**Constipation – a different approach**

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Key Points

* A simple definition for constipation is proposed.
* A new classification of constipation is introduced.
* Constipation cycle is described.
* 4 stages of constipation have been described along with alarm symptoms.
* A modified algorithm for constipation management is introduced.
* BED - Bowel Evacuation Days regimen has been introduced and described.
* Without change in the treatment of constipation a novel approach in management of constipation has been described in this chapter.
* A need for declaration of “National Constipation Day” is highlighted.

**I - INTRODUCTION**

The word constipation is derived from the latin word *constipatio* which means to press or crowd together. In medical terminology it denotes overcrowding of stools inside the colon.

Most of the definitions of constipation in the literature are physician centric where in the physician with the help of certain criteria diagnose constipation. One such guideline is Rome-IV criteria [1]. It defines functional constipation as having 2 or more of the following features: Straining during more than ¼ (25%) of defecations, Lumpy or hard stools (Bristol Stool Form Scale 1-2) more than ¼ (25%) of defecations, Sensation of incomplete evacuation more than ¼ (25%) of defecations, Sensation of anorectal obstruction/blockage more than ¼ (25%) of defecations, Manual maneuvers to facilitate more than ¼ (25%) of defecations (e.g., digital evacuation, support of the pelvic floor), fewer than three bowel movements per week, and Insufficient criteria for irritable bowel syndrome. So as per guidelines, if a patient has only one criterion like fewer than 3 bowel movements per week with Straining during less than ¼ (25%) of defecations does that mean the patient is not suffering from constipation? Is constipation a symptom or a disease? I opine that constipation is a symptom which can be simply defined as a condition in which there is “difficulty in complete evacuation of stool and flatus from the colon and rectum.”

Due to its variety of definitions the reported prevalence of constipation from various studies is around 1%-80% with wide geographical variation [2]. By simplifying the definition, the life time prevalence of constipation is 100% as every person at least once in their life time will experience this difficulty in evacuation of stools and flatus. Considering the patient’s distress with difficulty in evacuating the stools and flatus, any type of constipation requires immediate treatment without delaying time in diagnosis.

**II - PATHOPHYSIOLOGY**

In order to understand the pathophysiology of constipation one must understand the basic anatomy, innervation, physiology and function of colon and rectum, defecation reflex, the anatomy and innervation of anal sphincter complex. The relevant physiology of colon and rectum and defecation reflex will be discussed briefly here.

Migratory motor complexes (MMC) are electrical waves that originate in the stomach and move along the small intestine triggering peristaltic contractions [3]. This MMC will push the stomach contents through the small bowel. The colon does not have MMC [4]. The colonic innervation comprises the intrinsic enteric nervous system (ENS) and the extrinsic parasympathetic and sympathetic autonomic nervous system [5]. Peristalsis is initiated and propagated exclusively by the intrinsic ENS but can be modulated by the extrinsic nervous system with the parasympathetic system tending to augment and sympathetic system suppressing the peristalsis [6]. Interstitial cells of Cajal are the intestinal pacemakers and generate peristalsis in the colon [5]. The colon has High-amplitude propagated contractions (HAPCs) which are responsible for the urge to defecate upon awakening and also Low-amplitude propagated contraction which also helps in forward stool propulsion [4].

Colon peristalsis has local afferent and efferent component in the enteric nervous system. The stimulus for the afferent pathway is by two mechanisms 1) reflexive (stretch or mechanoreceptors) & 2) parasympathetic stimulation (via acetylcholine), and efferent pathway via the myenteric plexus to the muscularis propria which causes contraction and segmental peristalsis in colon [7]. All these segmental contractions are till the rectosigmoid which propels the feces into the rectum which is the stool reservoir.

Rectum is the distal part of colon which acts as a conduit and stores feces and expulse it when required by defecation reflex. There are four phases of defecation 1) the basal phase, 2) a pre-defecation phase, 3) the expulsive phase, and 4) termination of defecation phase. In the normal basal phase there is no desire for defecation and the rectum remains empty or with little stool and the pelvic muscles, sphincter complex are in continuous contraction where the pelvic muscles bear the weight of the pelvic organs and the sphincter complex keeping the anus closed preventing leakage of rectal contents [8]. The rectum and sigmoid has recurrent cyclical bursts of motor activity called motor complexes (MCs). The sigmoid MCs propagate the stool into the rectum but the rectal MCs are seen to propagate in retrograde direction which acts like a “braking mechanism” to untimely flow of colonic contents into the rectum which occurs especially in the night [8, 9]. In the pre-defecation phase there will be an urge to defecate with most of the colonic propagative sequences being the HAPCs. After continuous rectal distension with stool and flatus, there is an initial constant vague sensation, which leads to a persistent urge to defecate, that in turn culminates as a sense of discomfort and an intense urge to defecate as the tolerable maximal volume and pressure is reached within the rectum. The extrarectal tissues and the pelvic floor muscles mechanoreceptors also contributing to the defecation urge [10-12]. The rectal pressure surpasses the anal canal pressure which leads to exposure of the rectal contents to the specialized upper anal canal mucosa which samples the type of stool (sampling reflex) and if a conscious decision to evacuate the stools and flatus is made, the anal canal, puborectalis and the sphincter complex relax along with abdominal straining by valsalva maneuver results in evacuation of variable contents of the rectum [8]. In the termination of defecation phase the rectal pressure decreases and pelvic floor and sphincter complex becomes contracted and a sense of complete rectal emptying is achieved [8]. The conscious decision to evacuate depending on the favorable surrounding is developed in the childhood by toilet training. Here comes the role of the cerebral cortex in regulating the bowel function. Other than the local colorectal factors, any condition which alters the cerebral cortex role in brain-gut axis can cause constipation.

