

**Summer Training at
Sun Pharmaceuticals Ltd.,
Mumbai
(April-June 2013)**

**PERCEPTION MAPPING OF DOCTORS ON USAGE OF
POLYETHYLENE GLYCOL IN CONSTIPATION**

**By
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**Under the guidance of
Dr. Seema Mehta**

**Post Graduate Diploma in Pharmaceutical Management
2012-2014**



**Institute of Health Management Research,
Jaipur
2013**

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CERTIFICATE

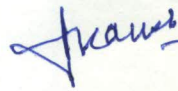
This is to certify that, Mr. Bhanshu Kakkar, student of Post Graduate Diploma in Pharmaceutical Management (PGDPM) from Institute of Health Management Research, Jaipur, batch 17th (2012-2014) has undergone summer internship training at Sun Pharmaceutical Ltd. The title of the project is Perception mapping of customers on usage of Poly ethylene Glycol in Constipation.

The candidate has successfully carried out the work assigned to him during his summer internship training from 15th April 2013 to 18th June 2013 and his approach has been sincere, scientific and analytical.

I wish him success in all his future endeavors.



Dr. Seema Mehta
Associate Professor
Faculty and Mentor
IIHMR, Jaipur



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SPIL/COR/HRD/PROJ/13
July 1, 2013

TO WHOMSOEVER IT MAY CONCERN

This is to certify that **Mr. Bhanshu Kakkar** of Indian Institute of Health Management Research, has undergone his summer project in Sun Pharmaceutical Industries Ltd in **Solares Division** from **April 15, 2013 to June 18, 2013**. His project title was **"Perception Mapping of Customers on Usage of Polyethylene Glycol in Constipation"**.

He has completed the project to the satisfaction of his project guide and the organisation.

We wish him success in all future endeavors.

for **SUN PHARMACEUTICAL INDUSTRIES LTD.**

DEBASHISH ROY
GM – HR (CORPORATE)

ACKNOWLEDGEMENT

I would like to show my gratitude towards Sun Pharmaceuticals Industries Ltd. for giving me an opportunity to work as a summer Intern in the organization.

For the successful completion of my work, I am thankful to my guides Mr. Sunil Jaju, Mr. Abhijeet and Mr. Shailesh Naik who helped me throughout my assignment.

I would like to express my sincere gratitude towards Mr. Paresh Shah, Ms. Anupama Dang for providing the best of working environment and ambience.

I would also like to thank all the Sales Officers of “Sun Pharma (Solares Division)” who helped me during field work.

I would like to express my gratitude to Dr. Seema Mehta for guiding me in my internship project.

Once again, thanking all those who have helped me directly and indirectly in completing my project.

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EXECUTIVE SUMMARY-

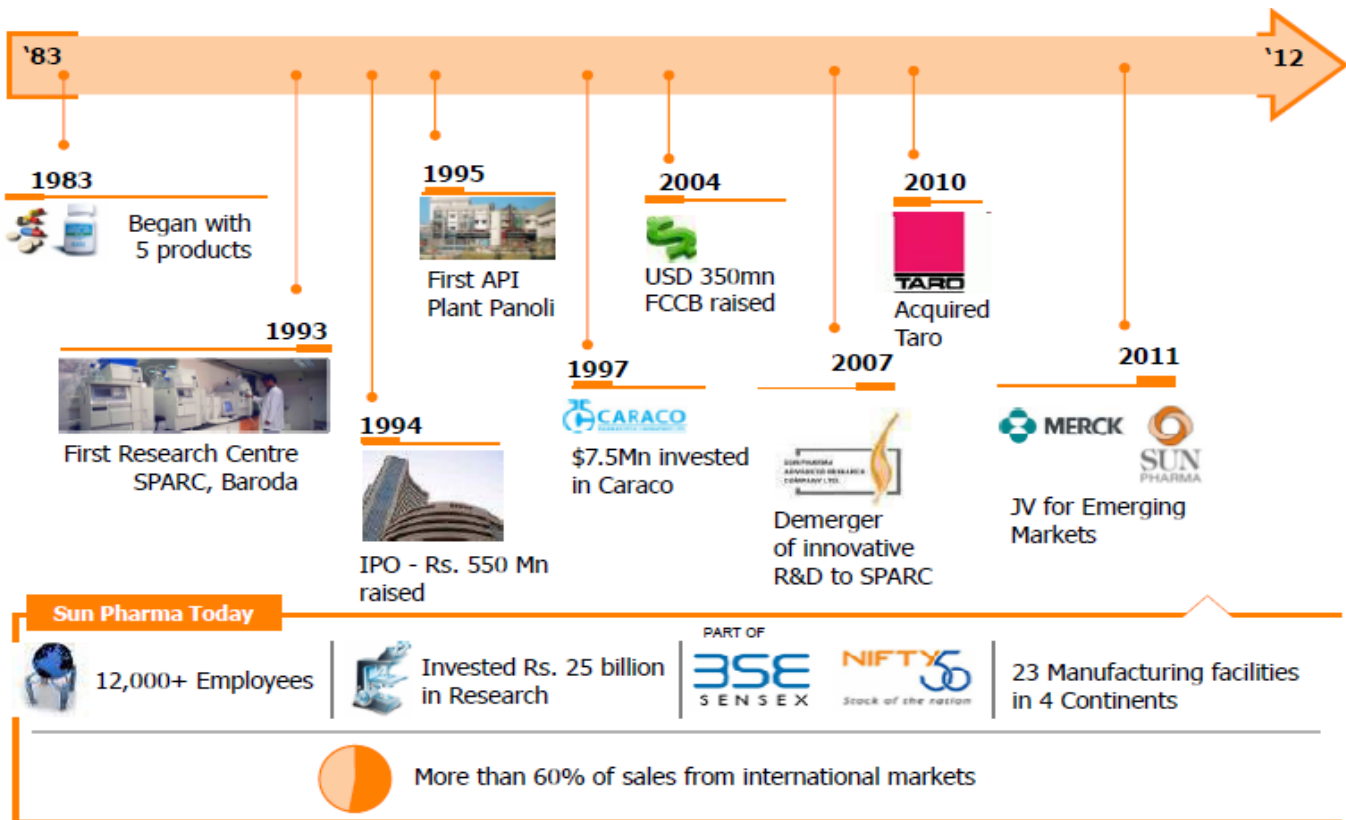
- 1) 134 doctors were surveyed. Out of which 29 were Gastroenterologist, 23 were General Surgeon, 32 were with cardiologist & diabetologist and 50 were consulting physicians.
- 2) Out of **134** (say 100%)Doctors surveyed, **53%** Doctor said that prevalence of constipation is more prevalent in patients with age 40- 59 years and 30% doctor said that constipation is more prevalent in patients with age greater than 60 years. It means **constipation is more prevalent in patients with age greater than 40 years.**
- 3) Out of total doctors surveyed 57% doctors said that there is difference in prevalence of constipation in males and females. Out of the total number of patients of constipation 43% are males and 57% are females. It means constipation is more prevalent in females than males.
- 4) Out of total responses(say 100%), 43% said that sense of incomplete evacuation is the most common complaint of the patient with constipation, followed by straining (32%), then stool inconsistency (19%) and abdominal pain(6%).
- 5) Doctors mostly prescribe lactulose to patients with constipation, ispaghula is the second preferred molecule, followed by combination of lactitol and ispaghula then lactitol, polyethylene comes under rarely prescribed molecule. Other molecule which doctor prescribe are combination of magnesium.
- 6) **95 % of the doctors are aware of usage of Polyethylene Glycol in constipation.**
- 7) Out of the 134 doctor surveyed 61% of the doctors are using Polyethylene glycol.
- 8) Out of 83 doctors who prescribe Polyethylene Glycol 57 doctors are prescribing it for adult and geriatric patients both. 24 doctors are using it for adults and 9 doctors are using it for all the age groups.
- 9) **Out of the total doctors who are using PEG (say 100%) 77% doctors are using it as second line therapy 19% doctors are using it in refractory cases and 4 % are using it as first line therapy.**

- 10) Out of the total doctors who are using PEG 86% of the doctors are using dose of 17g/day. 10% of the doctors are using dose of 34 g/day. 4% of the doctors are using dose of less than 17g/day.
- 11) 41% of the doctors prescribe PEG for one week and 42% of the doctors prescribe PEG for two weeks. 7% of the doctors prescribe it for 1 month. 10% of the doctors said duration of therapy depends on condition of the patient.
- 12) 93% of the doctors prescribe PEG for chronic constipation. 3 doctor use PEG for acute constipation and 5 doctors use it for drug induced constipation as well.
- 13) 28% of the doctors said that single dose pack is the patient friendly pack. 25% of the doctor said 7 day pack is the patient friendly pack and 44% of the doctors said 14 day dose pack is the patient friendly pack.
- 14) 86 % of the doctors who prescribes PEG feels the need of flavor in PEG. Out of all the flavors orange (26% of the doctors said orange is more preferred) and lemon (27% of the doctors said lemon is more preferred) are more preferred according to the perception of the doctor. 21 % of the doctors said it depends on patient to patient, it should be palatable.
- 15) 41% of the doctors said combining PEG with other molecule will be more effective and 31 % said that combining PEG with some other molecule will not be effective.
- 16) Out of the doctors who said combining PEG with some other molecule will be effective 81 % suggested combination of PEG and Fiber 19% suggested combination of PEG and electrolytes.
- 17) Out of the total doctors who do not prescribe PEG (say 100%) 28% of the doctors said they do not prefer PEG because of its efficacy, 15 % said because of its taste they do not prefer PEG, 19 % said there is inadequate clinical trial data, 21 % said because of its cost they do not prefer PEG and 15 % said because of its availability they do not prefer PEG.

COMPANY PROFILE-

- ▶ Sun Pharma pioneered specialty marketing in the Indian pharma industry when the company began in 1983. Today, company has reached leadership in each of the therapy areas that they operate in, and have built a reputation of trust and quality with their customers.

SUN PHARMA JOURNEY FROM 1983-2012



Strategy and Approach

Create sustainable revenue streams

- Focus: Chronic therapies
- Differentiation: Technically complex products
- Speed to market



Seek cost leadership

- Vertical integration : Development through Manufacturing (API and Finished Dosage) to Marketing
- Optimize operational costs

Balance profitability and investments for future

- Acquisitions yielding high ROI
- Development of complex generics

There are 17 divisions of SUN PHARMA delivering promotional message to specialty customers.

Therapy Focused Marketing



Delivering promotional message to specialty customers.

