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A Study on Prevalence and Incidence of Lower Gastrointestinal Sympptoms

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Abstract
This study investigates the frequency and occurrence of lower gastrointestinal symptoms. After obtaining approval from the Institutional Ethics Committee, a cross-sectional study was carried out among 600 inpatients in a tertiary care hospital in Bangalore. Out of 600 the patient population is categorized based on age, with a significant proportion (73.5%) falling between the ages of 48 to 58. The gender distribution highlights a dominance of males, comprising (58%) of the sample. In terms of patient diagnosis, gastrointestinal disorders (49.3%) were the most prevalent, followed by cardiovascular issues (21.5%). Among the patients, (31.83%) had more than two comorbidities, while (37.25%) had no comorbidities. The prevalence and incidence of lower gastrointestinal symptoms were found to be 0.313 and 0.252, respectively. Among these symptoms, abdominal pain (27.17%) and nausea (26.70%) were the most prevalent, followed by vomiting (22.99%). The data also delves into prescribing and patient care indicators, highlighting insights into drug utilization, consultation and medication dispensing times, and the availability of essential and key drugs. Medication errors were recorded, with 86 errors in total, and possible causes for these events included a lack of knowledge (64 cases) and miscommunication (22 cases).This study examined the prevalence and incidence of lower gastrointestinal symptoms and it was found a larger burden of lower gastrointestinal symptoms in patients compared with healthy controls. Gastrointestinal symptom severity was positively associated with almost all the disease .

Keywords: Incidence , Prevalence , Lower Gastrointestinal Symptoms , Medication Error , Drug Indicator

Introduction

GASTROINTESTINAL TRACT ANATOMY

It begins at the mouth, from the oesophagus to the stomach and then to the small and large intestines. The human GI tract is about 9 meters in length. In the GIT system, there are many supporting organs including the liver which helps by secreting enzymes that helps in digestion.

The human GI tract can be divided into two parts, namely:

1. Upper GI tract
2. Lower GI tract

Lower Gastrointestinal Tract

The lower GI consists of the organ below:

Small Intestine

The small intestine is a coiled thin tube. The length of the small intestine is about 6 meters in length. The absorption of nutrients takes place in mostly in small intestines. The Food mixes with the enzymes from the liver and the pancreas in the small intestine. The surfaces of the small intestine function by absorbing the nutrients from the food into the bloodstream, which carries them to the rest of the body.

Large Intestine

The large intestine is a thick tubular organ wrapped around the small intestine.it is also known as the Colon. The primary function is to absorb any remaining nutrients and water back into the system and process the waste products. The remaining waste is then sent to the rectum and discharged from the body as stool.[(1)]

Lower GI complaints include

1. Constipation
2. Diarrhea
3. Gas and bloating
4. Abdominal pain

The lower GI complaints mostly results from the physiologic illness or it represent a functional disorder (i.e., no radiologic, biochemical, or pathologic abnormalities are found even after extensive evaluation). The reasons for functional symptoms are not well clear. Evidence suggests that patients with functional symptoms may have disturbances of motility, no inception, or both; ie, they perceive as uncomfortable certain sensations (eg, luminal distention, peristalsis) that other people do not find distressing.

Diarrhea

Diarrhea can be defined as stool which weight > 200 g/day. It is considered as any increased in stool fluidity to be diarrhea. Diarrhea included Stool to be 60 to 90% water.

Complications of diarrhea

- Fluid loss with consequent dehydration, f
- electrolyte loss (sodium, potassium, magnesium, chloride),
- even vascular collapse sometimes occurs.
- Collapse can develop rapidly in patients who have severe diarrhea (eg, patients with cholera) or are very young, very old, or debilitated.
- Bicarbonate loss can cause metabolic acidosis.
- Hypokalemia can occur when patients have severe or chronic diarrhea or if the stool contains excess mucus.
- Hypomagnesemia after prolonged diarrhea can cause tetany.

Nausea and Vomiting

Nausea can be defined as the unpleasant feeling of needing to vomit. It represents awareness of afferent stimuli (including increased parasympathetic tone) to the medullary vomiting center. Vomiting is the forceful expulsion of gastric contents caused by involuntary contraction of the abdominal musculature when the gastric fundus and lower esophageal sphincter are relaxed.

Vomiting is different from regurgitation, the spitting up of gastric contents without associated nausea or forceful abdominal muscular contractions. Patients with achalasia or rumination syndrome or a Zenker diverticulum may regurgitate undigested food without nausea.

Complications

Severe vomiting can often leads to
symptomatic dehydration
electrolyte abnormalities (typically a metabolic alkalosis with hypokalemia)
rarely an esophageal tear, that can be partial (Mallory-Weiss) or complete (Boerhaave syndrome).
Chronic vomiting can result in undernutrition, weight loss, and metabolic abnormalities.
However, if the patient is unconscious or partly conscious, the vomitus may be inhaled (aspirated) and cause aspiration. The acid in the vomitus can severely irritate the lungs, causing aspiration pneumonia.

Constipation

Acute constipation is caused by an organic cause, whereas chronic constipation is caused by organic or functional cause.

Mostly constipation is highly associated with sluggish movement of stool through the colon and this delay may be due to drugs, organic conditions, or a disorder of defecatory function or a disorder that results from diet.

Patients with disordered defecation do not generate adequate rectal propulsive forces and do not relax the puborectalis and the external anal sphincter during defecation, or both.

In IBS, patients have symptoms (eg, abdominal discomfort and altered bowel habits) but generally normal colonic transit and anorectal functions. However, IBS-disordered defecation may coexist. [(2)]

Excessive straining, perhaps secondary to pelvic floor dysfunction, may contribute to anorectal pathology (eg, hemorrhoids, anal fissures, and rectal prolapse) and possibly even to syncope. Fecal impaction, which may cause or develop from constipation, is also common among older patients, particularly with prolonged bed rest or decreased physical activity. It is also common after barium has been given by mouth or enema.

