gastric ulcer in 1799; dyspepsia was simply classified into two major groups – dietary and moral by 19th century. They also credit Powell in 1820 for recognizing irritable bowel syndrome and Walter Alvarez at Mayo Clinic for using functional dyspepsia in 1916. Functional dyspepsia was distinguished from organic gastrointestinal disease by absence of structural causes. Alvarez later used the term nervous dyspepsia for these patients and his concept of

functional dyspepsia as hysterical, led to relatively little interest until after discovery of Helicobacter pylori (1982) and Rome criteria in 1980s. Dr Ian Hislop wrote about nervous dyspepsia in the 1970s. The landmark work of Warren and Marshall in 1982 spurred substantial new interest in non-ulcer dyspepsia. Marshall and Adams[7] observed, "In 2005, Barry Marshall and Robin Warren were awarded the Nobel prize in Physiology for their pioneering work on *Helicobacter pylori*. In the words of the Nobel Committee, they were honored "for their discovery of the bacterium *Helicobacter pylori* and its role in gastritis and peptic ulcer disease." It was soon recognized that up to half of the patients with this condition also had spiral bacteria-Helicobacter Pylori in their gastric mucosa; though Author is sceptical about it, because this concept has led to rampant use of drug regimes containing powerful antibiotics and proton-pump inhibitors generating FGIDs.

(4) Socioeconomy related Health Issues: After WW I '1914-18', the 'Great Depression' resulting in global 'Economic Crisis' by 1930s (The Great Depression[8]). This led to deterioration in lifestyle with resultant changes in dietary habits due to scarcity in ration supply. This also led to FGIDs fortified by erstwhile nascent and meagre medical facilities (Lozada[9], Richardson[10]). This economic crisis continued well after WW II. An International Monetary Fund Website[11] reported, "The Post War World: The Most Destructive War in History. By the end of World War II, much of Europe and Asia, and parts of Africa, lay in ruins. Combat and bombing had flattened cities and towns, destroyed bridges and railroads, and scorched the countryside. The war had also taken a staggering toll in both military and civilian lives. Shortage of food, fuel, and all kinds of consumer products persisted and in many cases worsened after peace was declared. War-ravaged Europe and Japan could not produce enough goods for their own people, much less for export. What was needed to pull Europe and Asia back into the international economy? The answer was *money* - but what kind? The currencies of war-torn countries? Gold? Dollars? Results were Inflation, Debt (mostly owed to the United States), *Trade deficits*, Balance of payments deficits, Depleted gold and dollar supplies, etc Unquote." Springate[12] states, "In many cases, parents don't have enough money to put the right kinds of food in their children's lunch pails. In some cases – and this is increasingly true as more women go into war work – parents just don't have the time to put up the right kind of lunch for their children. In other cases, parents aren't well enough informed about nutrition to prepare an adequate lunch for their children. - United States War Food Administration and Office of Distribution – 1943 Unquote." This is reinforced by LeBlanc[13] in her Doctoral Dissertation that from 1939 to 1970, the U.S. government poured funding into research on human physiology, food processing and hunger surveys so that they could physically prepare U.S. soldiers and civilians for war against Germany, Italy and Japan – and, later, against communism. LeBlanc argues that the U.S. military's interest in nutrition research exploded in the 1940s, after it began seeking healthy recruits to deploy in World War II and found a male population physically weakened by years of malnutrition during the Great Depression. One ninth of potential draftees were rejected due to apparently nutrition-related diseases, a statistic that boded ill both for American battle-worthiness abroad and for staffing war industries at home Unquote." In yet another revealing document by Dr. Boudreau[14] who read the paper before the Conference of State and Provincial Health Authorities of North America in Quebec City on May 21, 1947 and stated, in trying to recreate the atmosphere of the early 1930's when the world witnessed the spectacle of hunger and malnutrition among vast numbers of unemployed workers and their families... Dr Boudreau[14] went on, "In these circumstances, the outbreak of a Second World War could not have come as a surprise to the most casual student of world affairs. Unquote."