The gastrointestinal motility follows a circadian rhythm which is characterized by inactivity in the night, rapid activity upon awakening and increased activity throughout the day [3]. Any disturbance in the normal circadian rhythm can result in altered bowel habits like constipation or Irritable bowel syndrome (IBS) [13-14]. There are different clock genes which regulate the central and peripheral circadian rhythm [15]. Food intake is the important entraining factor which governs the gastrointestinal circadian rhythm. Colon and rectum has their peak activity immediately after awakening and increased activity during the day and decreased activity in the night [16]. A regular sleep-wake cycle is a necessity for normal bowel function [3].

Normal walking exercise increases the bowel motility and helps in evacuation of bowel [17]. A person, who is sedentary either because of his occupation (administrative officials, clerks, software employees etc.,) or his life style (lazy unemployed, obese, gamers etc.,) will be at high risk of constipation than a person whose work involves physical activity. Regular physical activity increases colonic motility and decreases the risk of constipation [18].

Considering the above physiology of normal bowel function, any deviation in any of the above mechanisms can result in altered bowel habits. Any disturbance in normal circadian rhythm can cause constipation. Diseases which interfere in the gastrointestinal motility and circadian rhythm cause disturbance in the bowel movement. Waking up at specific time in the morning, having adequate sleep, eating healthy food regularly at the scheduled time, not skipping meals, respectfully attending the nature call, not suppressing the defecation urge, maintaining the soft stool consistency by drinking adequate water and eating high fiber diet, adequate physical exercise, non-sedentary life style, etc., will help maintain a regular bowel habit. Doing rotation shifts (altered circadian rhythm), working in administrative and support (official) section, (sedentary life style, Low physical activity, stress), consuming low fiber diet increases the risk of constipation [17 - 24]. Increased age increases the incidence of constipation due to associated medical comorbidities, decreased colonic motility, and disordered defecation practices accumulated over the person’s life time.

***Constipation - work efficiency and quality of life***

Chronic constipation can lead to other symptoms like dullness and inactivity, abdominal pain and bloating, perianal pain or bleeding, frustration, irritability, decreased appetite, urinary and sexual dysfunction [25]. It significantly decreases the productivity of an organization and increases the healthcare utilization [26-29]. The constipated employees have decreased focus on work which is due to a sense of incomplete bowel evacuation, associated perianal pain or bleeding secondary to various ano-rectal conditions, frequent hospital visits and increased health expenditure, increased sickness absenteeism, regular visits to the bathroom at work place which decreases the working hours, can effect decision making skills, leads to quarrel with colleagues, frequent late entry and early exit from work place, pressure of meeting the work targets itself stresses out the employee and further increases the symptoms. Unfortunately all these factors are not considered for poor performance of an employee and the associated taboo of exposing his/her condition also deteriorates patient’s symptoms and the organization growth. Due to this decreased quality of life, a constipated person has poor performance personally and professionally which disturbs the families, societies, companies, states, and in fact a countries productivity. Hence, this condition needs to be given the importance it deserves by increasing its awareness in the society, and by practicing healthy life style which helps in prevention and treatment of constipation.

***Pediatric constipation***

Constipation in children is a vast topic. The entire pathophysiology cannot be discussed here but a person’s bowel movements pattern is developed in the childhood. Habitual constipation is the commonest cause of pediatric constipation [30]. Children tend to ignore their nature call either because of pain or extremely interesting activities, and the stool in the rectum becomes hard due to reabsorption of water which in turn cause painful defecation leading to a vicious cycle [30]. These children suffer from abdominal pain, fissure, bleeding per rectum, increased school absenteeism, decreased appetite, misleading diagnosis of appendicitis; intussusception etc., due to the social taboo of expression of the urge to defecate in the class room, the child will consistently stop the nature call and this leads to hardened stools and a vicious cycle of constipation. No proper access to bathrooms, unhygienic school bathrooms, bullying, verbal, sexual abuse all contributing to childhood constipation. Due to improper bowel training and increased rectal compliance with loaded stools the normal defecation reflex is disturbed and this improper training if not given due importance can persist [31] in the adulthood which makes constipation a life-long condition if not recognized and intervened properly. These children suffer with recurrent and chronic abdominal pain. The parents of these children also have work absenteeism due to frequent hospital visits.

***Negative effects of straining***

Increase in abdominal pressure requires the valsalva maneuver which is forced expiration with closed glottis. The complications of valsalva maneuver during straining at stool in constipation are due to raised intra-abdominal, intra-thoracic and intra-ocular pressures like chest pain, syncope, arrhythmia or cerebral stroke in patients with known cardiovascular and cerebrovascular disease, abdominal wall hernias in people with weak abdominal wall, headaches, dizziness, nausea or altered vision, retinal or macular haemorrhage (Valsalva retinopathy or maculopathy) due to increased intra-ocular pressure, increased risk of Alzheimer’s disease, increased peripheral intra-arterial and intra-venous pressure [32]. All these conditions can be seen in patients with chronic constipation.