Chronic abdominal pain (CAP)

Chronic abdominal pain (CAP) is pain that persists for more than 3 months either continuously or intermittently. Intermittent pain may be referred to as recurrent abdominal pain (RAP). Acute abdominal pain is discussed elsewhere. CAP occurs any time after 5 years of age. Up to 10% of children require evaluation for RAP. About 2% of adults, predominantly women, have CAP (a much higher percentage of adults have some type of chronic gastrointestinal [GI] symptoms, including non ulcer dyspepsia and various bowel disturbances). [(5)]

Functional bowel disorders are common causes of chronic abdominal pain. Irritable bowel syndrome (IBS) is a functional bowel disorder that causes recurrent abdominal pain and altered bowel habits. Centrally mediated abdominal pain syndrome, previously known as functional abdominal pain, is a similar but less common disorder that does not cause altered bowel habits. (See the American College of Gastroenterology's 2021 clinical guideline for the management of IBS.)

pathophysiology

Physiologic causes of chronic abdominal pain (see table Physiologic Causes of Chronic Abdominal Pain) result from stimuli of visceral receptors (mechanical, chemical, or both). Pain may be localized or referred, depending on innervation and specific organ involvement.

Irritable bowel syndrome and centrally mediated abdominal pain syndrome cause pain that persists > 6 months without evidence of physiologic disease. The pathophysiology of these disorders is complex and seems to involve altered intestinal motility, increased visceral nociception, and psychologic factors. Visceral hyperalgesia refers to hypersensitivity to normal amounts of intraluminal distention and

heightened perception of pain in the presence of normal quantities of intestinal gas; it may result from remodeling of neural pathways in the brain-gut axis. (3)

INCIDENCE

Incidence is a term often used in epidemiology and statistics to describe the frequency of new cases of a particular disease, condition or event over a period of time. This is often expressed as the number of new cases in a risk group over a period of time.

Incidence is the rate of new cases or events over a specified period for the population at risk for the event. In medicine, it is commonly the newly identified cases of a disease or condition per population at risk over a specified time period.

Incidence = (New Cases) / (Population x Timeframe)

PREVALENCE

Prevalence is a term used in epidemiology and statistics to describe the proportion of individuals in a population who have a particular disease or condition at a given point in time or period. Unlike incidence, which measures the number of new cases over a period of time, prevalence provides information about the total number of existing cases (both new and existing) in a population.

In medical epidemiology, prevalence is defined as the proportion of the population with a condition at a specific point in time (point prevalence) or during a period of time (period prevalence). Prevalence increases when new disease cases are identified (incidence), and prevalence decreases when a patient is either cured or dies. Many times, the period prevalence will provide a more accurate picture of the overall prevalence since period prevalence includes all individuals with the condition between two dates: old and new (incident) cases, as well as those who were cured or died during the period. (5)

Clinically, prevalence is most commonly described as the percentage with the disease in the population at risk. We commonly hear this in everyday discussion, and most find these references intuitive to interpret, such as "currently, X% of Americans were overweight or obese."

Prevalence = (Total number with disease) / (Population at risk for the disease) (5)

Alternatively, if the disease process tends to last a long time and both the incidence and cure/death rates are relatively stable then prevalence can be calculated based on the incidence and duration of disease.

Prevalence = (Incidence) x (disease duration) (6)

RATIONAL USE OF DRUGS USING CORE INDICATORS

The judicious use of medicines is an integral part of treatment to ensure that patients receive the right medicine at the right dose, at the right time and at the lowest cost, while minimizing potential side effects. Key indicators are tools and measures used to assess and promote rational drug use. Here are some key indicators and their importance in promoting rational drug use:

1. **Prescription indicators:** - **Prescription by generic names:** Measuring the percentage of drugs prescribed by generic names helps to reduce costs and promote the use of cost-effective drugs. - **Antibiotic prescription:** Monitoring antibiotic prescriptions can help fight antibiotic resistance by reducing unnecessary antibiotic use. - **Polypharmacy:** Estimating the average number of medications prescribed at the same time helps to identify the additional prescription and the potential risks associated with it.
2. **Indicators of patient care:** - **Treatment Adherence:** Monitoring patient adherence to

prescribed medication regimens ensures that patients are taking medications as directed, which improves treatment outcomes. - **Duration of treatment:** Assessing the duration of treatment can avoid short duration or long duration- **Adherence to clinical guidelines:** Measuring adherence to clinical guidelines ensures that medications are prescribed based on evidence-based recommendations.

3. "Health Indicators." These indicators are used to evaluate and measure the efficiency, quality and capacity of health facilities such as hospitals, clinics and health centers. They provide insight into how well these facilities provide health care and help identify areas for improvement.

PRESCRIBING INDICATORS

The prescribing indicators measure the performance of healthcare providers in five key areas related to the appropriate use of medicines. They are based on an analysis of patient clinical encounters.

Indicator 1: Average number of medicines per encounter

This indicator assesses the extent of polypharmacy. The WHO proposes that optimally, this should be <2. This indicator is obtained by first counting the total clinical encounters for which data was collected (x). Subsequently, the total number of medicines prescribed for the total encounters is determined (y). By dividing the total number of medicines prescribed (y) by the number of encounters (x) yields the average number of medicines per encounter (p). This is expressed mathematically as follows.

$$P = \frac{\text{total prescribed drug}}{\text{total encountered drug}}$$

Average number of medicines per encounter **(P)**

Indicator 2: Percentage of medicines prescribed by generic name

This indicator is aimed at measuring prescriber's tendency to prescribe medicines using generic or international non-proprietary name (INN). To be able to determine this indicator effectively, investigators must be able to confirm the actual names adopted in the prescription rather than utilizing the names of the dispensed products because of the potential for product substitution at the dispensary. This indicator (g) is calculated by dividing the total number of medicines prescribed in the INN format (d) by the total number of medicines prescribed (y) and expressed as a percentage. Sometimes, it is permissible to categorize some common brand names (e.g., aspirin) as generic if these are used interchangeably with other names. Moreover, local preparations with no generic names may be classified as generic. The WHO proposes that optimally, all medicines (100%) should be prescribed by generic names. The calculation of this indicator is expressed mathematically as follows; [7]

$$g = \frac{\text{generic } drug}{\text{total } number\ of\ drugs} \times 100\%$$