Holtmann et al[15] observed, "Recently a striking inverse relationship between symptom prevalence and gross domestic product in respective-European countries was observed, Unquote." They[15] also noted, "All these factors might be modulated by environmental factors such as diet Unquote." They[15] went on, "By initiating the Rome process 2 decades ago, the field has advanced gradually. Awareness of FGID has increased and substantial progress has been made with their epidemiology and pathophysiology. However, this contrasts the very limited progress that has been made with regard to the efficacy of treatment. While the Rome criteria might have been exceptionally valuable in shaping the definitions and recognition of FGID, the failure to include markers for underlying pathophysiologic mechanisms or response markers into the categorization system, efficacy of treatment has not progressed Unquote." This is very remarkable observation. Monteiro et al[16] further explain, "The changes from the First and Second World Wars in the production and sale of food, resulting from the economic, political, and social context, also led the population to move from a situation of malnutrition prevalence to current state, in which excess weight takes on epidemic proportions. In this context, another scientific field enters the scene with its epidemiological studies, which primarily require the establishment of food classification or even the elaboration of a classification system that allows evaluation of the impact of food on human health Unquote." This was also investigated by US FDA and produced the document: "The Voice of the Patient.[17]".

(5) Lessons Shown via Historical Scenarios: Burkitt's[18] longtime experiences in Africa led him to lament, "These diseases are rare or unknown in communities who have deviated little from their traditional way of life, and a rise in their frequency

follows adoption of Western customs. Available evidence suggests that all these diseases were rare or uncommon even in the Western world a century ago and that they are rare or unknown in undomesticated animals. Some appear or increase in frequency within a few years of exposure to a new environmental factor, others not until several decades later Unquote." He listed a number of diseases viz, appendicitis, diverticular disease, ulcerative colitis, polyps, cancer of the larger bowel, oesophagitis, cirrhosis, chronic pancreatitis, Crohn's disease, rectal hypersensitivity, anal fissures, coronary disease, gallstones, obesity, hiatus hernia, haemorrhoids, herniae, varicose veins. These are reaffirmed by Quinn in his article; Quinn M J (2011)-Origins of Western diseases.[19]

(6) Western Socioreligious mores and FGIDs: Church also hegemonised the Western education and medical therapy. 'Body' was held abode of 'sacred spirit' until refuted by Rene Descartes (1596–1650). Drossman quotes[20], "In 1637, Rene Descartes proposed the separation of the thinking mind (*res cogitans*) from the body (*res extensa*). This dualistic concept took hold because it harmonized with sociopolitical influences relating to the separation of church (the spirit) and state (the body). Also, Cartesian dualism powerfully influenced scientific thinking and the practice of medicine. The dissection of human cadavers, previously prohibited, was now permitted (because the spirit was no longer believed to reside there). So what was seen (ie, organic disease) was real and amenable to scientific study, but illness without pathology was dismissed as behavioral (functional), spiritual, or even as possession by evil. By definition, these conditions could not be understood or studied, and the patients having these disorders were ignored or relegated to asylums Unquote." Drossman[21] reasserted in an Editorial, "Descartes broke away from this concept opening a new pathway in medical field paving way for anatomical dissections of human body Unquote." This brought the Western renaissance in the progress of medical history.