Gastroenterology, Orthopedics



Cardiology, Diabetology



Psychiatry, Neurology



Ophthalmology



Rheumatology, Dermatology



Asthma, COPD



Oncology



Fertility, Gynecology, Urology



Gynecology



Preferred Choice of Doctors

Leadership in key therapeutic areas*

Specialist	Feb '07	Feb '12
Psychiatrists	1	1
Neurologists	1	1
Cardiologists	1	1
Orthopaedic	1	1
Ophthalmologists	1	1
Gastroenterologists	2	1
Diabetologists	1	2
Chest Physicians	5	4
Nephrologists	4	5
Oncologists	4	7
Consulting Physicians	5	8
Gynaecologists	10	7
Urologists	8	10
ENT Specialists	5	21

*Ranks based on prescription share

Top 10 Brands contribute 20% of India Sale

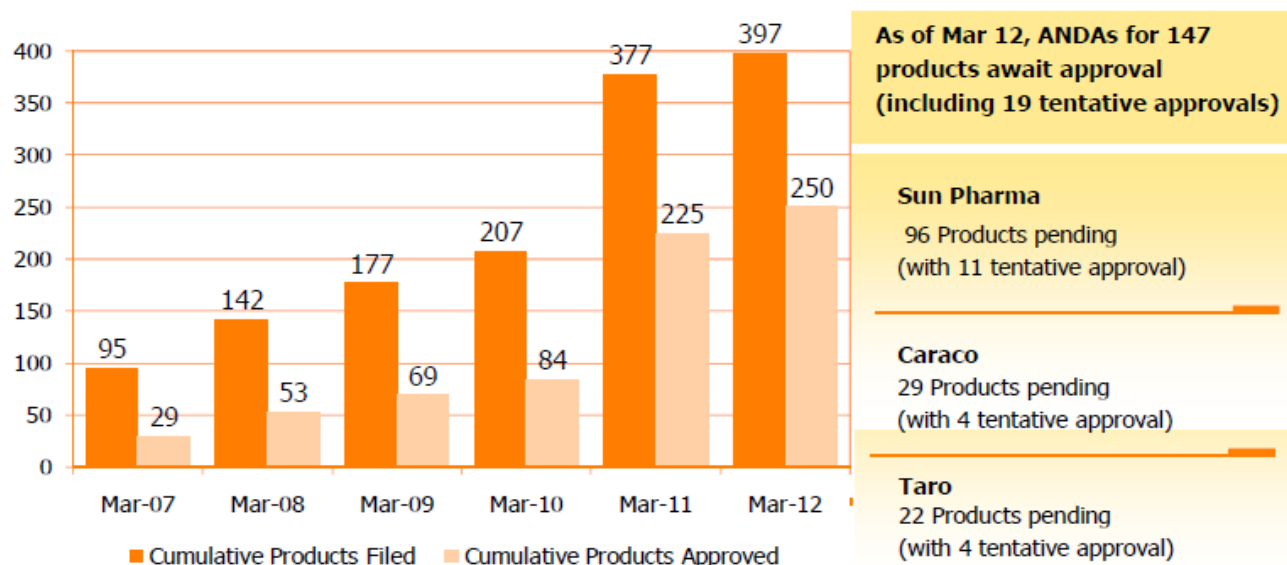
Brand Name	Therapy area
Pantocid	Proton pump inhibitor/ antiulcerant
Glucored Group	Oral antidiabetic
Aztor	CVS, cholesterol reducing agent
Susten	Women's healthcare
Pantocid-D	Proton pump inhibitor/ antiulcerant
Gemer	Oral antidiabetic
Levipil	CNS
Clopilet	CVS, anticlotting agent
Repace Group	CVS, Hypertension
Cardivas	CVS

Key Deals & Rationale

Year	Deals	Country	Rationale
2011	100% ownership of Caraco	US	Privatization
2011	Formation of Sun-MSD JV	Emerging Markets	Develop and commercialize technology based combinations products
2010	Acquired Taro Pharmaceutical Industries Ltd.	Israel	Dermatology & Topical Product Manufacturing Plant at Israel & Canada
2009	Caraco acquired some products of Forest's Inwood business	US	Increased generic product offerings
2008	Acquired Chattem Chemicals, Inc.	Tennessee, US	Import registration with DEA, API Plant approved by DEA in Tennessee, US
2005	Assets of Able labs	New Jersey, US	Dosage form plant (NJ, US) and IP
2005	Formulation plant in Bryan	Ohio, US	Dosage form plant (Ohio, US)
2005	Acquired ICN Hungary	Hungary	API and dosage form plant (Hungary)
1999	Merged Milmet Labs	India	Ophthalmology brands
1998	Brands from Natco	India	Respiratory brands
1997	Acquired Caraco	Detroit, US	Dosage form Plant
1997	Merged Tamilnadu Dadha Pharmaceuticals Ltd (TDPL)	Chennai, India	Gynecology and oncology brands; API and dosage form plant
1996	Acquired MJ Pharma	Halol, India	Dosage form plant (now USFDA approved)
1996	Bulk Drug plant from Knoll Pharma	Ahmednagar, India	API plant (now USFDA approved)

ANDA Pipeline : Significant ramp up

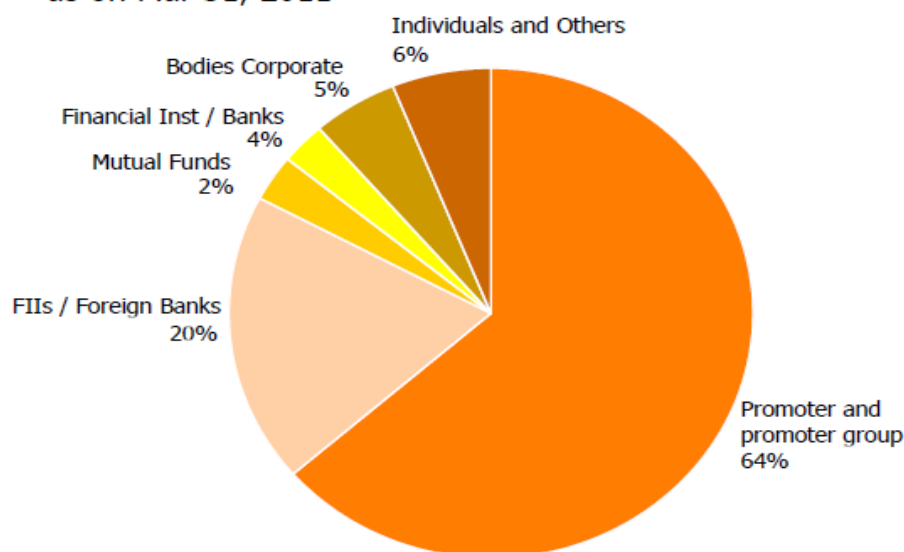
Products Filed and Approved Status



(Taro numbers added since Mar 2011)

Shareholding Pattern

as on Mar 31, 2011



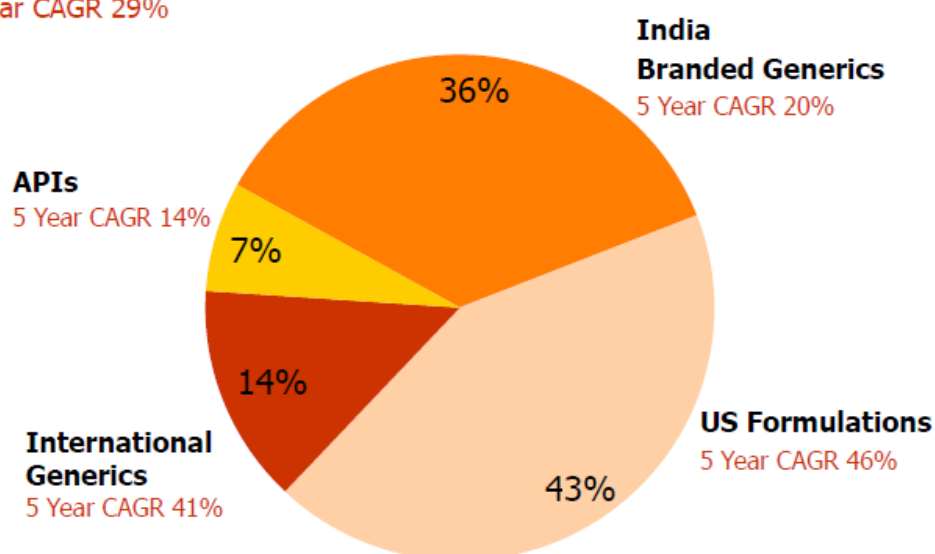
- Rs 1,000 Invested in the 1994 IPO is currently worth more than Rs. 270,000

- Total shares outstanding : 1,035 million
- Total free float (shares) : 375 million
- Average daily trading volume (12 months) : 1.0 million

Revenue Composition

2011-12 Annual Gross Sales : Rs 81173 million

5 Year CAGR 29%



Finished Dosage sales 92%
5 year CAGR 31%

International sales 62%
5 year CAGR 39%

Solares Division

From a modest start now Solares basket features product used for gastrointestinal disease and orthopedics disease.

Therapy area coverage:

- ✚ Gastroenterology
- ✚ Orthopedics

Top 5 brands:

	Active Ingredient				
1. Sompraz	Esomeprazole	SOMPRAZ 40MG TAB	SOMPRAZ- D 40MG CAPS	SOMPRAZ- IT CAPS	SOMPRAZ- L CAPS
2. Lesuride	Levosulpride	LESURIDE- MPS TAB	LESURIDE INJ(BOX)	LESURIDE- OD 75MG TAB	
3. Predmet	Methylprednisolone	PREDMET 16MG TAB	PREDMET 8MG TAB		
4. Febutaz	Febuxostat	FEBUTAZ 80MG TAB			
5. Betavert	Betahistine	BETAVERT OD 48MG TAB	BETAVERT- 24MG	BETAVERT- OD 24MG TAB	