Percentage of medicines prescribed by generic name**(g)**

Indicator 3: Percentage of encounters with an antibiotic prescribed

This indicator assesses the frequency of antibiotic prescribing among primary health care (PHC) providers. There is often the need for clarity on the medicines counted as antibiotics in any study, as the indicator is sensitive to the kinds of medicines categorized as antibiotics. The determination should be made whether dermatologic creams and eye care products should be regarded as antibiotics. Adding such products into the category of antibiotics could significantly impact the results especially in areas where conditions such as bacterial conjunctivitis, and bacterial and fungal skin infections are prevalent as such products may be in wide use. The WHO/INRUD have provided a list of medicines which should usually be categorized into the group of antibiotics and has advised that where researchers deviate markedly from this

categorization, this should be given in the study's methodology. The WHO classification of antibiotics has been outlined in the percentage of encounters with antibiotic prescribed (*b*) is calculated by dividing the number of clinical encounters in which one or more antibiotic was prescribed (*f*) by the total number of encounters (*x*) and expressed as a percentage. The WHO indicates that optimally, this value should be (<30%). Mathematical expression is provided below. (7)

$$\boldsymbol{b} = \frac{\textbf{total number of antibiotic}}{\textbf{total } \boldsymbol{number\ of\ drug}} \times 100\%$$

Percentage (%) of encounters with an antibiotic prescribed **(b)**

Indicator 4: Percentage of encounters with an injection prescribed.

This indicator describes the frequency with which injectable forms of medicines are prescribed. Investigators should be aware of immunizations that are not counted as injections. This indicator (*j*) is calculated by dividing the number of clinical or drug use encounters in which an injectable form of medicine was prescribed (*t*) by the total number of encounters studied (*x*) and expressed as a percentage. The WHO proposed an optimal value for this indicator should be (<20%). Mathematical expression is presented as follows.

$$x = \frac{\text{total number of injection}}{\text{total number of drugs}} \times 100\%$$

Percentage (%) of encounters with an injection prescribed **(x)**

Indicator 5: Percentage of medicines prescribed from the essential medicines list

The main focus of this indicator is to access whether prescribing practices conform to drug use policy as pertaining to the use of essential medicines list (EML). An EML is a list of medicines that satisfy the priority health care needs of a population. The concept of EML use is built on the premise that the use of a limited number of well-known and cost-effective medicines can lead to better health care, enhanced long-term medicines supply and more equitable and sustainable access to products. In assessing this indicator, investigators must obtain a copy of the reference EML (national or facility-based) from which comparison of prescribed medicines can be made. In settings with no established EML, the WHO model EML may be used as a reference guide. Where brand names have been prescribed it is necessary to establish whether they are equivalent to ones appearing in generic forms in the EML. The percentage of medicines prescribed from the EML (*k*) is calculated by dividing the number of medicines prescribed from the EML (*m*) by the total number of medicines prescribed (*y*) and expressed as a percentage. Ideally, all medicines prescribed at PHC facilities should be from the EML hence the optimal value for this indicator is 100%. (7)

Percentage (%) of medicines prescribed from EML $(\mathrm{k}) = \frac{\mathrm{m}}{\mathrm{y}} \times 100\%$

PATIENT CARE INDICATORS

To understand how medications are used, it is important to consider what is happening in healthcare, both from the provider's perspective and from the patient's perspective. Patients arrive at facilities with varying symptoms, complaints, and expectations of the care they receive; They usually bring a package of medication or a prescription to offer on the private market. The patient care indicators examine key aspects of the patient experience in healthcare facilities and the level of their preparedness to manage prescribed and dispensed medications.

The time that prescribers and donors spend with each patient significantly limits the potential quality of diagnosis and treatment. Patients receiving medications should, at a minimum, receive properly labelled medications and know how to take each medication.

Like prescription rates, patient supply rates do not take into account many important aspects related to the quality of tests and treatments. A good assessment of the quality of care must take into account the content of interactions between patients and healthcare professionals. However, this goes beyond a limited number of key indicators from both a practical and technical perspective. As with prescribing rates, a more detailed examination of patient-provider interactions and a closer examination of beliefs and motivations related to drug use may be required after initial testing identifies one or more specific problems. All data necessary to measure patient care indicators for each facility can be recorded and summarized in the patient care sheet.

Average consultation duration Target Measure the time that medical staff spend with patients in the consultation and prescription process.

Methods for accurately recording the consultation time, i.e., the time between entering and leaving the consultation room. The waiting time is not included in the price.

The average is calculated by dividing the total duration of a series of consultations by the number of consultations.

Example In Malawi, patients spend an average of 2 days.3 minutes with medical professionals in the consultation room.

Average dispensing time

Average time spent dispensing medication Target Requirements Measuring the average time spent dispensing medication to patients .

Method for accurately recording the average length of stay of a patient with a pharmacist or a medication dispenser, or in other words the time between your arrival at the counter and your departure. The waiting time is not included in the price.

The average is calculated by dividing the total medication administration time for a series of patients by the number of encounters.

In health centers across Tanzania, patients spend an average of 78 seconds taking their medication.

Percentage of drugs actually dispensed

Purpose Prerequisites Calculation To measure the degree to which health facilities are able to provide the drugs which were prescribed.

Information on which drugs were prescribed, and whether these drugs were actually dispensed at the health facility.

Percentage, calculated by dividing the number of drugs actually dispensed at the health facility by the total number of drugs prescribed, multiplied by 100.

In health facilities in Nepal, 73% of prescribed drugs were actually dispensed at the health facility.

Percentage of drugs adequately labelled

Purpose Prerequisites Calculation To measure the degree to which dispensers record essentia
l information on the drug packages they dispense.

Investigators must be able to inspect drug packaging as it is actually dispensed in a healthcare facility.

The percentage is calculated by dividing the number of boxes of medicines containing at least the patient's first and last name, the name of the medicine and the date of taking the medicine by the total number of boxes of medicines dispensed , multiplied by 100.

In Region A, only 10.2% of the drugs distributed were correctly labeled .
Patients & 039; Knowing the correct dosage
Objective Measuring the effectiveness of the information provided to patients on the dosage schedule of the drugs they receive
Requirements Access to a written prescription or medical record, depending on which patient&039; It is possible to test knowledge of the dosing regimen or access to standards of use for each commonly used medication. Interviewers should be trained to assess patient knowledge during an interview or to record patient responses for later evaluation.
The percentage is calculated by dividing the number of patients who were able to correctly indicate the dosage regimen of all medications by the total number of patients surveyed and multiplying by 100.
In 23 health facilities in Bangladesh, 63% of patients were able to repeat the correct dosage list of medications received.