**III- CLASSIFICATION**

Constipation is classified as primary and secondary. Primary is classified as normal transit constipation, slow transit constipation and dyssynergic constipation [33]. The causes for secondary constipation include organic causes like colorectal cancer, colonic strictures, extra-intestinal masses, endocrine or metabolic causes like diabetes mellitus, hypothyroidism, hypercalcemia, chronic renal insufficiency, panhypopituitarism, neurological causes like Spinal cord injury, Parkinson’s disease, paraplegia, multiple sclerosis, autonomic neuropathy, Hirschsprung’s disease, chronic intestinal pseudo-obstruction, myogenic causes like Myotonic dystrophy, dermatomyositis, scleroderma, amyloidosis, chronic intestinal pseudo-obstruction, anorectal causes like fissure, fisutula, intersphincteric abscess, hemorrhoids, medications like Opiates, antihypertensive agents, anti-epileptic drugs, iron preparations, anti-Parkinsonian agents (anticholinergic or dopaminergic), tricyclic antidepressants etc. [33].

According to me, constipation cannot be classified strictly into primary (idiopathic) and secondary (disease). A person with diabetes mellitus, hypothyroidism, anorectal diseases, or on some medications can have constipation not because of the disease itself but because of the disordered defecation mechanisms. Hence classifying constipation as primary and secondary looks arbitrary. A more relevant classification is given below.

**Somesh Meegada’s** classification of constipation.

Constipation is classified as sensorimotor, structural and hysteric constipation. Sensory motor is further divided into proximal and distal depending on the level of the disorder (Table-1).

|  |  |  |
| --- | --- | --- |
|  | Somesh Meegada’s Classification of constipation | |
| 1 | Sensorimotor constipation | 1. Proximal (above anorectum) |
| 1. Distal (at anorectum) |
| 2 | Structural constipation | |
| 3 | Hysteric constipation | |

Table- 1: Somesh Meegada’s classification of constipation.

1. ***Sensorimotor constipation.***

As discussed in the pathophysiology, the defecation reflex is a complex process which involves sensory and motor neuromuscular activity of the enteric, autonomic and central nervous system. Alteration in this sensory and motor activity causes Sensorimotor constipation. In this type of constipation, there is decreased GI motility and or decreased sensation to defecate. The etiology is multifactorial. The common causes are diet, sedentary life style, immobility, abnormal circadian rhythm, inadequate water intake, increased age, postponing defecation, stress, disordered defecation practices, systemic conditions like hypothyroidism, chronic diabetes mellitus, anticholinergic drugs, tricyclic antidepressants, etc. This is the commonest type of constipation.

It is divided into proximal and distal type. In distal type there is abnormality in the Sensorimotor function of the anorectum like pelvic dyssynergia, increased rectal compliance, rectal hyposensitivity, and hirschprung’s disease. Any colonic motility issues like colonic inertia, megacolon, pseudo-obstruction, decreased intestinal motility seen in hypothyroidism, spinal cord lesions can cause proximal Sensorimotor constipation.

The peculiar thing about defecation sensation is that it is due to colonic motor activity called HAPCs. The sensation of defecation is not due to stool in the colon but because of the motor activity of colon. Where as in the rectum, rectal distention and stretch stimulates the rectal and extrarectal mechanoreceptors causes urge for defecation (sensory). The rectal contraction along with increased abdominal pressure by valsalva helps evacuate the rectal contents by pressure gradient (motor). Hence, difficulty in performing valsalva, seen in tracheostomy patients leads to constipation.

1. ***Structural constipation***

Structural cause like colorectal cancer, colorectal strictures, adhesions, redundant sigmoid colon, sphincter spasms due to fissure in ano, intersphincteric abscess, and fistula in ano, obstructed defecation due to huge hemorrhoids, enterocele, rectocele, rectal prolapse, sigmoid volvulus, extra intestinal compression etc., are the reasons for structural constipation.

1. ***Hysteric constipation***

In this condition patients exaggerate their symptoms of constipation. All investigation will be normal or show minimal abnormality but they exaggerate their symptoms out of proportion to the underlying cause. These patients will have frequent hospital visits and laxative drug abuse. Persistent symptoms after treatment of sensorimotor and structural constipation denote hysteria.

All the 3 types of constipation can co-exist.

**IV- PHASES OF CONSTIPATION CYCLE.**

There are 3 phases of constipation cycle.

1. **Pre- constipation phase** – the patient do not have symptoms of difficult evacuation but there is colonic overload with feces and gas. May have mild abdominal discomfort.
2. **Constipation phase**- the patient have symptoms of difficulty in evacuation. Requires some intervention for relieve of symptoms either medical or dietary.
3. **Post- constipation recovery phase** – the patient is relieved of constipation and has regular bowel function.

The duration of these three phases vary depending on the patient’s life style and treatment interventions. These phases repeat leading to increase in severity of constipation. With recurrent cyclical phases patient will remain in the constipation phase and in late cases cannot reach post constipation recovery phase (Figure -1).

Figure-1: showing the phases of constipation cycle.

**V- STAGES OF CONSTIPATION**

The constipation phase can be divided into 4 stages and suffix can be used for alarm symptoms as shown in Table – 2 (**Somesh Meegada’s** staging of constipation)

|  |  |
| --- | --- |
| Stage | *Somesh Meegada’s* staging of constipation – features |
| Stage-I | Constipation relieved with diet and lifestyle modification, medications not required. |
| Stage-II | Constipation relieved after using medications intermittently. |
| Stage-III | Constipation relieved only after taking medications – laxative/medication dependent. |
| Stage-IV | Refractory to most of the medications. Despite using medication there is little or no relief. |
| Suffix | Alarm symptoms |
| (A) | Abdominal pain & bloating |
| (B) | Bleeding PR and anemia |
| (D) | Discharge |
| (W) | Weight loss (unexplained and significant) |

Table- 2: showing 4 stages of constipation with alarm symptoms as proposed by Somesh Meegada.