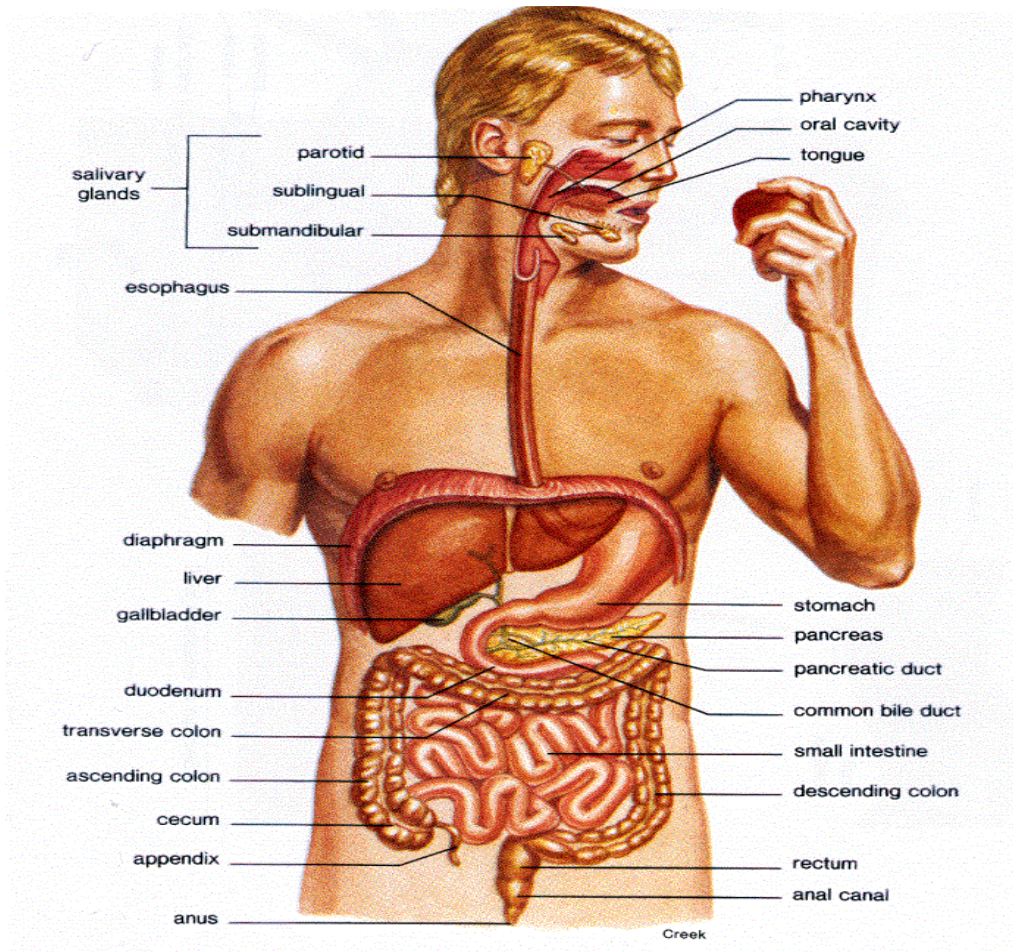
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Introduction to Human Digestive System-

The digestive system is made up of the digestive tract—a series of hollow organs joined in a long, twisting tube from the mouth to the anus—and other organs that help the body break down and absorb food .

Organs that make up the digestive tract are the mouth, oesophagus, stomach, small intestine, large intestine—also called the colon—rectum, and anus. Inside these hollow organs is a lining called the mucosa. In the mouth, stomach, and small intestine, the mucosa contains tiny glands that produce juices to help digest food. The digestive tract also contains a layer of smooth muscle that helps break down food and move it along the tract.

Two “solid” digestive organs, the liver and the pancreas, produce digestive juices that reach the intestine through small tubes called ducts. The gallbladder stores the liver's digestive juices until they are needed in the intestine. Parts of the nervous and circulatory systems also play major roles in the digestive system.



Constipation

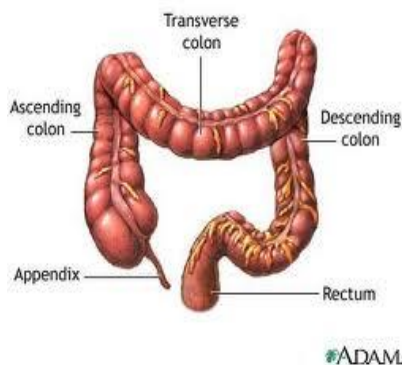
- Constipation also known as constativeness or dyschezia refers to **bowel movements** that are infrequent or hard to pass.
- Constipation is a common cause of painful defecation. Severe constipation includes constipation (failure to pass stools or gas) and **fecal impaction**, which can progress to **bowel obstruction** and become life-threatening
- Constipation may be defined as two or more of the following symptoms for atleast 3 months
 1. Straining more than 25% of the time
 2. Hard stools more than 25% of the time
 3. Incomplete evacuation more than 25% of the time
 4. Two or fewer bowel actions in 1 week two or more of the following symptoms for at least 3 months is Constipation.

Normal Defecation

Contraction and relaxation of both smooth and stratified muscles , Propulsive peristaltic waves begins in proximal colon,Moves distally to rectum then Synchronous relaxation of internal anal sphincter and Intrapelvic pressure is raised by contraction of the diaphragm and abdominal musculature

Pathophysiology

- Colonic Anatomy and Function

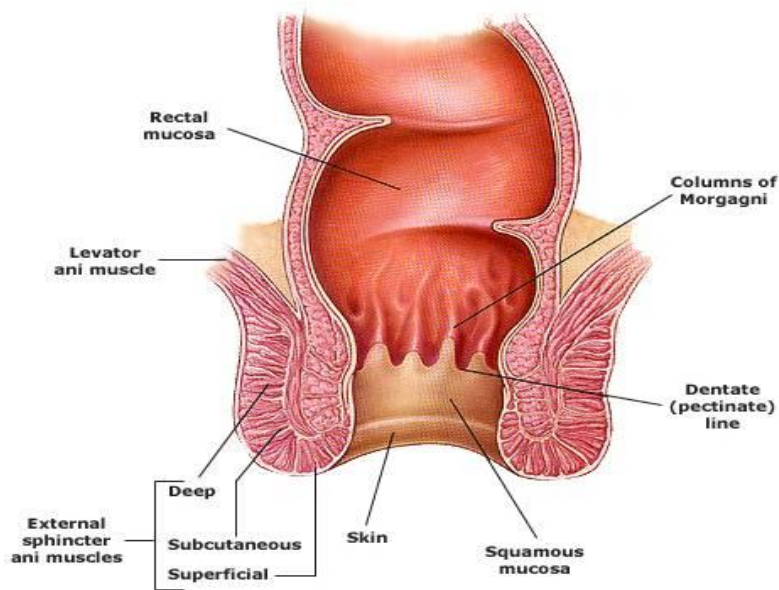


- Absorption of water and sodium.
- Diameter and length of colon.
- Colonic Motor Function

Defecatory Function

- Absent or infrequent colonic and rectal contraction waves
- Failure of Relaxation of the anal sphincter complex

- Ineffective Straining
- Diminished rectal sensation



Symptoms Associated With Constipation

- Soiling of clothes
- Infrequent stools
- No urge
- Stools difficult to pass
- Ineffective straining
- Discomfort or pain related to defecation
- Need to digitate
- Bad taste in the mouth
- Headache
- Nausea
- Malaise
- Sense of incomplete evacuation
- Anal or perineal pain
- Prolapse “comes down” at the anus

Causes of Constipation

- Mode of Life
- Systemic Disorders
- CNS Disease
- Disorders of Anorectum and Pelvic floor
- Psychological causes
- Disorders of GIT
- Drugs like analgesics, antacids containing Mg, Al salts

Drug Treatment That May Cause or Aggravate Constipation

- Analgesics; These often contain opiate derivatives and are taken for chronic conditions such as arthritis.
- Anticholinergics; Many drugs including antispasmodics, antidepressants and antimuscarinic drugs used for parkinsonism
- Calcium or aluminium containing antacids; These medications now used less commonly , have a constipating effect.

Approach to Management

I. Initial recommendations

In clinical practice patients with milder symptoms are usually offered behavioral, diet and lifestyle modifications as the first step of treatment. Despite the lack of controlled clinical trials to support these recommendations patients are often encouraged to increase their fluid intake, get involved with moderate increase in exercise, and use the bathroom daily in response to feeling of urge for a bowel movement or at a specific time, particularly after meals. Patients with more severe symptoms or those who do not respond to this initial treatment are usually offered an empiric medication treatment with fiber supplements and "simple laxatives."

II. Evaluation of chronic primary constipation

The initial evaluation is based on careful history and physical evaluation. Important historical features include bowel frequency, stool consistency, need for straining, and feeling of incomplete evacuation. Presence of abdominal pain/discomfort can suggest a diagnosis of other functional disorders (e.g., IBS-C). Identifying alarm symptoms (e.g., weight loss, reduced appetite, weakness) are important since they can suggest other underlying conditions which usually require further evaluation (e.g., abdominal imaging, colonoscopy). Patients' medications should be reviewed carefully and initial limited laboratory tests should be performed to exclude medications (e.g., calcium channel blockers, anticholinergics) or diseases (e.g., hypothyroidism) to which constipation is secondary.

The majority of patients with constipation are seen by primary care physicians. Those who are more difficult-to-manage or fail to respond to the initial medical therapy are referred to GI specialists or tertiary care centers. In these settings, patients with primary constipation can be further evaluated for the underlying pathophysiological mechanism(s) of their constipation. Using functional tests of the colon and anorectum, primary constipation can be divided into three separate subgroups:

1. Slow transit constipation
2. Normal transit constipation
3. Obstructed defecation

Slow transit Constipation refers to a decrease in colonic transit particularly in its proximal parts (i.e., the ascending and transverse colon). **Normal transit constipation** refers to patients who meet the criteria for chronic functional constipation but testing of their colonic transit is between normal limits. These patients often have misperceptions of normal bowel movements and some may have psychosocial disorders. **Obstructed defecation** refers to organic/mechanical obstruction at the level of the rectosigmoid colon or pelvic floor, or functional obstruction due to failure of the anorectal and pelvic floor muscles to relax during defecation. Combinations of these three subtypes are possible.

In clinical practice only a small minority of patients with primary constipation undergo formal physiologic testing to identify the underlying pathophysiology and subgroup to which they belong. Patients who are refractory to behavioral (diet and lifestyle) measures and fail initial treatments are often referred for further physiological testing. Subgrouping of functional constipation based on the underlying pathophysiological mechanism may help direct treatment. For example, while education and psychological support may be sufficient in patients with normal transit constipation, patients with slow transit constipation usually require promotility and stimulant laxatives, and patients with obstructed defecation often need other interventions such as biofeedback and/or surgical repair.

Drugs Used in Constipation

1. Bulk Laxatives- Wheat Fiber, Ispaghula (Psyllium), sterculia, methylcellulose
2. Osmotic Laxatives- Magnesium and phosphate containing salts, sugar alcohols eg. Sorbitol, lactulose and polyethylene glycol (PEG).
3. Stimulant laxative- Includes anthraquinones Compounds- senna, aloe, cascara and Diphenylmethane compounds- Phenolphthalein, bisacodyl and sodium picosulfate.
4. Stool Softener-sodium sulfosuccinate, docusate
5. Liquid paraffin, Prokinetic drugs- cisapride, tegaserod

Bulking Agent

- Psyllium is the most commonly available and most studied bulking agent. Psyllium is natural plant product derived from the ground seeds of the herb Plantago psyllium
- Amount of fiber varies from .53g/ capsule, 6g/2 wafer serving and 3-6 g/ powder serving.

Osmotic laxatives

- Magnesium containing salts are poorly absorbed ions that have long been used in the treatment of constipation.
- Caution is necessary due to the potential for magnesium toxicity when recommending magnesium containing laxatives to the elderly and should be avoided in patients with renal disease
- Sodium sulfate and phosphate salts are used as osmotic Laxatives. They are better absorbed systematically than the magnesium containing laxatives but require caution in individuals with renal disease, liver disease.

Lactulose

- Lactulose is a poorly absorbed synthetic disaccharide.
- The small intestine lacks a dissacharidase to hydrolyze lactulose limiting its absorbtion.
- It remains in the gastrointestinal tract where it is fermented by the colonic bacterial flora.
- It improves stool frequency and is more efficacious than bulking agents.
- Dose- 15-30 ml/day

PEG 3350

- PEG with or without electrolytes has been used both as a colonic purgative and as a laxative in chronic constipation
- PEG increases stool frequency and the water content of stool.
- PEG has been well studied in children with chronic constipation showing efficacy and safety.
- PEG appears to be as or more efficacious than lactulose and undergo bacterial fermentation resulting in less gas formation.