Required Tasks

A simple medication use rate study measures the adequacy of patient care by observing a sample of regular patient encounters and interviewing patients as they leave the facility. In addition to the measures described for prescribing rates, the following activities are required to measure patient supply rates.
Development of a procedure for prospective data collection Since patient visit samples are always selected prospectively, it is necessary to organize observations and interviews with patients. Since patient flow in can be organized in different ways, attention should be paid to data collection methods before starting a study. Methods should be reasonably consistent across settings and not have undue impact on routine patient care. Observing patient care in different settings before starting a study is usually enough to design an effective data collection process. Methods should be developed to measure consultation and dispensing times and to interview and question patients after they have received medications, because such interviews can disrupt patient flow and even pose less risk to healthcare workers, it is best that interviews take place outside of the main clinic area. It is not necessary to measure consultation and drug administration times and interview the same patients, especially if the structure of the research group does not allow this effectively. However, measuring all indicators for the same patients would provide a better picture of the overall level of services received by each patient. It is recommended that observations begin in the middle of the clinical workday. This helps ensure results are not unduly influenced by the rush to see patients at the start or end of a clinic visit, or by the freshness or fatigue of medical staff.
Determine how consultation and delivery times will be measured.
A consistent method for observing the beginning and end of counseling and dispensing sessions must be developed. To reduce time differences between patients, it is recommended that patient care includes at least 30 individual appointments. If a facility has fewer than 30 patient encounters per day, all encounters must be included. Based on knowledge of patient flow in healthcare facilities, procedures for recording clinical consultations and medication dispensing times should be established in advance. The basic procedure should be to record the start and end times of each consultation. If patients are seen individually in the practice, this means that , measure the time between entering and leaving the practice. In some facilities, more than , patients are treated in a single consultation room, and patients may even queue in the consultation room alone. In such situations, you must be present in the room on and adhere to the actual start and end times of each consultation. A similar procedure should be followed in the medication dispensing area, where the start and end times of the patient's interactions with the dispensers should be recorded. In this case, the encounter time refers to the period from the time the patient approaches the

pharmacy counter to receive their medication to the time they leave the counter. The patient's waiting time until the prescription to be filled is presented is not taken into account.

Identify data sources to compare prescribed and dispensed medications. Not all prescribed medications are actually dispensed in a healthcare facility. This may occur when medicines normally available are not available or when medicines are deliberately prescribed in order to purchase them in the private sector. Measuring the extent to which medicines need to be procured outside the healthcare system provides insight into the reliability of medicine supply and how prescribing options correspond to the range of pharmaceutical products available in the system. Prescribed medication information is generally recorded on a prescription form or entered directly into the medical record unless the medication is actually dispensed by the prescribing physician. The identity of the prescribed medication is an important criterion for the choice of therapy. In many facilities, information about the medicines dispensed is also available in the pharmacy file on or in the form of additional information on the prescription form. The medications dispensed can also be determined based on the products actually received by the patient. When both types of information are available, researchers need instructions for comparing prescribed and dispensed medications. An unclear situation occurs when a medication is dispensed as prescribed, but in a different quantity than prescribed. The discrepancy could be due to low inventory levels or institutional policy constraints the amount dispensed. In these situations, the drug should be counted as if it had been dispensed as indicated, with a special note on the record form.

Define criteria for adequate patients' knowledge about medications.

At some point during the review or dispensing of a medication, the details of the prescribed medication must be explained to the patient. Ideally, this explanation will include why the medication is being used, how each medication is used, and information about precautions and possible side effects. Because most of these factors are difficult to measure, patients should be assessed solely on their knowledge of the timing and amount of each medication. This must be assessed for each medication actually dispensed to the patient. Ignorance of one or other of these two points regarding any of the medicines dispensed should lead to the assessment that the patient's knowledge is inadequate. To reliably assess the accuracy of patients&039; To get answers about when to take medications, clear guidelines for typical dosing regimens need to be developed. For example, does “three times a day” mean “morning, noon and evening” or “after every meal”? Does “six pills a day” mean “six pills a day”? Does this correspond to “two tablets three times a day”? Guidelines for acceptable responses should be developed and communicated during data collector training.

Describe procedures for evaluating patient’s knowledge

Awareness can be determined by noting the prescribed dose on the medication package, on a prescription form kept by the patient, or in the patient's medical record. If the necessary data (name of the drug, when and in what quantity) are available in writing, the patient's knowledge can be assessed based on this documentation. Even if drug dosage data are not collected, it is still possible to assess patient knowledge. Implementation depends on the level of pharmaceutical knowledge of the researchers. If the data is collected by pharmacists or other healthcare professionals who are familiar with the names and dosages of the medications, can they assess the appropriateness of treatment for patients? Determine directly and easily whether each patient surveyed has the relevant knowledge. In this case, consistency can be ensured by checking the correct dosage of important medications as part of the training of data collectors and by providing them with a checklist for use in the field. It may be helpful to give them examples of medications that are most commonly delivered to healthcare facilities to help them identify them. If data collectors are

less experienced, it may be more reliable to ask them to record the name of each drug and what the patient knows about it during the interview and then have these records reviewed by experienced coders. For each oral and topical medication prescribed to a patient, the data collector must record the name of the medication, its dosage, the amount administered, and the patient's explanation of how and when the medication should be taken.

Facility Care Indicators

The ability to prescribe medications rationally is influenced by many characteristics of the work environment. Two particularly important elements are an adequate supply of essential medicines and access to impartial information about them. Without them, it is difficult for medical staff to work effectively. Health facility indicator data can be collected in the Facility Summary form in Appendix 2. Information about the data collection process at each healthcare facility, such as the names of key contacts. at the facility, whether retrospective or prospective data were collected, how many cases were recorded for prescription and patient supply rates, and what problems occurred during the visit.

Availability of copies of the national list of essential medicines or formulary

Target Requirements Indication of the level of availability of copies of the national list of essential medicines or the local list of medicines in health facilities.

A national list of essential medicines or a local prescription form should be available for this level of care. Otherwise, the indicator will always receive a “No” rating.

Yes or no, by subject.

In country A, only 28% of health facilities had a copy of the national list of essential medicines.

Availability of key drugs

Target Requirements Calculation Measuring the availability of essential medicines, which are recommended to treat some common health problems, in healthcare facilities.

A short list of 10-15 essential medications should be prepared and kept available at all times (recommended list in Table 3).