Ex- Stage-IVB means refractory constipation with bleeding PR and/or anemia which requires further work up. Stage- IID means constipation requiring intermittent laxative use with perianal discharge. Stage-IIIA means laxative dependent constipation with abdominal pain and bloating. Stage-IVAB means refractory constipation with abdominal pain and bleeding pr. Stage-IW means constipation relieved with diet alone but with unexplained significant weight loss which requires further work up.

The staging of constipation is to know the severity of constipation and the need to further workup. Unexplained weight loss if associated with constipation also requires further evaluation.

A stage-I constipation without any alarm symptoms doesn’t usually require further workup but a stage-IV constipation with or without alarm symptom requires further evaluation.  
 Sometimes it might be difficult to classify adjacent stages, in that case a Stage II to III or Stage I to II can be used.

**Normal bowel frequency**

Using Rome criteria the prevalence of constipation in India is 2-17% [34-37]. But the prevalence of self-perception constipation is above 40% [38]. The normal frequency of bowel movements is 3 motions per week as per the western criteria but for Indian population a frequency of 5 motions per week is reasonable where as the normal stool frequency in 90% of the population in several Asian countries is 1-2 motions/day [39- 41].

**VI- BOWEL EVACUATION DAYS (BED - REGIMEN)**

It is a scheduled plan of evacuating the bowel with either a laxative diet or laxative medications on a particular day at regular intervals.

The preferred regimen for a normal person, pre-constipation phase, stage-I and II constipation would be weekly once preferably the night before a holiday with an osmotic laxative like Lactulose 30ml bed time followed by a glass of water after the medication. The interval can be changed to weekly twice depending on the severity of symptoms. 5mg of tablet bisacodyl (dulcolax) can also be added. The patients can use any other type of laxative with which they are comfortable with. For stage –III and IV constipation one can use polyethylene glycol along with a prokinetic or enemas at regular intervals. Whichever laxative medication is used, the ultimate goal is to evacuate the bowel at regular intervals, the frequency, dose and type of medication is tailored according to the stage of patient.

A BED regimen twice a week for 1 month denotes using a laxative twice a week on specific days for 1 month.

These bowel evacuation days will help people concentrate on their bowel habits and help them empty their bowel regularly. This will help in reduction of abdominal pain and bloating episodes, increases their appetite, and make them active in their day to day activities. This can help detect some colonic disorders at an early stage. Physical activities like walking, jogging, running, dancing will help in clearance of gas and stools.

**VII- HISTORY AND PHYSICAL EXAMINATION**

Constipation is common in geriatric population, children, and in women compared to men. It is more common in shift workers and sedentary jobs. Constipation is common in people from cool climate, and low socioeconomic areas [42]. People with sensorimotor type constipation have issues in the urge to defecate, or decreased colorectal propulsive movements. Sensorimotor constipation can be proximal (colon) and distal (anorectal). Structural constipation includes any mechanical causes or structural abnormalities in the lower GI system. They can have constipation due to severe perianal pain seen in acute fissure, anorectal sepsis, thrombosed hemorrhoids. Other associated history of abdominal pain or bloating, bleeding per rectum, discharge, weight loss is to be noted. Hysteric constipation also present like sensorimotor constipation but with exaggerated symptoms. They have recurrent visits to multiple hospitals, and have already been worked up extensively. History of diabetes, hypothyroidism, parkinsonism, or any neurological diseases are to be noted. Drug history to be taken and the causative drug can be withheld if possible. Sometimes constipation presents as frequent passage of stools due to inadequate emptying of rectum at one go. These patients term this as diarrhea and take anti-diarrheal agents. Another condition called overflow incontinence seen in fecal impaction wherein the multiple hard masses of feces (fecoliths) obstruct the outlet, the liquid stools percolates between the fecoliths and comes out of anus presenting as a fecal incontinence. These patients also use anti-diarrheal agents which in turn worsens the condition.

On abdominal examinations look for distention, any palpable masses, any hernias, percussion for tympanic note and auscultate for bowel sounds. On Digital rectal examination (DRE) perianal skin, anal canal tone and rectal lumen and wall need to be examined.

**VIII- INVESTIGATIONS**.

Routine hematological test like complete blood picture, renal and liver function tests, serum electrolytes, thyroid profile are to be done.

The diagnostic algorithm described here is my personal modification of already described standard algorithm.

One can remember the investigations as pneumonic ABCD shown in Table – 3.

|  |  |
| --- | --- |
|  | Investigations |
| A | Anorectal Manometry (ARM) |
| B | Balloon expulsion test (BET), Barium meal follow through, Barium defecography |
| C | Colonoscopy, Colon transit studies, , Computed Tomography (CT-enterography, colonography) |
| D | Defecography (MRI), |

Table-3: showing the relevant investigations for constipation.

See Figure-2 for constipation algorithm.

The initial investigation of choice is Anoscopy and or colonoscopy depending on the symptoms. For Stage-I & II constipation with alarm symptoms and stage-III & IV constipation a Colonoscopy can be done initially to rule out structural causes for constipation. If there are no alarm symptoms then patient can directly undergo ARM and Balloon expulsion tests. The choice of investigation depends on the patient’s presenting symptoms and economic status.

I prefer Colonoscopy as the initial investigation for constipation because of

1. It rules out any benign/malignant causes of structural constipation and
2. The colon preparation given before colonoscopy is itself a therapeutic intervention for constipation. If completely evacuated then the colonic motility is fine, if not completely evacuated then there is some motility issues.

Before doing ARM, BET, Colonic transit studies, and Defecography this colon preparation for colonoscopy helps to empty the bowel so that the feces in the colon do not interfere in these tests.