- PEG in opiate-induced constipation and pregnancy-induced constipation also showed improved stool frequency .
- Dose- 17 g of PEG in 8 ounces liquid daily to twice daily.

Stimulant laxatives

- Used when first line therapies have failed.
- Work through irritant or stimulatory effects on gastrointestinal epithelium, muscle or nerve.
- Anthraquinone laxatives include senna pods, rhubarb roots.
- When used long term the colon becomes discolored a condition termed melanosis coli.
- Diphenylmethane derivatives include bisacodyl, sodium picosulphate, and phenolphthalein.
- Bisacodyl is converted by intestinal enzymes and has effects in the small intestine and colon.
- Sodium picosulphate is converted by bacteria in the colon to its active compound

Prokinetic Agents

- Tegaserod, a 5-HT₄ partial agonist is the only prokinetic approved for the treatment of constipation.
- Cisapride also acts at the 5 HT₄ receptor site to stimulate the release of acetylcholine.

Other prokinetics agents include cholinergic agonists such as bethanhol or pyridostigmine. They are rarely used due to their side effects including excessive salivation, abdominal cramping, vomiting and bladder irritability.

Polyethylene Glycol

Polyethylene Glycol 3350 is an osmotic agent for the treatment of constipation. It is available in powdered form, for oral administration after dissolution in water.

Pharmacology

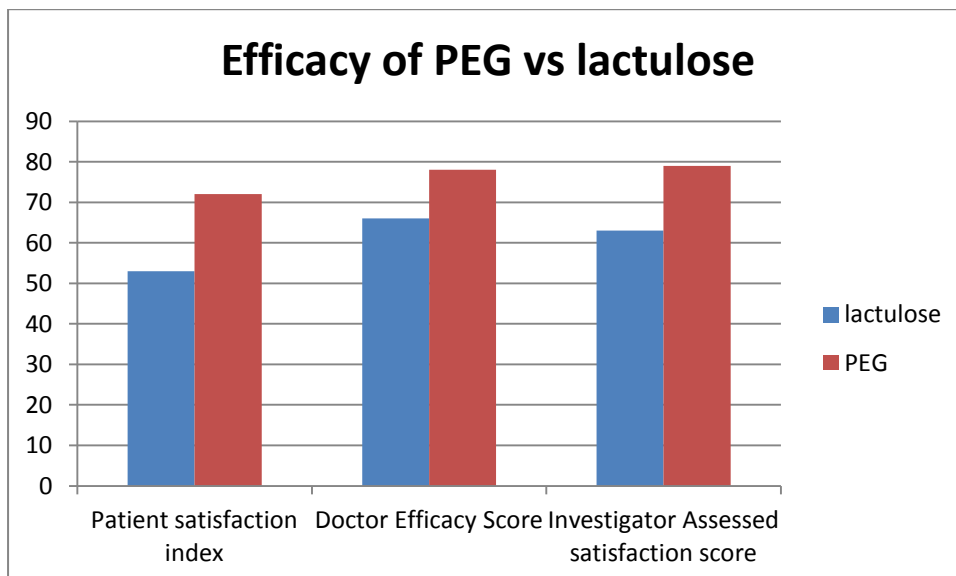
Polyethylene glycol is osmotic laxative but works differently. It is a high molecular weight non absorbable macrogol polymer. PEG 3350 binds to water with a ratio of 1:100. PEG thus improves stool consistency and frequency. Orally Administered PEG 3350 is minimally absorbed rapidly excreted and primarily eliminated via faeces.

Clinical Experience

Efficacy and safety of PEG has been established in large population in both adults and children. The efficacy was evaluated in adult patients and children with functional constipation and faecal impaction. Review studies reveal that more than 20 clinical trials have supported the efficacy of PEG in adults with constipation and more than 7 clinical trials have observed favorable results of PEG in children.

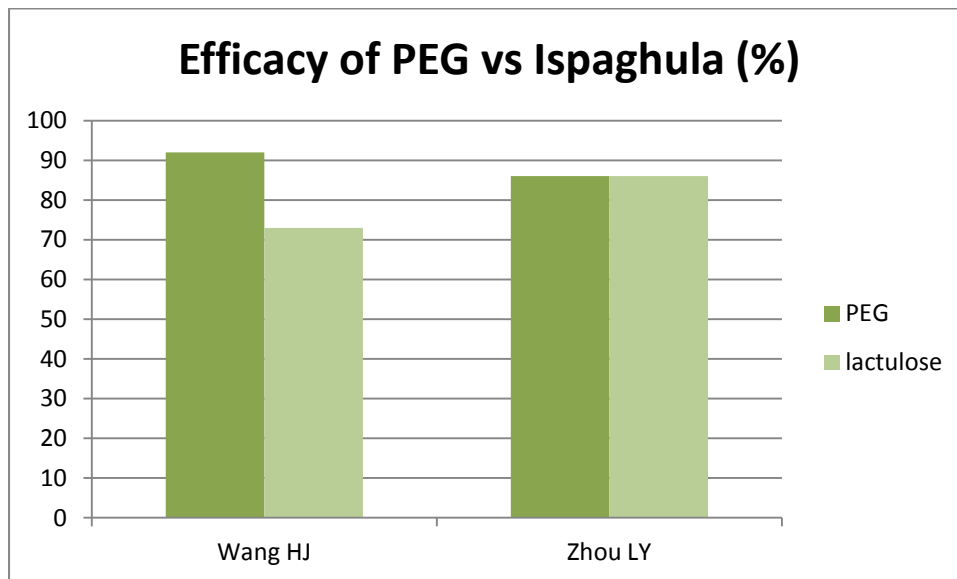
PEG vs Lactulose

In the study by Couturier and Licht, the patient satisfaction index was significantly higher for PEG patients, The doctor efficacy score were 78 and 66 resp. In the study by Denis et al the investigator assessed satisfaction score were 79 mm for PEG group and 63 mm for Lactulose group.



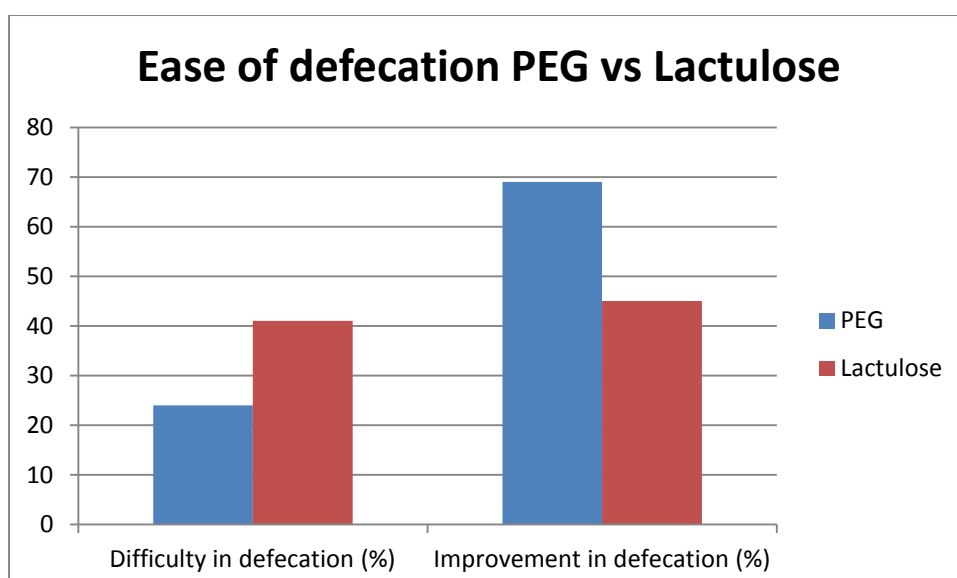
PEG vs Ispaghula

Efficacy of PEG was significantly better than ispaghula. Overall efficacy rates of PEG vs Ispaghula in the two studies were 92% vs 73% and 86% vs 86%.



Ease of defecation

Ease of defecation was significantly better with PEG than lactulose. In the study by Couturier and Licht significantly fewer PEG patients reported difficulty in defecating. The study by Denis et al reported that 69% of PEG and 45% OF Lactulose patients had improvements in the difficulties of defecation.



RESEARCH OBJECTIVE

- 1) To Find the Prescription pattern of the molecules used in the treatment of constipation.
- 2) To find a place for Polyethylene Glycol in the therapy.

RESEARCH METHODOLOGY

A structured questionnaire consisting of open ended questions was designed within the scope of the given objectives.

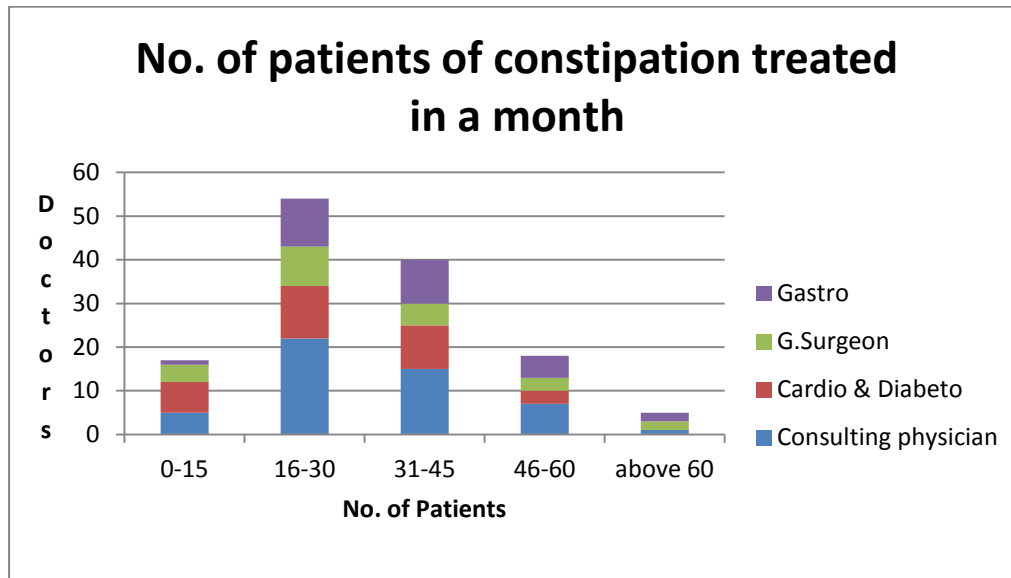
S. No.	PARAMETER	DESCRIPTION
1.	Research type	Exploratory Research
2.	Data collection	Primary & Secondary
3.	Measurement technique	Structured Questionnaire
4.	Sample selection	Area and specialty wise
5.	Sample size	134
6.	Sample unit	Gastroenterologist-29, General Surgeons-23 Cardiologist & Diabetologist -32, Consulting Physicians- 50
7.	Sampling Technique	Convenience sampling based on geography
8.	Analysis of Data	Using Microsoft Excel.