The percentage is calculated by dividing the number of specific products actually in stock by the total number of medications on the checklist and multiplying by 100.

Example: Health Centers in Nigeria actually had an average of 62% of the 14 most essential medicines in stock.

Required tasks.

Determine whether a national essential drugs list or local formulary exists.

A sign of acceptance of the concept of essential medicines is the development, dissemination, and use of a national list of essential medicines, a local list of essential medicines products or reference documents on equivalent essential medicines, for example drug information sheets. The availability of this drug information is the cornerstone for rational drug prescribing.

To achieve maximum effectiveness, information must be widely disseminated throughout the healthcare system to facilitate decisions on the purchase, distribution and therapeutic use of medicines. Investigators must determine whether the national list of essential medicines matches the local formulary. or an equivalent reference document, when it was last revised and in what form, it was distributed to healthcare facilities. To assess this indicator locally, data collectors should ask prescribers at each site to provide an updated copy of the list or form.

Develop a shortlist of essential drugs to test availability.

Prescribers can only treat patients rationally if vital medications are regularly available. One way to view the general availability of needed medications is to make a short list of specific medications (fewer than 15) needed to treat common health problems and check their availability at the facility on the day of the test.

A recommended list of medications that could be used for this purpose is shown in Table 3. Researchers should modify this list or develop a new one to apply to several important health problems in community settings. Data collectors then check the availability of the drugs on this list in the facility. For the purposes of this indicator, branded drugs and generic drugs are chemically equivalent, therefore the presence of a chemically equivalent form of the listed drug must be taken into account. If there are questions about the suitability of a drug, data collectors should be trained to record questions in the short form of the website so that principal investigators can make the final decision. Inventory does not need to be considered. Even if only one bottle or tablets are available, the medicine must be registered as available.

Medication error:

A medication error refers to any preventable event or occurrence that could lead to inappropriate use of a medication or harm to a patient. This can occur at various stages of the medication use process, including prescribing, dispensing, dosing, or monitoring. Medication errors can include factors such as incorrect dosage, mixing medications, mislabeling, communication problems between health care providers, and patient-related issues. Healthcare providers and institutions are taking steps to reduce medication errors, such as implementing medication safety protocols, using electronic prescribing systems, and educating and training healthcare professionals.

Factors that may influence medication errors.

Factors associated with health care professionals.

- Lack of therapeutic training
- Inadequate drug knowledge and experience
- Inadequate knowledge of the patient
- Inadequate perception of risk
- Overworked or fatigued health care professionals

Physical and emotional health issues

- n Poor communication between health care professional and with patients
- Factors associated with patients.
- n Patient characteristics (e.g., personality, literacy, and language barriers)
- n Complexity of clinical case, including multiple health conditions, polypharmacy, and high-risk medications 8 causes of medication errors
- Factors associated with the work environment.
- Workload and time pressures
- Distractions and interruptions (by both primary care staff and patients)
- Lack of standardized protocols and procedures
- Insufficient resources
- Issues with the physical work environment (e.g., lighting, temperature, and ventilation)
- Factors associated with medicines.
- Naming of medicines
- Labelling and packaging Factors associated with tasks.

- Repetitive systems for ordering, processing, and authorization
- Patient monitoring (dependent on practice, patient, other health care settings, prescriber)
- Factors associated with computerized information systems.
- Difficult processes for generating first prescriptions (e.g., drug pick lists, default dose regimens and missed alerts)
- Difficult processes for generating correct repeat prescriptions.
- Lack of accuracy of patient records
- Inadequate design that allows for human error Primary-secondary care interface
- Limited quality of communication with secondary care
- Little justification of secondary care recommendations

COUNSELING THE PATIENT:

Patient counseling is an important part of healthcare, especially in pharmacy and clinical settings. This includes healthcare professionals providing information and guidance to patients about these medicines. The goal of patient counseling is to ensure that patients understand how to take their medications correctly, including dosage, frequency, and special instructions. It also includes information about possible side effects, interactions, and what to do if you miss a dose or experience a side effect. Patient counseling promotes medication adherence and helps patients make informed treatment decisions.

Aim

The aim of the study was to investigate and understand the prevalence and incidence of lower gastrointestinal symptoms.

Objective of study

The objectives of this present study are

- To assess the rational use of drug using core drug indicators (prescribing indicators , patient care indicator ,and facility care indicator)
- To assess the incidence and prevalence of mild and severe lower GI symptoms in in-patient using standard questionnaires (bio med central gastroenterology)
- To analyze the medication error .

METHODOLOGY

STUDY DESIGN : This study is a cross sectional study.

SITE OF STUDY: The study has done at Sapthagiri Institute of Medical Science and Research Centre, Bangalore-90.

DURATION OF STUDY : The study was conducted for a period of six months.

INCLUSION CRITERIA :

Inpatients of both genders aged above 18 years with lower gastrointestinal symptoms admitted to various departments in a tertiary care hospital .

EXCLUSION CRITERIA :

- Patients with HIV infections.
- Patients who left the hospital in between the therapy.
- Patients admitted in the ICU.

- Unconscious patients.
- Pediatric patients.
- Pregnant and lactation mothers.

SOURCES OF DATA AND MATERIALS

- Patient case sheet .
- Nurses `s notes .
- Doctor`s notes.
- Dietician`s notes.
- Patient and patient`s attender interview.

METHOD OF COLLECTING DATA

- The details were collected from the Patient case sheet, Nurse's notes, Doctor's notes, Dietician's notes , Patient and patient's attender interview.
- The relevant patient demographics, comorbidity, laboratory and treatment details were collected.

STUDY PROCEDURE

- This is a cross sectional study. A cross sectional cohort study was conducted on the patients according to the inclusion criteria after obtaining the consent form.
- All the inpatients were reviewed daily for their progress. Details on patients demographics (age, gender , occupation , past medical history , co-morbidities, diagnosis), laboratory details (complete blood count , endoscopy , stool (PCR) test , ultrasound , pH-monitoring , barium swallow test, etc.) treatment details on therapy appropriateness (dose , duration , frequency) rational use of drug , drug interactions and adverse drug reaction were noted from the medical records.
- Prescribing pattern was assessed using core indicators (prescribing indicator, patient care indicator and facility care indicator). Patients was surveyed on the risk factors associated with gastrointestinal tract complications (lifestyle induced , drug induced , disease induced) and prevalence and incidence of the lower gastrointestinal tract symptoms was calculated using the formula.
- The prescription was assessed to calculate Prescribed Daily Dose and Defined Daily Dose.
- The data was analyzed using descriptive inferential statistics .