But as shown in the algorithm a patient can undergo ARM/BET directly if symptoms are suspicious of pelvic floor dyssynergia or DRE suggestive of high resting and squeeze pressures which can be appreciated by an experienced physician/surgeon.

Frequently there are incidental findings which do not cause constipation like small polyps, and hemorrhoids knowing which the patient want to get them removed and undergo surgery. Majority of the patients are of the opinion that hemorrhoid surgery relieves constipation but that’s not the case. It may even worsen the symptoms due to post-operative rectal stricture and anal stenosis.

After colonoscopy ARM and BET should be done for further evaluation. If it is normal then colonic transit study or barium studies can be done to see the colonic motility. If it is abnormal then it is slow transit constipation which classifies constipation as proximal Sensorimotor constipation and if the motility is normal then it is normal transit constipation. This can be termed as Hysteric constipation if patient has persistent symptoms despite giving adequate treatment. If ARM and BET is abnormal then it is dyssynergic pelvic floor disorder. If inconclusive then do MR defecography, if it is abnormal then it is dyssynergic pelvic floor, if normal do colonic transit study or barium series. Barium series is equally effective compared to a sitzmark colonic transit study. This delineates the anatomy of small intestine and colon better. A CT enterography can be advised to see the small intestine if all the tests are normal or suspecting a small bowel pathology.

**IX- TREATMENT**

A normal person is one who passes motion daily immediately upon awakening without any intervention and who have the sense of complete evacuation after the defecation.

In any type of constipation, diet, physical activity, adequate hydration and life style modifications are basic interventions. Maintaining a good circadian rhythm sets the biological clock and is definitely needed for normal bowel function. The relevant abnormal blood parameters must be normalized. Any drug causing constipation needs to be stopped and replaced if possible. Along with above the following necessary specific medications are to be used. Any case of constipation suspecting to be an intestinal obstruction should be managed as emergency and a CECT abdomen and pelvis should be done.

In Stage- I patients, a high fiber and intake of laxative fruits like mango, guava, grapes, sapota, papaya, banana, kiwi fruit, plum etc. relieves the symptoms. These patients can consult a dietician if required and prepare a food chart accordingly. These patients after relief of their symptoms should be kept on BED regimen as described.

In Stage-II patient’s use of medications like laxative, stool softeners and stimulants like Lactulose, milk of magnesia, liquid paraffin, castor oil, sodium picosulfate, psyllium husk, sorbitol, docusate sodium and bisacodyl will relieve their symptoms. These patients after relief of their symptoms should be kept on BED regimen as described.

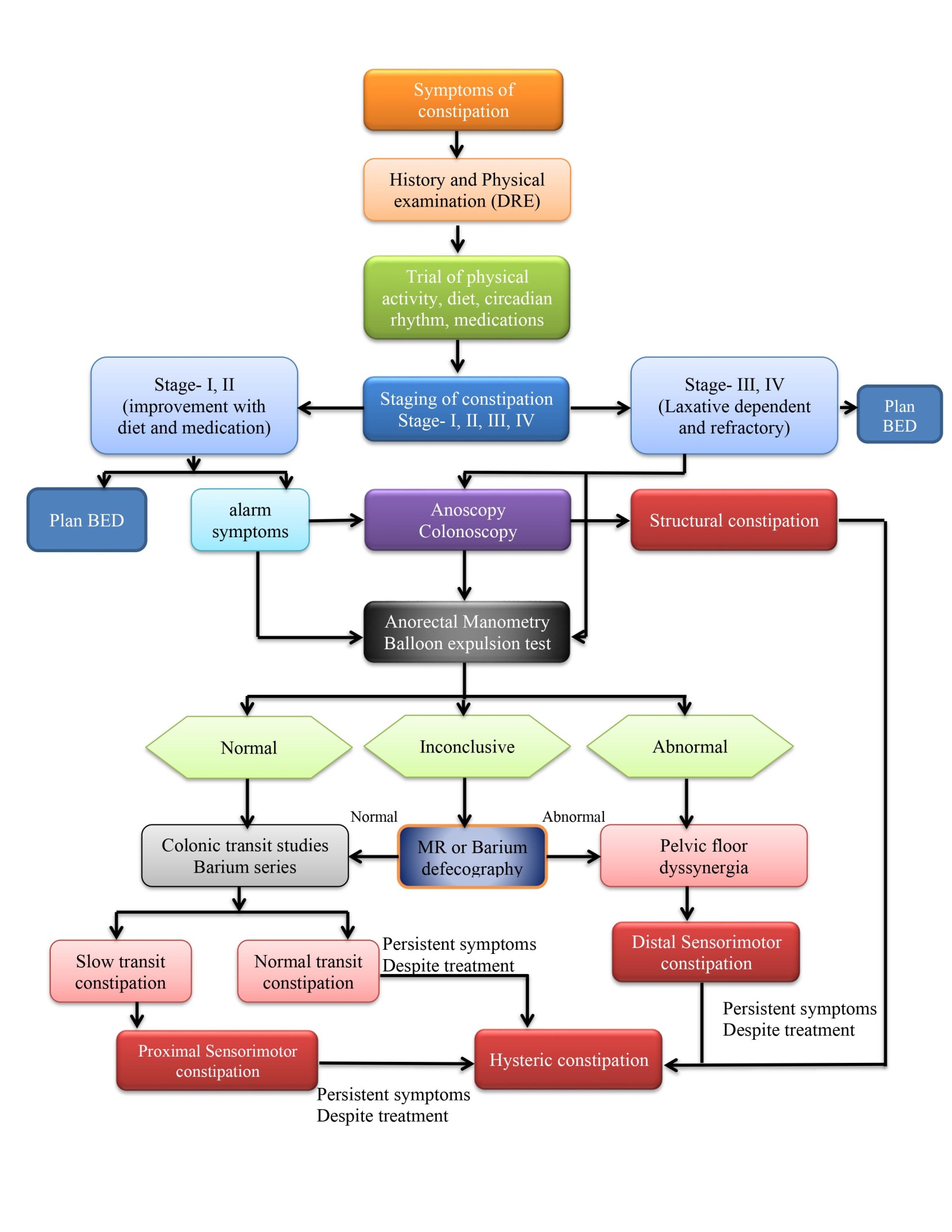


Figure-2: showing the algorithm for constipation management.