Primary Data: Field work done in different areas of Mumbai (zone wise)

Zone	Areas
Western	Andheri, Jogeshwari, Goregaon, Kandivali, Borivali, Malad, Dahisar, Bandra, Santacruz
Central	Thane , chembur, vashi, mulund
South	Byculla, Dadar, mahim, marine lines, masjid Bandar, parel, mazagaon

ANALYSIS OF COLLECTED DATA FROM
GASTROENTEROLOGIST (29), GENERAL
SURGEONS (23), CARDIOLOGIST &
DIABETOLOGIST (32) AND CONSULTING
PHYSICIAN (50) DOCTORS

Q1) Doctor, On an average how many patients of constipation do you treat in a month?



Specialty Dr.	0-15	16-30	31-45	46-60	Above 60
C.Physician	5	22	15	7	1
Cardio & diabeto	7	12	10	3	0
G.surgeon	4	9	5	3	2
Gastroenterologist	1	11	10	5	2

INTERPRETATION

1. One Consulting Physician on an average treat 31 patients with constipation in a month.
2. One Cardio and diabeto specialty doctor on an average treat 33 patients with constipation in a month.
3. One General Surgeon specialty doctor on an average treat 34 patients with constipation in a month.
4. One Gastroenterologist specialty doctor on an average treats 28 patients in a month.

Q2- According to you in which age group of patients constipation is more prevalent?

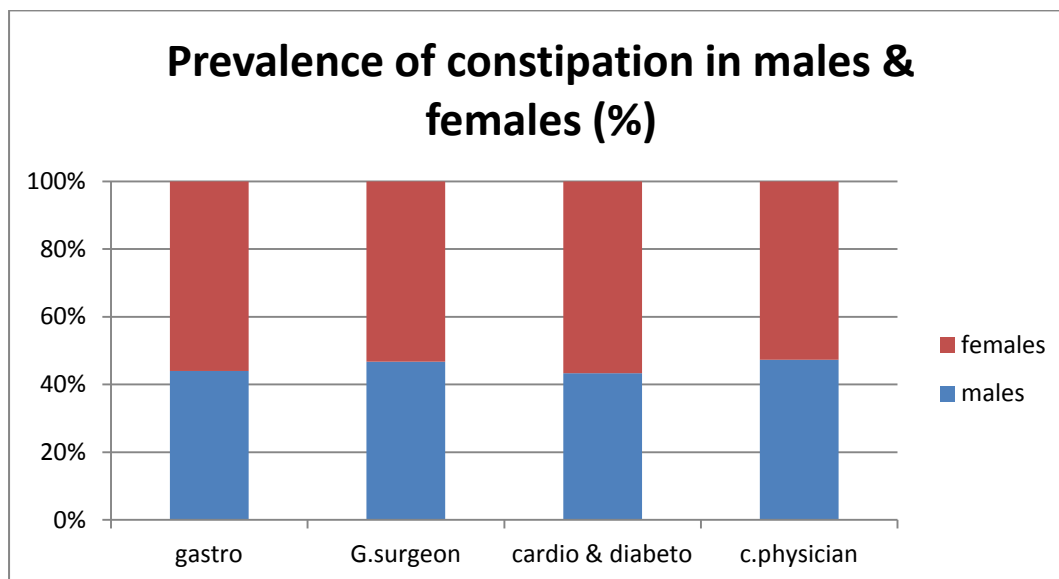
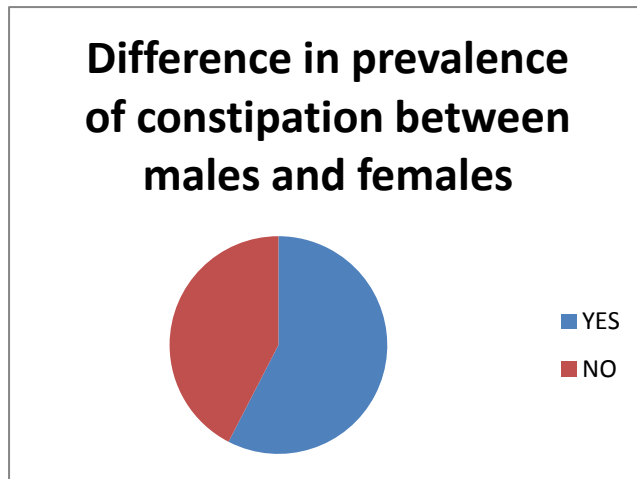


Prevalence of constipation (age group)	<5 years	6-19 yrs	20-39 yrs	40-59 yrs	Above 60 yrs
No. of responses	7	7	16	97	56

INTERPRETATION-

1. Out of **134** (say 100%) Doctors surveyed, **53%** Doctor said that prevalence of constipation is more prevalent in patients with age 40- 59 years.
2. 30% doctor said that constipation is more prevalent in patients with age greater than 60 years.
3. It means **constipation is more prevalent in patients with age greater than 40 years**

Q3 Sir Have you observed any difference between prevalence of constipation in male and females? If Yes can you give an idea in percentage?

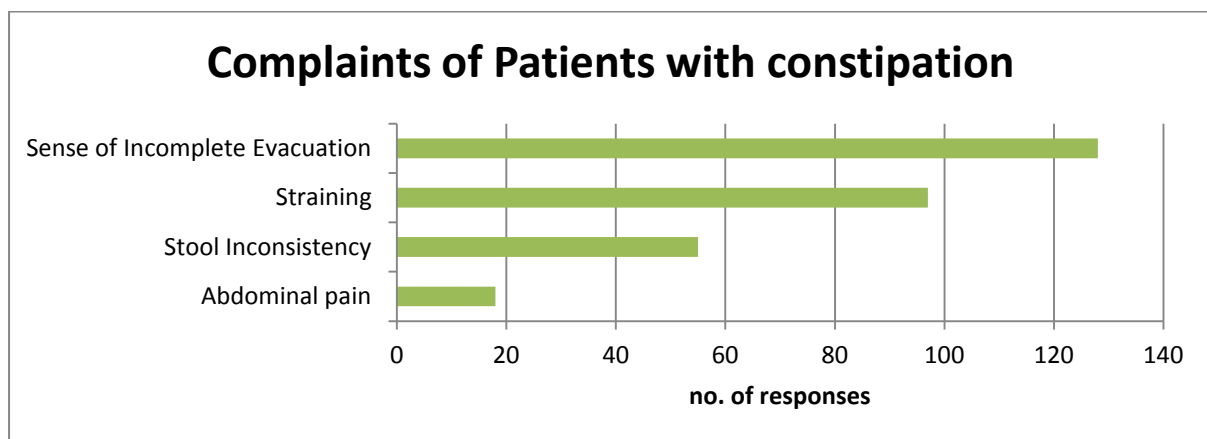


Specialty Dr.	Males(%)	Females(%)
Gastro	44	56
G.Surgeon	46.7	53.3
Cardio& diabeto	43.3	56.7
C.Physician	42.6	47.4

INTERPRETATION-

1. Out of total doctors surveyed 57% doctors said that there is difference in prevalence of constipation in males and females.
2. Out of the total number of patients of constipation 43% are males and 57% are females.
3. It means constipation is more prevalent in females than males

Q4 Which of below are their common complaints?



Common Complaints	Abdominal pain	Stool inconsistency	straining	Sense of incomplete evacuation
No. of responses	18	55	97	128

INTERPRETATION-

Out of total responses(say 100%), 43% said that sense of incomplete evacuation is the most common complaint of the patient with constipation, followed by straining (32%), then stool inconsistency (19%) and abdominal pain(6%).

Q5 Please rank as per the order of preference of prescribing the below molecules?(1- mostly prescribed.... 5- Rarely prescribed)

Specialty Dr.	Lactulose	Ispaghula	Lactitol + Ispaghula	Peg	lactitol
Gastro	1	2	3	4	5
G. Surgeon	2	1	3	5	4
Cardio & diabeto	2	1	3	5	4
C. Physician	1	2	3	5	4

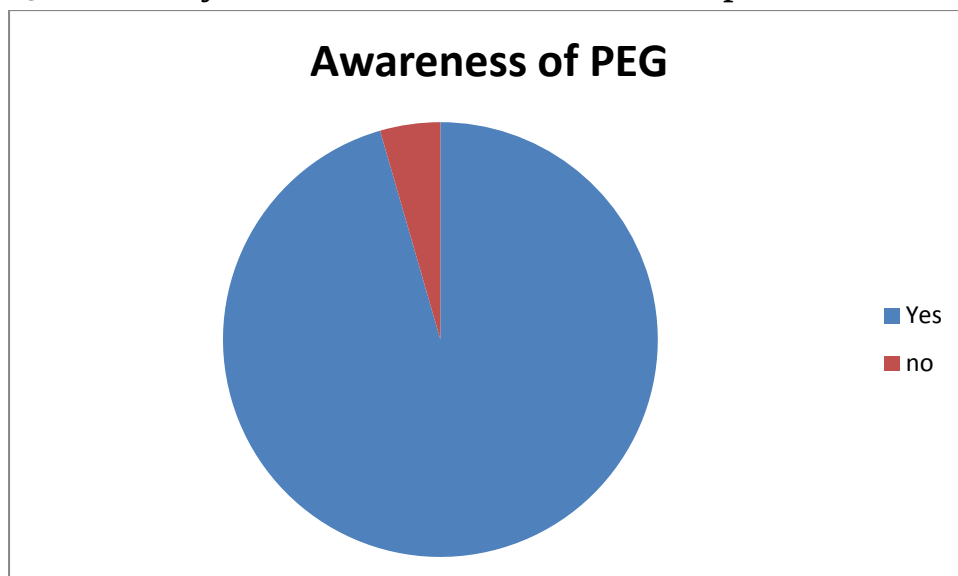
INTERPRETATION-

1.Doctors mostly prescribe lactulose to patients with constipation, ispaghula is the second preferred molecule, followed by combination of lactitol and ispaghula then lactitol.

2.Polyethylene Glycol comes under rarely prescribed molecule.

3. Other molecules which doctor prescribe are combination of magnesium salts and liquid paraffin.

Q6 ? Have you heard about PEG in constipation?