STATISTICAL ANALYSIS

The data was collected and entered in Microsoft excel software 2019 and interpreted by descriptive statistics that was presented to analyze and express the report as counts and percentages in the form of the tables, charts, and graphs.

RESULTS

PATIENT'S AGE WISE CATEGORIZATION

The patients were distributed according to age and was observed patients under the age group of 48-58 were on high risk of obtaining GI with the total of 119 patients having (19.8%) followed by patient at age of 38-48 with the total of 117 having percentage of 19.5% and least were on the age of 88-98 having percentage of 0.2% and 78-88 having the percentage of 2.5%

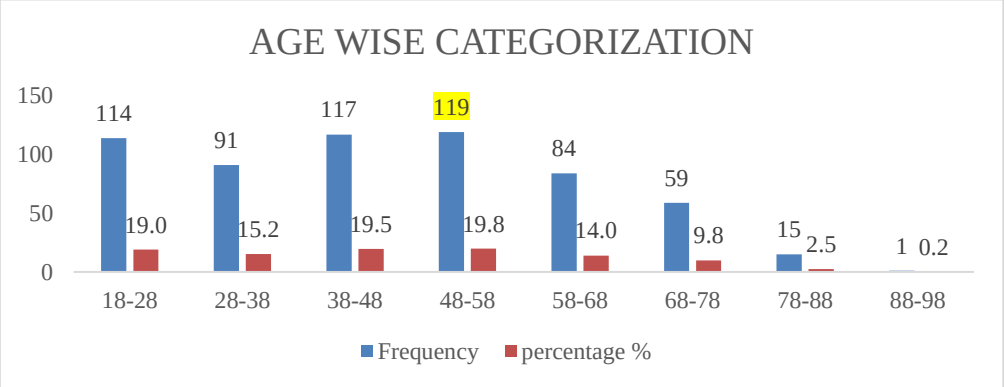


Figure 1. Patients Age Wise Categorization

GENDER DISTRIBUTION

Current study shows males 348 (58%) were more prone to GI abnormalities than females 252 (42%).

Table: 1. Gender Distribution.

PATIENTS GENDER	ENUMERATION	PERCENTAGE
MALE	348	58%
FEMALE	252	42%

PATIENT'S DIAGNOSIS

Various department patients were diagnosed with GI disorder out of which patient admitted to GI department were high.

TABLE: 2 Patient's Diagnosis

DEPARTMENT	No. OF PATIENTS	PERCENTAGE %
GASTROINTESTINAL TRACT SYSTEM	296	49.3
NEUROLOGY	44	7.3
CARDIOVASUCULAR SYSTEM	129	21.5
NEPHROLOGY AND UROLOGY	66	11.0
ORTHOLOGY	45	7.5
HAEMATOLOGY	20	3.3
	600	100.0

PATIENT WITH COMORBIDITIES

All 600 patients were assessed for the co morbidities at time of admission and was noticed patient with more than one co morbidities 276 patients (31.83%) have high risk of having GI complaints.

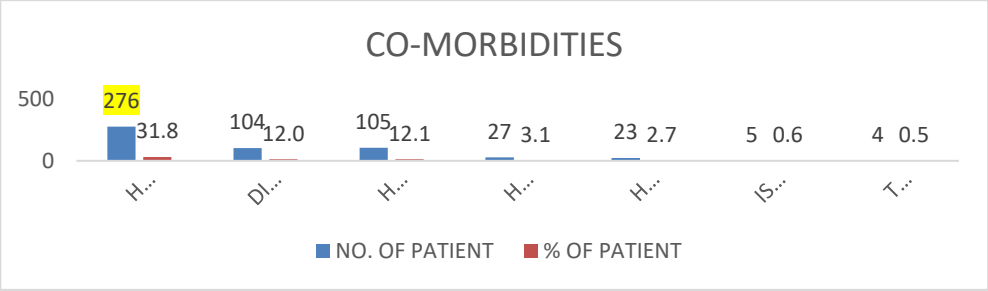


Figure 2: Patient's distributions with co-morbidities

PREVALENCE AND INCIDENCE OF LOWER GI SYMPTOMS

Patient who are admitted to the hospital with their prevalence and incidence was found to be 0.313 and 0.252 respectively.

Table: 3 Prevalence and Incidence of Lower GI Symptoms

PREVALENCE	INCIDENCE
0.313	0.252

LOWER GI SYMPTOMS

The data provided represents the frequency and percentage of lower gastrointestinal (GI) symptoms experienced by a sample population. Among the symptoms studied, abdominal pain was the most prevalent, reported by 27.17% of the individuals in the sample, followed closely by nausea, which was reported by 26.70% of the participants. Vomiting was the third most common symptom, with a frequency of 341 cases, accounting for 22.99% of the total. Diarrhea followed with a frequency of 261 cases, constituting 17.60% of the responses. Constipation was the least frequently reported symptom, with 82 cases, making up 5.53% of the total. In total, these symptoms collectively affected 1,483 individuals in the sample. This data provides valuable insights into the prevalence of lower GI symptoms within this population, with abdominal pain and nausea being the most reported issues.

Table: 4 Lower GI Symptoms

LOWER GI SYMPTOMS	FREQUENCY	PERCENT-AGE %
VOMITING	341	22.99
DIARRHOEA	261	17.60
ABDOMINAL PAIN	403	27.17
CONSTIPATION	82	5.53
NAUSEA	396	26.70
	1483	100.00

PRESCRIBING INDICATOR STATISTICS

The dataset of 600 cases, indicates an average prescription of 7.55 drugs, with 11.16% identified by generic names. Notably, antibiotics constitute 18.81% of prescriptions, while injections are prevalent at 43.71%. The data underscores a high adherence of 99.26% to the formulary list, revealing patterns and variations in drug prescribing practices.