In stage –III constipation the patients are dependent on common osmotic and stimulant laxatives stopping which they have symptoms. People who are not relieved with osmotic and stimulant laxatives need to be started on prokinetics and secretagogues [43]. Secretogogues like lubiprostone and linaclonide and prokinetic like prucalopride 1 or 2 mg can be given in severe cases. Bisacodyl is a stimulant laxative which increases the normal colonic HAPCs and can be tried before. Usually these patients have associated systemic cause for constipation like hypothyroidism,

In stage-IV constipation patient is refractory to any medications. If not in obstruction, laxatives like Polyethylene glycol, sodium phosphate enemas or oral bowel preparation solutions can be given along with prokinetic and secretagogues laxatives. Enema is helpful in distal colon and rectal fecal impaction. Fecal impaction leads to overflow fecal incontinence which presents like diarrhea. This should be suspected in people with frequent passage of liquid stools with abdominal distention which can be confirmed by DRE. A bisacodyl suppository also can be used but causes irritation.

Along with the above, specific medical treatment for fissure to relieve the perianal pain like analgesic creams, sitz bath, antibiotics to relieve the perianal infection, flavonoids for hemorrhoids need to be given.

In pelvic dyssynergia syndrome biofeedback helps in relieving the symptoms of constipation.

Hysteric constipation requires psychotherapy and counseling.

Making use of the physiologic gastro-colic reflex which is the normal colonic response to food ingestion by a series of coordinated signals via the enteric nervous system and neuropeptides like gastrin, serotonin, prostaglandin E1 and cholecystokinin causing bursts of increased colonic MCs and HAPCs causing propulsion of stool from the colon to the rectum and culminating in defecation which is more in the morning. Defecation immediately after breakfast as a daily routine helps to relieve the constipation [43].

**X- SURGERY IN CONSTIPATION.**

The role of surgery in constipation is mainly in structural constipation. The surgeries include internal anal sphincterotomy for fissure in ano, fistula surgeries, excision of thrombosed hemorrhoids, rectal prolapse surgery (sigmoid resection & rectopexy), STARR procedure in obstructed defecation syndrome, rectocele and enterocele repairs, colorectal cancer and stricture surgeries like Abdominoperineal resection (APR), Anterior resection, left, right hemicolectomy, adhesiolysis for intestinal adhesions, hernia surgery, small bowel resection anastomosis, etc.

In Sensorimotor constipation surgery is indicated in colonic inertia, colonic atony, toxic megacolon, chronic refractory constipation (segmental, subtotal and total proctocolectomy and ileostomy). Botulinum toxin injection into puborectalis and external anal sphincter for pelvic dyssynergia. Malone antegrade colon enema for pediatric slow transit constipation.

In hysteric constipation which can be associated with above two types of constipation the relevant surgery can relieve the exaggerated symptoms. Patient persistently request the physician to remove any colonic polyps and low grade uncomplicated hemorrhoids seen incidentally during colonoscopy which are not the cause for constipation. These patients will not get satisfied till the procedure is performed. These patients get relief by consulting a senior famous doctor even if he/she prescribes the same medicine as prescribed by a junior doctor. These patients are difficult to deal with. They often come with nonspecific symptoms. Care must be taken before classifying any patient as hysteric. If in doubt consider re-evaluating the patient before finally classifying him/her into hysteric constipation.

**XI- PREVENTION OF CONSTIPATION**

Constipation is not completely preventable; one has to experience this at some or other point of life. The only thing which is preventable is the number of episode of constipation. A healthy life style, high fiber food, fruits, physical activity, adequate fluid intake, maintaining good circadian rhythm, not postponing the defecation, adequate food intake helps decrease the number of episodes of constipation and its associated complications. Good toilet training in childhood, maintaining that in adulthood also helps minimizing the episodes. One of the important risk factor for constipation is the taboo associated with the expression of the urge to defecate [45]. This is particularly important in school children and adult women though equally important in men and adult population. This taboo has to break. Not just breaking the taboo, but provision of proper toilet, sanitation and water facilities in schools, work places and outdoors is the need of the hour. For these to occur there should be awareness of constipation. International foundation for gastrointestinal disorders (IFFGD) recognized December as constipation awareness month but in India there is not much awareness created. A National Constipation day has to be declared in India so as to create awareness regarding constipation and its complications to the general public. As a part of creating awareness schools should educate students regarding constipation and should help break the taboo associated with it. My only point is to give constipation the importance it deserves. Though the condition looks simple it affects everyone’s day to day activities and increases health care burden. The high prevalence of constipation in rural and low socioeconomic population [42] can be due to limited access to toilets, overcrowding and diet. Hence this condition apart from awareness also requires administrative support from the government for improving the toilets, sanitation and water supply to every region of the country.