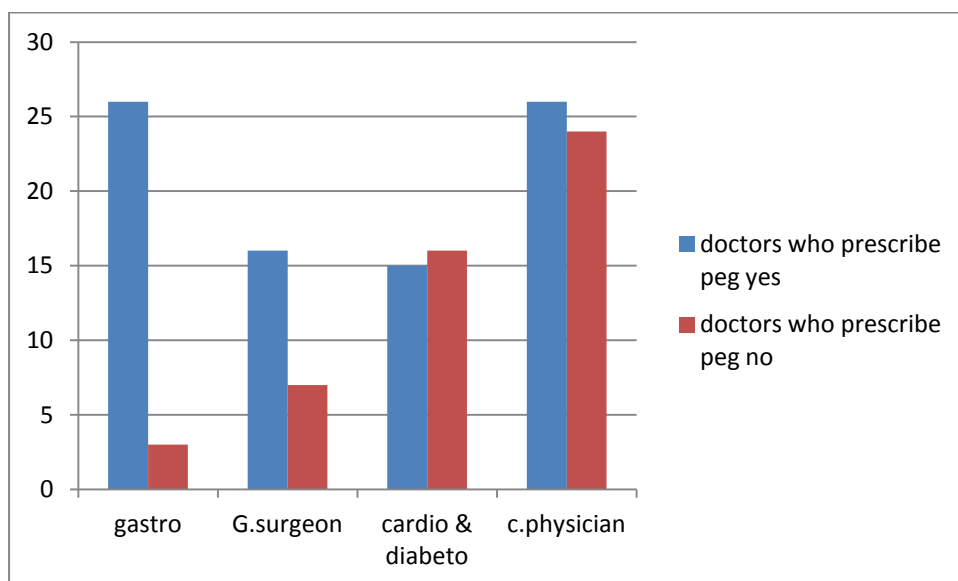


Awareness of PEG	Yes	No
	128	6

INTERPRETATION-

95 % of the doctors are aware of usage of Polyethylene Glycol in constipation.

Q7 Did you had an opportunity to use PEG in Patients?

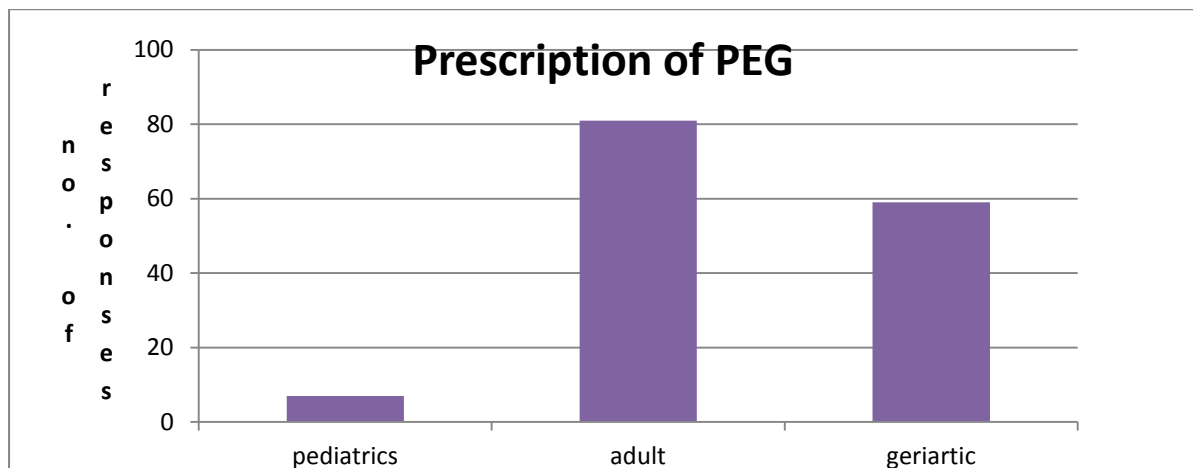


Dr. Specialty	Yes	No
Gastro	26	3
G.Surgeon	16	7
Cardio & Diabeto	15	16
C.Physician	26	24

INTERPRETATION-

1. Out of the 29 gastroenterologist surveyed 26 are using PEG.
2. Out of 23 G.Surgeons surveyed 16 are using PEG.
3. Out of 32 cardio & diabeto surveyed 15 are using PEG
4. Out of 50 consulting physicians surveyed 26 are using PEG.

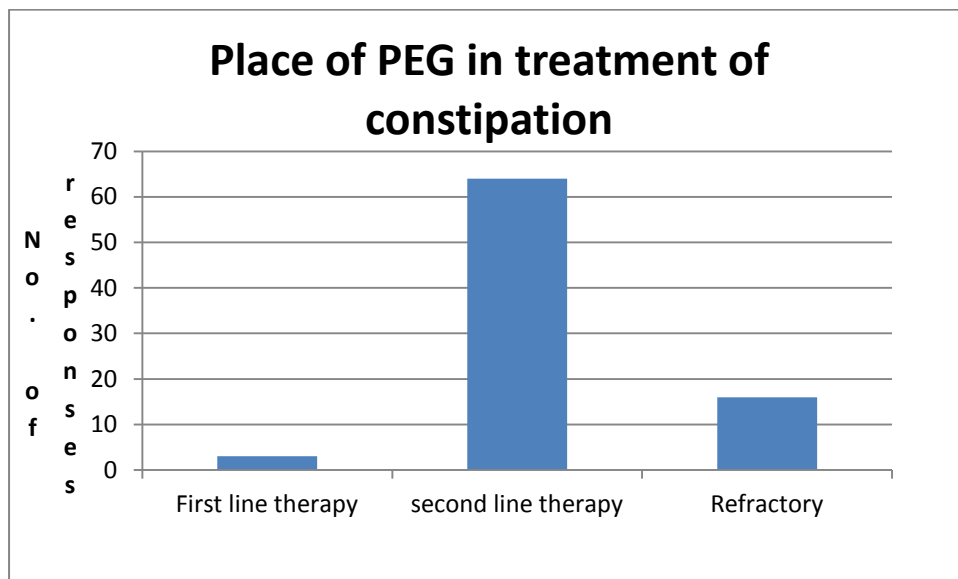
Q8 Do you prescribe PEG in any specific age group of patients?



INTERPRETATION-

- 1) Out of 83 doctors who prescribe Polyethylene Glycol 57 doctors are prescribing it for adult and geriartic patients both.
- 2) 24 doctors are using it for adults and 9 doctors are using it for all the age groups.

Q9 What place does Polyethylene Glycol hold in treatment of constipation?

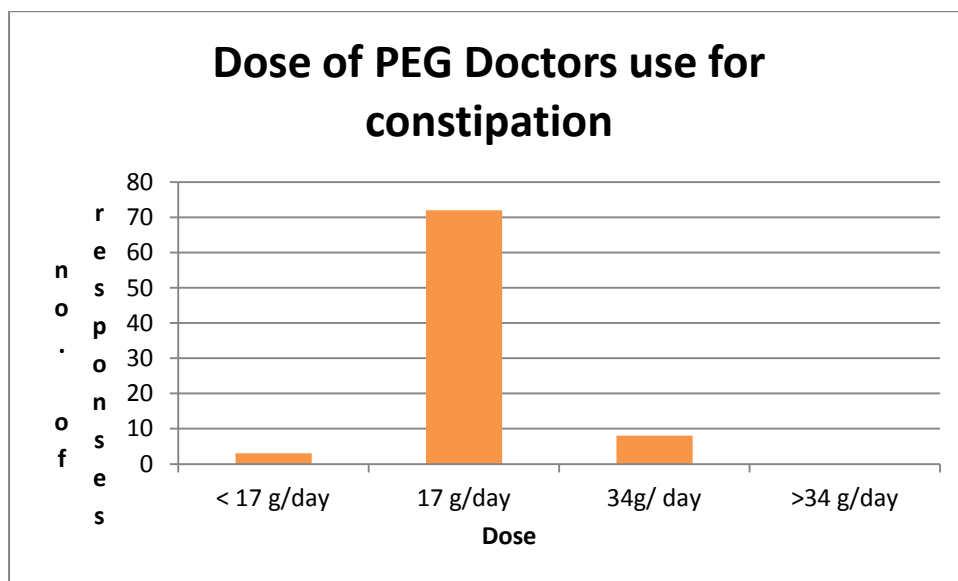


	First Line therapy	Second line therapy	Refractory
No. of responses	3	64	16
Percentage	4	77	19

INTERPRETATION-

Out of the total doctors who are using PEG (say 100%) 77% doctors are using it as second line therapy 19% doctors are using it in refractory cases and 4 % are using it as first line therapy.

Q10 What is the dose of PEG you use for constipation?

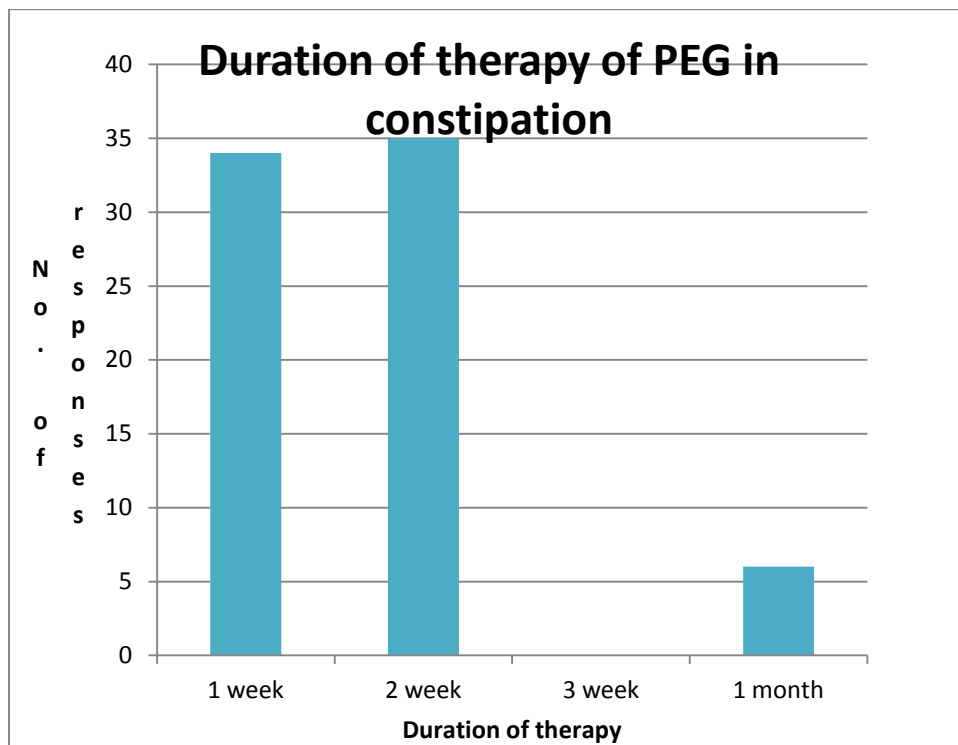


	<17g/day	17g/day	34g/day	>34g/day
No. of responses	3	72	8	0
Percentage	4	86	10	0

INTERPRETATION-

- 1) Out of the total doctors who are using PEG 86% of the doctors are using dose of 17g/day.
- 2) 10% of the doctors are using dose of 34 g/day. 4% of the doctors are using dose of less than 17g/day.

Q 11 What is the duration of therapy of polyethylene glycol ?