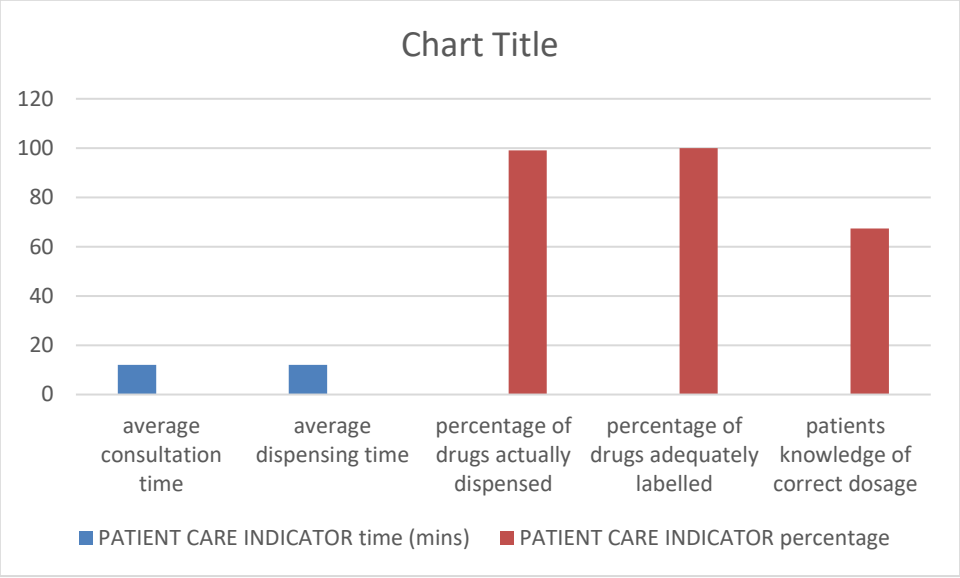
PRESCRIBING INDICATOR	
PARAMETER	PERCENTAGE (%)
average no of drug	7.55
%of generic drugs	11.16
% of antibiotics prescribed	18.81
% injection prescribed	43.71
% of drugs from formulary or essential drug list	99.26

Table: 5 Prescribing Indicator Statistics

PATIENTS CARE INDICATOR STATISTICS

The statistics, drawn from 600 cases, reveal an average consultation and dispensing time of 12 units each. Notably, 99% of drugs are dispensed and correctly labeled, while patient knowledge of correct dosage averages at 67.4%, with a standard deviation of 24.2%. This data provides insights into the efficiency of consultation and dispensing, drug dispensing accuracy, and variations in patient understanding of correct dosages.

FIGURE 3 Patients Care Indicator Statistics



FACILITY CARE INDICATOR STATISTICS

The statistics, based on a sample of 600 cases, indicate high availability of essential drugs (mean: 99.48%) and perfect availability of key drugs (mean: 100%). The low standard deviation for key drugs suggests

consistent and uniform availability, while a slightly higher deviation for essential drugs indicates some variability but still a high overall availability level.

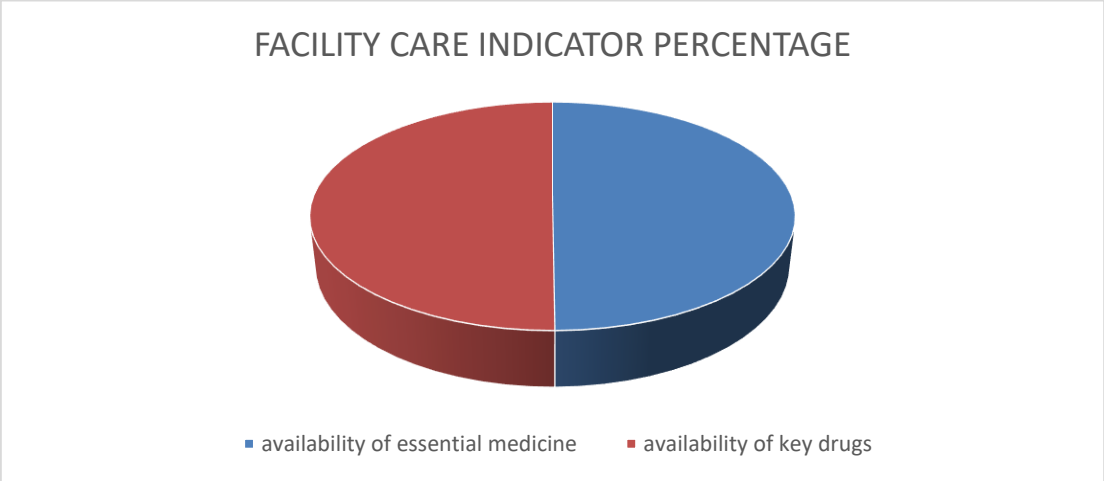


Figure 4 Facility Care Indicator Statistics

CLASS OF DRUG PRESCRIBED

The data categorizes different classes of drugs and provides the total quantities along with the highest used drug within each class. Among these drug classes, the highest used drug varies significantly. The class with the highest usage is PPI (Proton Pump Inhibitors) with a total of 553, and Pantoprazole is the most prescribed drug in this category. On the other hand, the class with the lowest usage is Amino Acids, with only 12 in total, and P-Ornithine and P-Aspartate being the highest used drugs within this category. These statistics reflect the diverse prescription patterns across various drug classes, with some classes having substantially higher usage than others.

Table: 6 Class of Drugs Prescribed

CLASS OF DRUGS	TOTAL	HIGHEST USED DRUG
ANTICOAGULANTS	21	ENOXAPARIN
H2 RECEPTOR	41	RANITIDINE
DIURETICS	68	FUROSEMIDE
AMINOACIDS	12	P-ORNITHINE, P-ASPARTATE
CNS DRUGS	55	ALPRAZOLAM
CORTICOSTEROIDS	28	HYDROCORTISONE
ANTI HISTAMINE	22	LEVO CETRIZINE
RESPIRATORY DEPRESSANT	81	BUDESONIDE
ANTI THYROID DRUGS	27	THYROXINE
ANTI HYPERTENSIVE DRUGS	155	CLINIDIPINE

ANTI HYPERLIPIDEMIC	42	ATORVASTATIN
ANTI DIABETIC	109	INSULIN
ANTIBIOTICS	489	CEFTRIAXONE
MULTI-VITAMIN	194	VIT C
PPI	553	PANTOPRAZOLE
ELECTROLYTES	59	POTASSIUM CHLORIDE
NSAID	377	PARACETAMOL
ANTI-CONVULSANT	29	PREGABALIN
STIMULANT LAXATIVE	118	MAGNESIUM HYDROXIDE

MEDICATION ERROR

The data records the count of various types of errors in medical events. Among these errors, there were 30 instances of administration errors, 2 instance of dispensing error (or "DISPENCING ERROR" as indicated), 3 instances of prescribing errors, 18 cases of T.DUPLICATION, and 12 instances of wrong medication. In total, there were 86 recorded errors across these categories.