**References**

[1] Drossman DA. Functional Gastrointestinal Disorders: History, Pathophysiology, Clinical Features and Rome IV [published online ahead of print, 2016 Feb 19]. *Gastroenterology*. 2016;S0016-5085(16)00223-7. doi:10.1053/j.gastro.2016.02.032

[2] Sanchez MI, Bercik P. Epidemiology and burden of chronic constipation. *Can J Gastroenterol*. 2011;25 Suppl B(Suppl B):11B-15B. doi:10.1155/2011/974573

[3] Konturek PC, Brzozowski T, Konturek SJ. Gut clock: implication of circadian rhythms in the gastrointestinal tract. *J Physiol Pharmacol*. 2011;62(2):139-150.

[4] Duboc H, Coffin B, Siproudhis L. Disruption of Circadian Rhythms and Gut Motility: An Overview of Underlying Mechanisms and Associated Pathologies. *J Clin Gastroenterol*. 2020;54(5):405-414. doi:10.1097/MCG.0000000000001333

[5]Gudsoorkar VS, Quigley EM. Colorectal sensation and motility. *Curr Opin Gastroenterol*. 2014;30(1):75-83. doi:10.1097/MOG.0000000000000028

[6] Szmulowicz UM, Hull TL. The ASCRS Textbook of Colon and Rectal Surgery.

Beck DE, Roberts PL, Saclarides TJ, Senagore AT, Stamos MJ, Wexner SD,

editors. 2nd ed. New York, NY, USA: Rueil-Malmaison, Springer ScienceþBusiness

Media; 2011. pp. 23–39.

[7] Patel KS, Thavamani A. Physiology, Peristalsis. [Updated 2023 Mar 12]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK556137/>

[8] Palit S, Lunniss PJ, Scott SM. The physiology of human defecation. *Dig Dis Sci*. 2012;57(6):1445-1464. doi:10.1007/s10620-012-2071-1

[9] Rao S, Welcher K. Periodic rectal motor activity: the intrinsic

colonic gatekeeper? Am J Gastroenterol. 1996;91:890–897.

[10] Sun WM, Read NW, Miner PB. Relation between rectal sensation and anal function in normal subjects and patients with faecal incontinence. Gut. 1990;31:1056–1061.

[11]. Broens PM, Penninckx FM, Lestar B, Kerremans RP. The trigger for rectal filling sensation. Int J Colorectal Dis. 1994;9:1–4.

[12]. Broens P, Penninckx F. Filling sensations after restorative proctocolectomy. Acta Chir Belg. 2002;102:20–23.

[13] Bassotti G, Clementi M, Antonelli E, et al. Low-amplitude propagated contractile waves: a relevant propulsive mechanism of human colon. Dig Liver Dis. 2001;33:36–40.

[14]. Wells M, Roth L, McWilliam M, et al. A cross-sectional study of the association between overnight call and irritable bowel syndrome in medical students. Can J Gastroenterol. 2012;26: 281–284.

[15] Hoogerwerf WA. Biologic clocks and the gut. Curr Gastroenterol Rep. 2006;8:353–359.

[16] Hoogerwerf WA, Shahinian VB, Cornélissen G, et al. Rhythmic changes in colonic motility are regulated by period genes. Am J Physiol Gastrointest Liver Physiol. 2010;298:G143–G150.

[17] Kim HS, Park DH, Kim JW, et al. Effectiveness of walking exercise as a bowel preparation for colonoscopy: a randomized controlled trial. *Am J Gastroenterol*. 2005;100(9):1964-1969. doi:10.1111/j.1572-0241.2005.40373.x

[18] Tantawy SA, Kamel DM, Abdelbasset WK, Elgohary HM. Effects of a proposed physical activity and diet control to manage constipation in middle-aged obese women. Diabetes Metab Syndr Obes. 2017 Dec 14;10:513-519. doi: 10.2147/DMSO.S140250. PMID: 29276399; PMCID: PMC5734236.

[19] Chang WP, Peng YX. Differences between fixed day shift workers and rotating shift workers in gastrointestinal problems: a systematic review and meta-analysis. Ind Health. 2021 Mar 24;59(2):66-77. doi: 10.2486/indhealth.2020-0153. Epub 2021 Jan 7. PMID: 33408309; PMCID: PMC8010167.

[20] Zhou HQ, Yao M, Chen YW, Huang JY, Chen GY. Functional Gastrointestinal Disorders Common Among Nurses With Poor Sleep Quality in Shanghai, China: A Pilot Study. *Gastroenterol Nurs*. 2017;40(4):312-319. doi:10.1097/SGA.0000000000000176

[21] Saberi & Moravveji (2010) Saberi HR, Moravveji AR. Gastrointestional complaints in shift working and day-working nurses in Iran. *Journal of Circadian Rhythms.*2010;8:1–4. doi: 10.1186/1740-3391-8-1.

[22] Rogers AE, Hu YJ, Yue Y, Wissel EF, Petit Iii RA, Jarrett S, Christie J, Read TD. Shiftwork, functional bowel symptoms, and the microbiome. PeerJ. 2021 May 11;9:e11406. doi: 10.7717/peerj.11406. PMID: 34026361; PMCID: PMC8121053.

[23] Stachowska E, Maciejewska D, Palma J, Jamioł-Milc D, Szczuko M, Marlicz W, Wunsch E, Skonieczna-Żydecka K. Improvement of bowel movements among people with a sedentary lifestyle after prebiotic snack supply - preliminary study. Prz Gastroenterol. 2022;17(1):73-80. doi: 10.5114/pg.2021.108985. Epub 2021 Nov 1. PMID: 35371359; PMCID: PMC8942012.