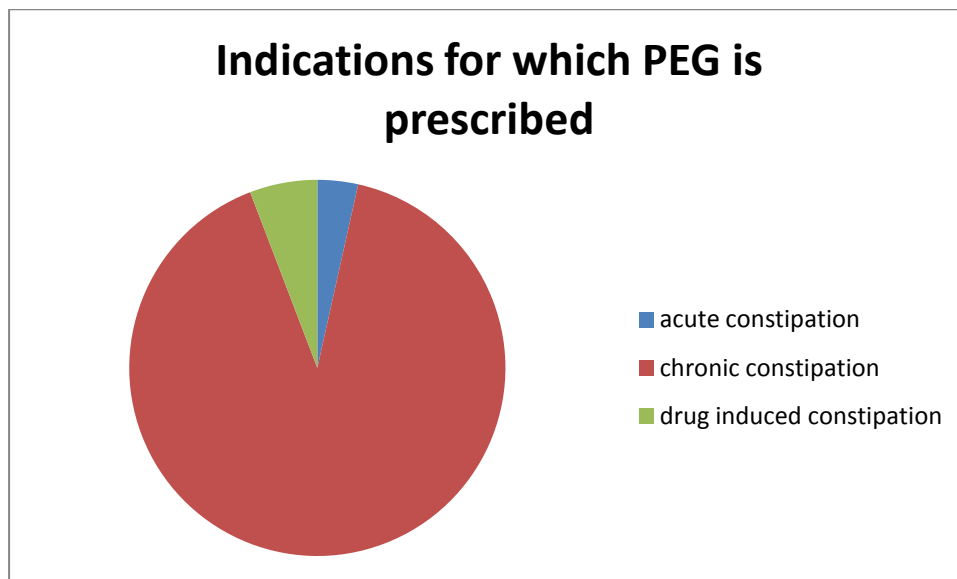


	1 week	2 week	3 week	1 month
No. of responses	34	35	0	6
Percentage	41	42	0	7

INTERPRETATION-

- 1) 41% of the doctors prescribe PEG for one week and 42% of the doctors prescribe PEG for two weeks.
- 2) 7% of the doctors prescribe it for 1 month. 10% of the doctors said duration of therapy depends on condition of the patient.

Q12- What are the indications for which PEG is prescribed?

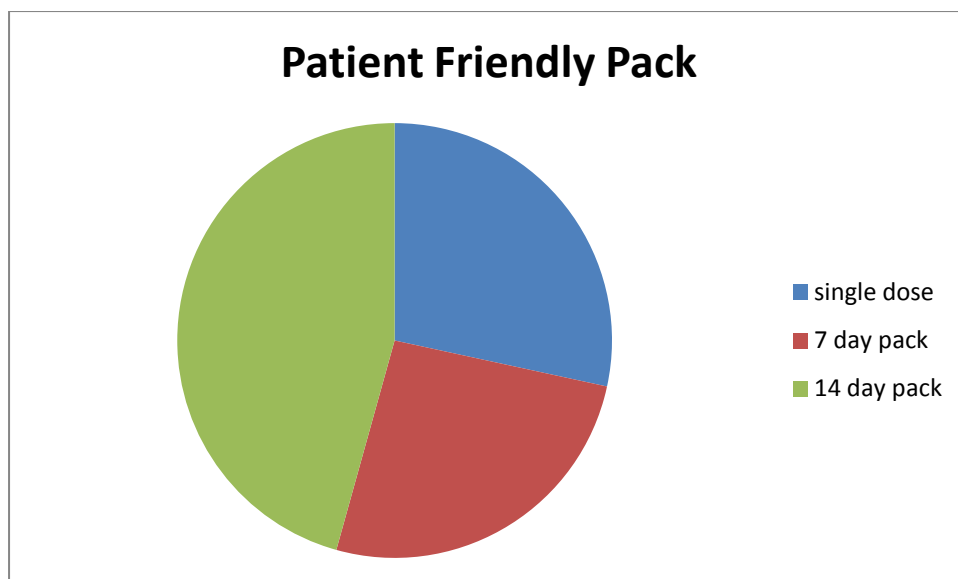


	Acute Constipation	Chronic constipation	Drug induced constipation
No. of responses	3	78	5

INTERPRETATION-

- 1) 93% of the doctors prescribe PEG for chronic constipation.
- 2) 3 doctor use PEG for acute constipation and 5 doctors use it for drug induced constipation as well.

Q13- According to you for PEG which is the appropriate and patient friendly pack?

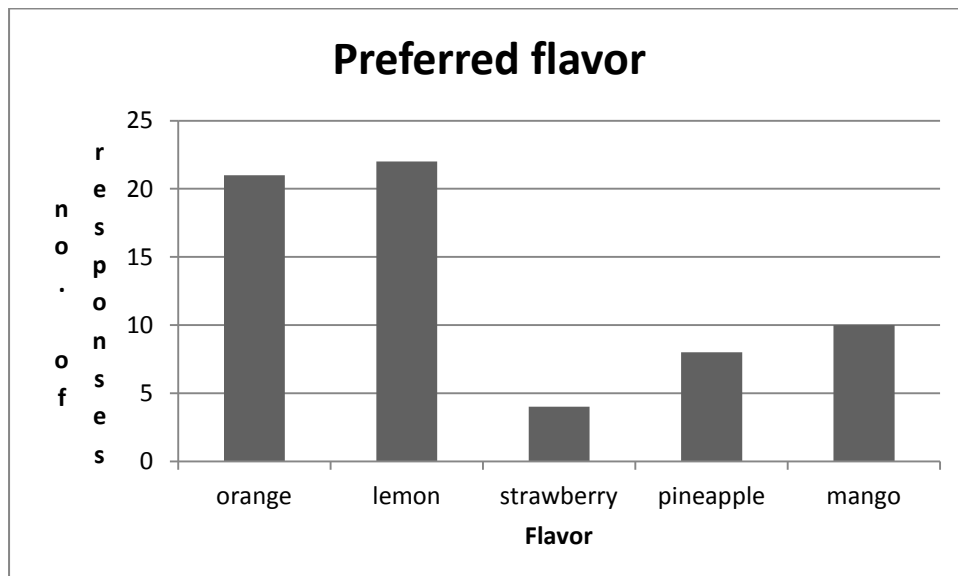
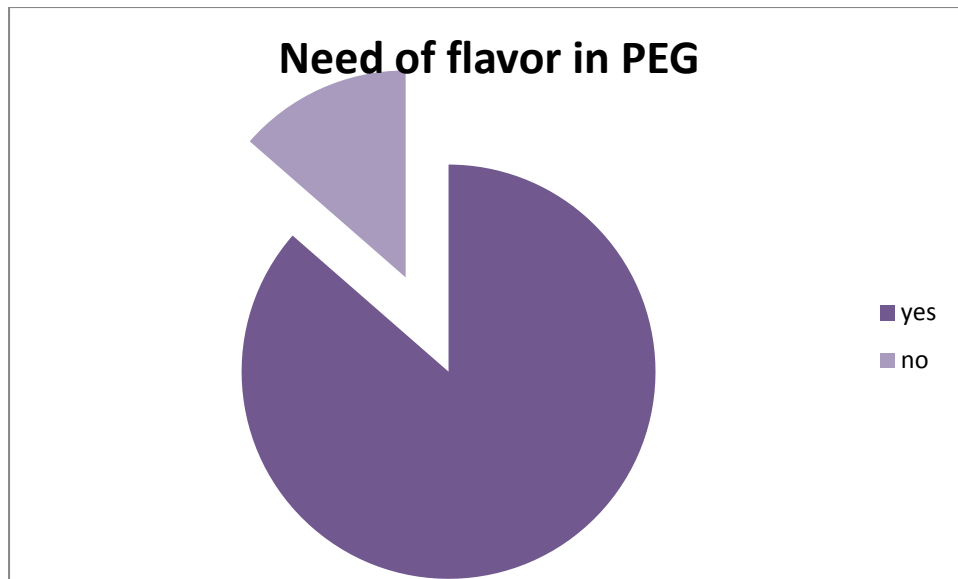


Appropriate and patient friendly pack			
	Single dose pack	7 day dose pack	14 day dose pack
No. of responses	23	21	37
Percentage	28	25	44

INTERPRETATION-

- 1) 28% of the doctors said that single dose pack is the patient friendly pack.
- 2) 25% of the doctor said 7 day pack is the patient friendly pack.
- 3) 44% of the doctors said 14 day dose pack is the patient friendly pack.

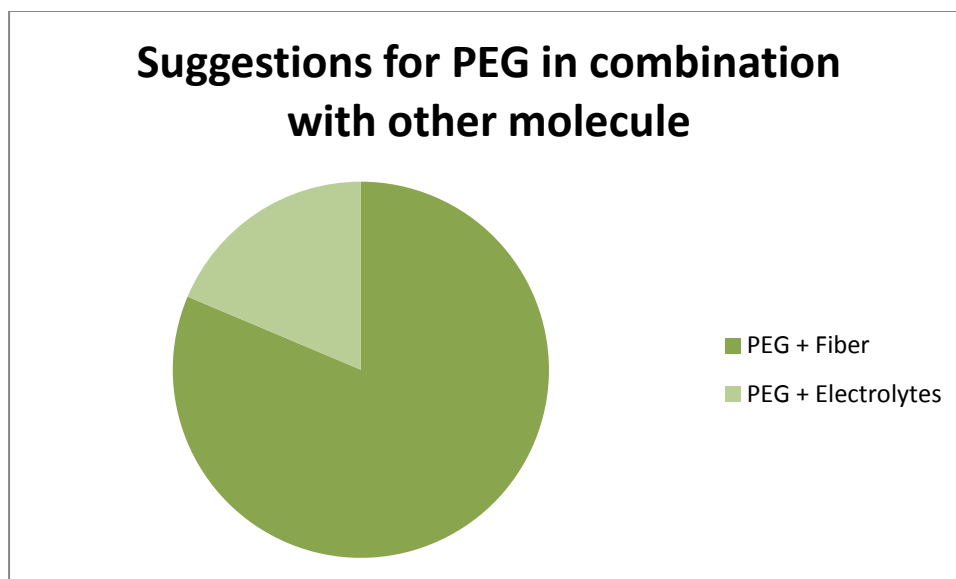
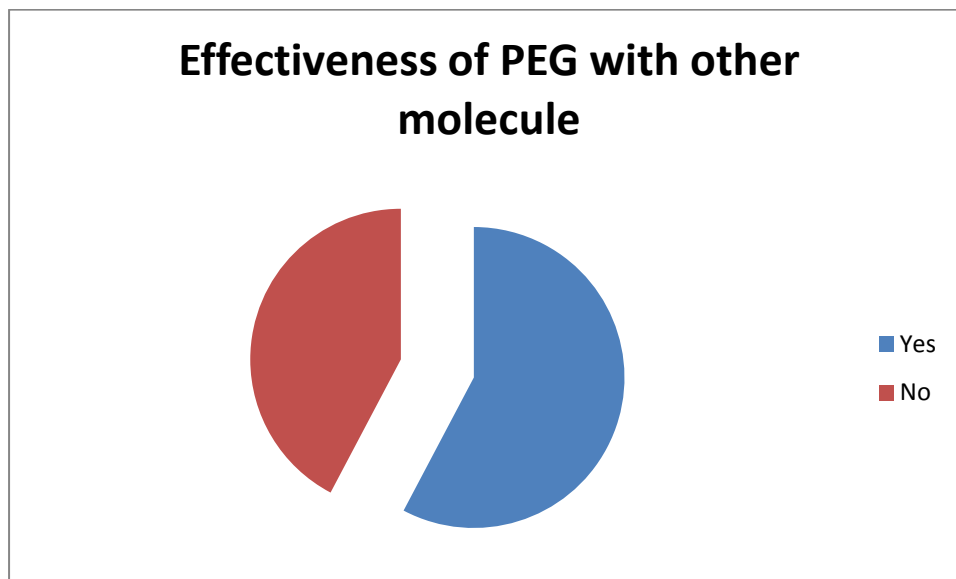
Q 14 Do you feel the need of flavor in PEG? If yes which flavor is more preferred?