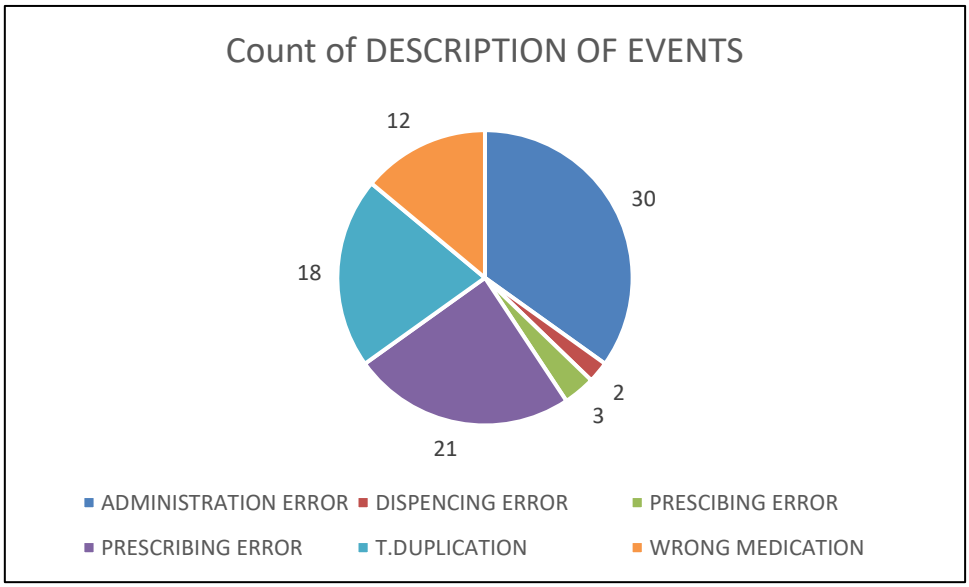


Figure 5 Count of Description of Events

COUNT OF POSSIBLE CAUSE

The data presents a count of possible causes for certain events. Among these causes, lack of knowledge was the most common, with 64 instances reported. Miscommunication was the second most prevalent cause, with 22 cases, followed by lack of experience and peak hour, each with 2 instances. In total, there were 90 possible causes recorded across these categories.

Table: 7 Count of Possible Cause

	Count of POSSIBLE CAUSE
LACK OF EXPEIENCE	2
LACK OF KNOWLEDGE	64
MISCOMMUNICATION	22
PEAK HOUR	2
Grand Total	90

COUNT OF OUTCOME OF EVENTS

The data provides a count of the outcomes resulting from events. Among these outcomes, there were 18 instances of errors with harm, and 73 instances of errors with no harm. In total, there were 91 recorded outcomes across these categories

Table: 8 Count of Outcome of Events

	COUNT OF OUTCOME OF EVENTS
ERROR, HARM	18
ERROR, NO HARM	73
GRAND TOTAL	91

COUNT OF INTERVENTION DONE

The data records the count of interventions carried out in response to certain situations. These interventions included changing drugs in 27 cases, adjusting frequency in 19 cases, modifying the dose in 4 cases, educating individuals in 29 cases, informing staff in 15 cases, and changing procedures in 2 cases. In total, there were 96 interventions documented across these categories, reflecting various actions taken in response to specific circumstances or needs.

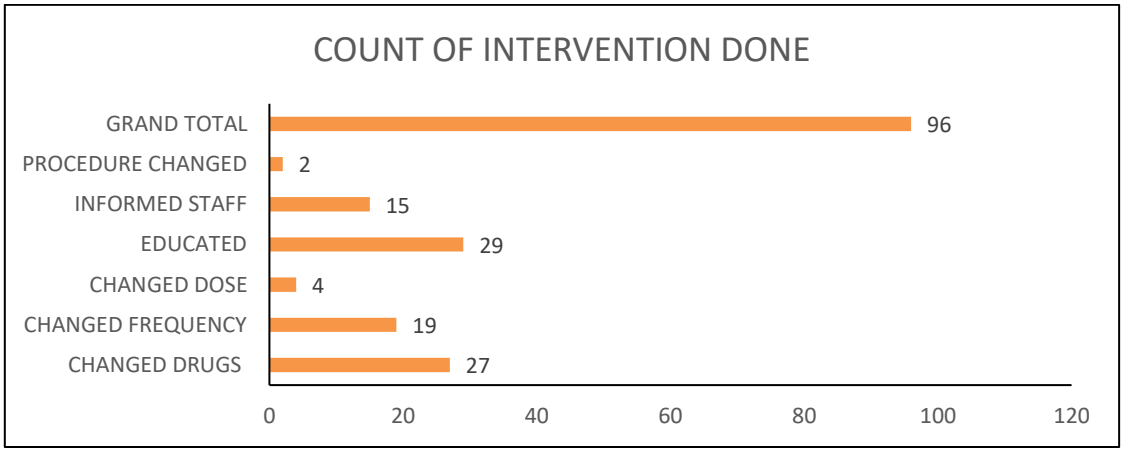


Fig: 6 Count of Intervention Done

DISCUSSION:

The incidence and prevalence of the lower gastrointestinal symptoms were evaluated .A total of 600 patient according to the inclusion criteria were studied. The data presented in the various tables and figures provides a comprehensive overview of different aspects related to patient demographics, healthcare practices, and medical events. This study examined the prevalence and incidence of lower gastrointestinal symptoms and it was found a larger burden of lower gastrointestinal symptoms in patients . However more time is required to evaluate common the etiologic factor of most of the lower gastrointestinal symptoms .

CONCLUSION:

In conclusion, the data provides valuable information for healthcare professionals and policymakers to better understand patient demographics, disease prevalence, medication usage, and the quality of care. It emphasizes the need for targeted interventions to improve medication safety and patient education .Overall, the data underscores the importance of continuous monitoring and improvement in healthcare practices to enhance patient outcomes and safety.

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