[24] Najafimehr H, Yadegari H, Taherinejad H, Manhoie K, Rasooli SR, Moradi A, Akbariju MJ, Mohseni H, Ghadimi S, Mohaghegh Shalmani H. The effect of working in an auto factory on functional constipation and bowel habits. Gastroenterol Hepatol Bed Bench. 2019;12(Suppl1):S101-S107. PMID: 32099609; PMCID: PMC7011070.

[25] Gwee KA, Siah KT, Wong RK, Wee S, Wong ML, Png DJ. Prevalence of disturbed bowel functions and its association with disturbed bladder and sexual functions in the male population. *J Gastroenterol Hepatol*. 2012;27(11):1738-1744. doi:10.1111/j.1440-1746.2012.07243.x

[26] Sbahi H., Cash B.D. Chronic Constipation: A Review of Current Literature. *Curr. Gastroenterol. Rep.*2015;17:47. doi: 10.1007/s11894-015-0471-z

[27] Daniali M., Nikfar S., Abdollahi M. An overview of interventions for constipation in adults. *Expert Rev. Gastroenterol. Hepatol.*2020;14:721–732. doi: 10.1080/17474124.2020.1781617.

[28] De Giorgio R., Ruggeri E., Stanghellini V., Eusebi L.H., Bazzoli F., Chiarioni G. Chronic constipation in the elderly: A primer for the gastroenterologist. *BMC Gastroenterol.*2015;15:1–3. doi: 10.1186/s12876-015-0366-3.

[29] Neri L, Basilisco G, Corazziari E, Stanghellini V, Bassotti G, Bellini M, Perelli I, Cuomo R; LIRS Study Group. Constipation severity is associated with productivity losses and healthcare utilization in patients with chronic constipation. United European Gastroenterol J. 2014 Apr;2(2):138-47. doi: 10.1177/2050640614528175. PMID: 24953097; PMCID: PMC4040810.

[30] Gibas-Dorna M, Piątek J. Functional constipation in children - evaluation and management. Prz Gastroenterol. 2014;9(4):194-9. doi: 10.5114/pg.2014.45099. Epub 2014 Sep 16. PMID: 25276249; PMCID: PMC4178044.

[31] Bongers ME, Benninga MA, Maurice-Stam H, Grootenhuis MA. Health-related quality of life in young adults with symptoms of constipation continuing from childhood into adulthood. Health Qual Life Outcomes. 2009 Mar 2;7:20. doi: 10.1186/1477-7525-7-20. PMID: 19254365; PMCID: PMC2655286.

[32] Pstras L, Thomaseth K, Waniewski J, Balzani I, Bellavere F. The Valsalva manoeuvre: physiology and clinical examples. *Acta Physiol (Oxf)*. 2016;217(2):103-119. doi:10.1111/apha.12639

[33] Tack J, Müller-Lissner S, Stanghellini V, Boeckxstaens G, Kamm MA, Simren M, Galmiche JP, Fried M. Diagnosis and treatment of chronic constipation--a European perspective. Neurogastroenterol Motil. 2011 Aug;23(8):697-710. doi: 10.1111/j.1365-2982.2011.01709.x. Epub 2011 May 24. PMID: 21605282; PMCID: PMC3170709.

[34] Panigrahi MK, Kar SK, Singh SP, Ghoshal UC. Defecation frequency and stool form in a coastal eastern Indian population. *J Neurogastroenterol Motil.*2013;19:374–380. doi: 10.5056/jnm.2013.19.3.374.

[35] Ghoshal UC, Singh R. Frequency and risk factors of functional gastro-intestinal disorders in a rural Indian population. *J Gastroenterol Hepatol.*2017;32:378–387. doi: 10.1111/jgh.13465

[36] Makharia GK, Verma AK, Amarchand R, et al. Prevalence of irritable bowel syndrome: a community based study from northern India. J Neurogastroenterol Motil. 2011;17:82–7.

[37]Rajput M, Saini SK. Prevalence of constipation among the general population: a community-based survey from India. *Gastroenterol Nurs.*2014;37:425–429. doi: 10.1097/SGA.0000000000000074.

[38] Ghoshal UC, Abraham P, Bhatt C, et al. Epidemiological and clinical profile of irritable bowel syndrome in India: report of the Indian Society of Gastroenterology Task Force. Indian J Gastroenterol. 2008;27:22–8

[39] Ray G. Evaluation of the Symptom of Constipation in Indian Patients. J Clin Diagn Res. 2016 Apr;10(4):OC01-3. doi: 10.7860/JCDR/2016/15487.7524. Epub 2016 Apr 1. PMID: 27190857; PMCID: PMC4866155.

[40] Gwee KA, Lu CL, Ghoshal UC. Epidemiology of irritable bowel syndrome in Asia: something old, something new, something borrowed. *J Gastroenterol Hepatol.*2009;24:1601–07.

[41] Adibi P, Behzad E, Pirzadeh S, Mohseni M. Bowel habit reference values and abnormalities in young Iranian healthy adults. *Dig Dis Sci.*2007;52(8):1810–13.

[42] Johanson JF. Geographic distribution of constipation in the United States. *Am J Gastroenterol*. 1998;93(2):188-191. doi:10.1111/j.1572-0241.1998.00188.x

[43] Krogh K, Chiarioni G, Whitehead W. Management of chronic constipation in adults. United European Gastroenterol J. 2017 Jun;5(4):465-472.

[44] Malone JC, Thavamani A. Physiology, Gastrocolic Reflex. [Updated 2023 May 1]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2023 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK549888/

[45] Break the taboo with poo. *Nat Rev Gastroenterol Hepatol*. 2021;18(11):743. doi:10.1038/s41575-021-00528-z