INTERPRETATION-

- 1) 86 % of the doctors who prescribes PEG feels the need of flavor in PEG.
- 2) Out of all the flavors orange (26% of the doctors said orange is more preferred) and lemon (27% of the doctors said lemon is more preferred) are more preferred according to the perception of the doctor. 21 % of the doctors said it depends on patient to patient, it should be palatable.

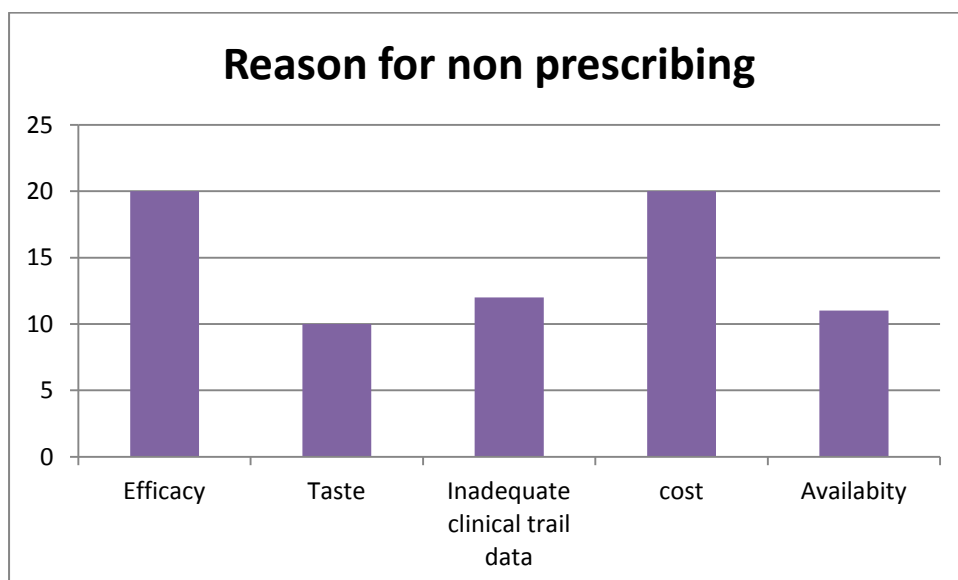
Q15- Do you think combining PEG with some other molecule will be more effective? If yes kindly suggest.



INTERPRETATION-

- 1 41% of the doctors said that combining PEG with other molecule will be more effective. 31% of the doctors said that combining PEG with other molecule will not be effective.
- 2 Out of Doctors who said that PEG will be more effective in combination with other molecule (say 100%) 81 % suggested combination of PEG with fiber and 19 % suggested combination of PEG with electrolytes.

Q16- Why do you not prefer Polyethylene Glycol for constipation?



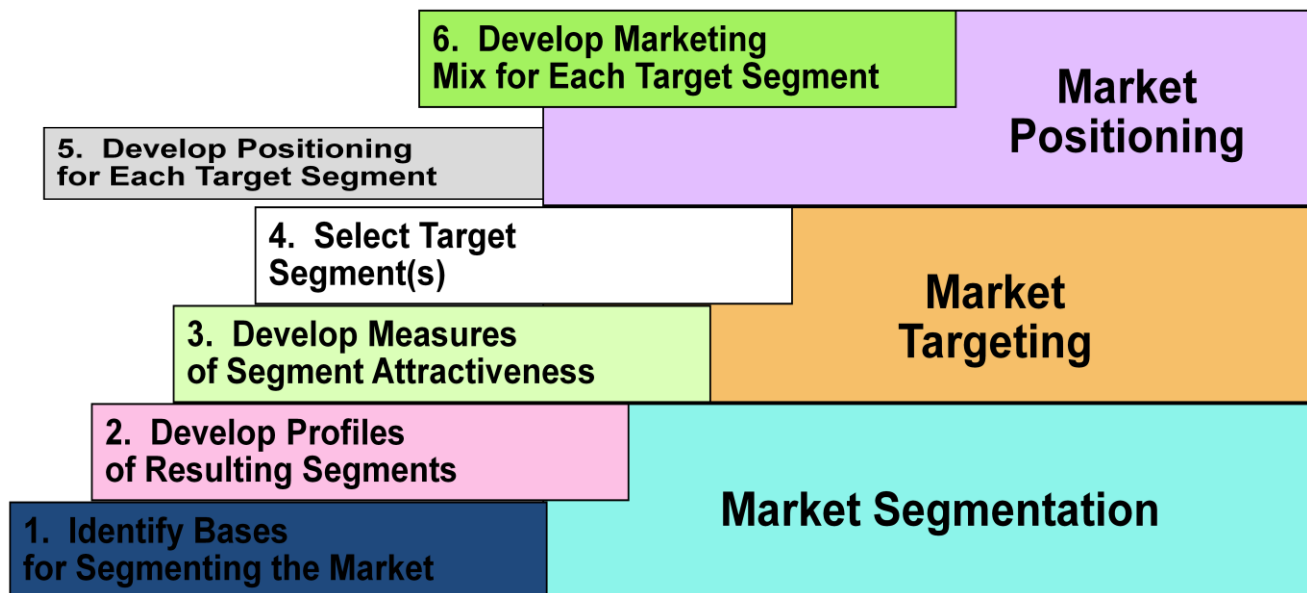
	Efficacy	Taste	Inadequate clinical trial data	Cost	Availability
No. of responses	20	10	12	20	11

INTERPRETATION-

Doctors do not prefer Polyethylene glycol because of the following reasons

- 1 Efficacy- 20 doctors feel that PEG is not as efficacious as other molecules.
2. Cost- 20 doctors do not prefer PEG because of its cost
3. Inadequate Clinical trial data- 12 doctors do not prefer PEG of inadequate clinical trial data.
4. Availability- 11 of doctors do not prefer PEG because of its availability
5. Taste- 10 doctors do not prefer PEG because of its cost

Recommendation-



Market Segmentation-

1) Identify bases for segmenting the market-

Polyethylene glycol should be promoted only to those doctors who treat patients with constipation.

2) Profiles of Resulting segment

- a) Gastroenterologist
- b) G. Surgeon
- c) Cardiologist and diabetologist
- d) Consulting Physicians

Target Segment-

- 1) Gastroenterologist**
- 2) General Surgeons**
- 3) Consulting Physician**
- 4) Cardiologist and Diabetologist**

Promotion-

- 1) According to findings most of the doctors were aware of use of Polyethylene Glycol in constipation, hence opportunity for polyethylene glycol is very high.
- 2) Some doctors are not convinced with the efficacy of the molecule, To overcome this problem Research articles containing clinical trail data of PEG should be given to non prescribers of PEG.

Market Positioning-

To increase the frequency of prescribing PEG, Doctors should be told about its better efficacy and lesser side effects than other molecules like ispaghula and lactulose with clinical evidence.

Future Expansion of the Polyethylene Glycol

- 1) As most of the doctors feel the need of flavour in polyethylene glycol, moreover some of the doctors are also not preferring PEG because of its taste, a flavour should be added in the Polyethylene Glycol.
- 2) As per the findings and perception of the doctors ,Orange and lemon are more preferred flavours in patients.
- 3) 44 % of the doctors said that 14 day dose pack is appropriate and patient friendly pack. Hence we can also think of launching PEG in 14 day dose pack.
- 4) As per the findings PEG in combination with fiber will be more effective. Hence in future after adequate clinical trial data we can also think of launching PEG in combination with fiber.

Questionnaire

1. Doctor, on an average how many patients of constipation do you treat in a month?

0-15	15-30	30-45	45-60	Above 60

2. According to you in which age group of patients constipation is more prevalent?

☐ <5 years ☐ 6-19 years ☐ 20-39 years ☐ 40-59 years ☐ >60 years

3. Sir have you observed any difference between prevalence of constipation in male and female. Yes ☐ No ☐

Can you give an approximate idea in percentage? Male_____Female_____

4. Which of below are their common complaints?

Abdominal Pain ☐ Stool Inconsistency ☐ Straining ☐
Sense of Incomplete Evacuation ☐ Others_____

5. Please rank as per the order of preference of prescribing the below molecules? (1-Mostly prescribed..... 5-Rarely prescribed)

- a) Lactilol ☐
- b) lactulose ☐
- c) Polyethylene Glycol ☐
- d) Ispaghula ☐
- e) Lactilol + Ispaghula ☐
- f) Others_____

6. Have you heard PEG in constipation? Yes ☐ No ☐

7. Did you had an opportunity to use PEG in patients? Yes ☐ No ☐

If prescribing PEG then go to question no.8 otherwise skip to question no.15 on next page.

8. According to you for which class of patients PEG can be used?

Pediatrics ☐ Adult ☐ Geriatric ☐ All ☐

9. According to you Polyethylene glycol fall under which category?

☐ First line therapy ☐ Second line therapy ☐ Refractory

10. What is the dose of Polyethylene Glycol?

☐ <17g/day ☐ 17 g/day ☐ 34g/day ☐ >34 g/day

11. What is the duration of therapy of Polyethylene Glycol?

☐ 1 week ☐ 2 week ☐ 3 week ☐ 1 month others_____

12. What are the indications for which polyethylene glycol is prescribed?

Acute constipation ☐ Chronic constipation ☐ Drug Induced Constipation ☐
Others_____

13. According to you for PEG which is the appropriate and patient friendly pack?

Packing: ☐ Single dose ☐ 7 day ☐ 14 day

14. Do you feel the need of flavor in PEG? ☐ Yes ☐ No

If yes which flavor is more preferred?

☐ Orange ☐ Lemon ☐ Strawberry ☐ Pineapple ☐ Mango

Any Other_____

15. Do you think combining PEG with some other molecule will be more effective?

Yes ☐ No ☐

If yes kindly suggest

PEG + Fiber ☐ , PEG + Electrolytes ☐ ,

Others_____

16. Why do you not prefer Polyethylene Glycol for Constipation? Is there any specific reason

Efficacy ☐ Taste ☐ Inadequate clinical trail data ☐ Pack Inconvenience ☐

Availability ☐ Cost ☐ Any other_____

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