(7) Eastern Socioreligious mores and FGIDs: Socioreligious acrimonies are perennial events common in every human history for selfish hegemony to exploit masses. In Eastern medicine, viz, *Ayurved* is the oldest continuously practiced health-care system in the world since Vedic antiquity. Derived from ancient Sanskrit roots, ie, *ayus* (life) and *ved* (knowledge); offers a comprehensive system to attain healthy life; its origin goes back to eternity. Ayurved deals with practical issue of complete wellbeing versus disease free body. Two important treatises in Ayurved – *Charak Samhita* deals with internal medicine and *Susruth Samhita* with surgery – were compiled during the golden age of Ayurved long before the beginning of modern era (Ramchandran[22]). *Sushrut* is well known for his surgical acumen. Singh[23] describes, "He treated numerous cases of Nasa Sandhan (rhinoplasty), Oshtha Sandhan (lobuloplasty), and Karna Sandhan (otoplasty). Even today, rhinoplasty described by Shushrut in 600 BC (precise era unknown) is referred to as the Indian flap and he is known as the originator of plastic surgery Unquote." For successful surgery, Sushrut induced anesthesia using intoxicants such as wine and henbane (Cannabis indica). He was one of the first people in human history to suggest that a student of surgery should learn about human body and its organ by dissecting dead body (Singh[23], Mallinath[24], Sagar[25], Gandhi and Patil[26]). Gandhi and Patil[26] state, "Sushruta faced significant cultural and societal challenges, particularly regarding his pioneering practices. During his time, the dissection of human bodies was considered taboo, as it was believed to render practitioners impure, a view strongly criticized by religious and cultural authorities. Despite this, Sushruta remained steadfast in his belief that understanding human anatomy through dissection was crucial for successful surgery. The process of surgery itself was often viewed with suspicion, almost regarded as a last resort rather than a legitimate treatment method. *Sushruta's advocacy for cadaver dissection* was a landmark in his medical practice and education, particularly in a culture that resisted such practices. In *Sushruta Samhita*, he emphasized the necessity of direct observation through dissection to master human anatomy. Despite Hindu beliefs that regarded the human body as sacred in death, Sushruta navigated these restrictions innovatively Unquote."

Loukas et al[27] (2010) reaffirmed vividly, "The different parts or members of the body as mentioned before including the skin, cannot be correctly described by one who is not well versed in anatomy. Hence, any one desirous of acquiring a thorough knowledge of anatomy should prepare a dead body and carefully, observe, by dissecting it, and examine its different parts Unquote." They continued[27], "Interestingly, the *Susruta Samhita* mentions the role of a student in the dissection: 'A pupil, otherwise well-read, but uninitiated, in the practice (of medicine or surgery) is not competent to take in hand the medical and surgical treatment of disease.' According to the *Susruta Samhita*, medical students should be taught the art of making cuts in the body of a *puspaphala* (a kind of gourd), *alavu* (bottle-gourd) or *ervaruka* (cucumber) prior to dissection of human cadavers Unquote." Natarajan K[28] pictorially and vividly details the list of surgical instruments used with an atlas of surgical instruments innovated by the ancient Indian Sage Surgeon, Sushrut. One full chapter (IX of section I) is devoted to principles of experimental surgery. Chapters VII and VIII of Section I give a detailed description of 121 types of surgical instruments. These are classified into two main groups which comprise 101 blunt and 20 sharp instruments Unquote."

(8) Summary: Modern medical fraternity has become ingrained with an etiopathology in physical illness without which keep inventing one out of infinite possibilities, eg, dyspepsia, FGIDs. Ancestral vegetable

based diet has been discussed including its biochemical production of chemicals like Equol. Equol is a nonsteroidal estrogen that is produced in intestines by microbiota from isoflavone daidzein, which is a naturally occurring isoflavone and has been endorsed as having many beneficial effects like anti-inflammatory and antioxidants in humans. FGIDs are totally amorphous nonorganic pathophysiological phenotypes incurred by Western society with indulgence in incompatible lifestyle starting with the WW I due to food scarcity. FGIDs are incidental anthropological by-products of human society borne out of evolving lifestyle. Medical evolution of terminology dyspepsia to FGIDs is indicated. No lessons were learnt even after people like Burkitt, Painter and others had shown from 1966 to 1972. This issue addressed evolutionary anthropological progress and comparative socioreligious historical practices between Western and Eastern societies in relation to FGIDs. The next issues shall address its size of problem, anatomical, etiopathophysiological aspects serially.

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