Ф А 2.2.1-32-367

MINISTRY OF HEALTH OF UKRAINE
NATIONAL UNIVERSITY OF PHARMACY
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QUALIFICATION WORK

on the topic: **« THE CLINICAL AND PHARMACEUTICAL ANALYSIS OF THE MARKET OF THE DRUGS FROM THE GROUP OF LAXATIVES IN MOROCCO »**

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Kharkiv – 2023 year

ANNOTATION

Questionnaires of 109 patients who bought laxatives in a pharmacy found out the circumstances of constipation treatment and their awareness of side effects, threating symptoms and more. Also, a survey of 27 pharmacists from nine pharmacies assessed the level of pharmaceutical care of patients with this pathology. 22% of cases of irrational use of medicines were detected, including 58.3% in the elderly. Reasonable choice of preparations based on awareness has been established in only 15.7% of patients. The main directions of improving the efficiency and quality of pharmaceutical care based on the opinions of pharmacists are identified. The work is presented on 59 pages of text, contains tables, figures and 51 sources of literature.

Key words: pharmaceutical care, constipation, chronic constipation, over-the-counter drugs, OTC-drugs

АНОТАЦІЯ

Анкетуванням 109 пацієнтів, що придбали для себе проносні препартати в аптеці з'ясовували обставини лікування закрепу та їх інформованість щодо побічної дії, тривожних симптомів захворювання тощо. Також анкетуванням 27 провізорів дев'яти аптек оцінювали рівень фармацевтичної опіки пацієнтів вказаної патології. Виявлено 22% випадків нераціонального застосування препаратів, в тому числі у 58,3% при похилому віці. Обґрунтований вибір ліків на базі інформованості встановлено лише у 15,7% пацієнтів. Встановлені основні напрями підвищення ефективності та якості фармацевтичної опіки на базі думок провізорів. Робота викладена на 59 сторінках тексту, містить таблиці, рисунки і 51 джерело літератури.

Ключові слова: фармацевтична опіка, закреп, хронічний запор, безрецептурні препарати, ОТС-препарати

CONTENTS

INTRODUCTION

Background. Chronic constipation is a persistent and widespread condition that affects many people globally, causing significant economic burden and healthcare utilization. It is characterized by infrequent bowel movements, excessive straining, feeling of incomplete evacuation, unsuccessful or prolonged attempts to defecate, hard stool consistency, and abdominal bloating. Primary constipation, also known as chronic idiopathic constipation, can be divided into functional defecation disorder, slow-transit constipation (STC), and constipation-predominant irritable bowel syndrome (IBS-C), although there may be some overlap between these classifications. The first step in treating primary constipation, irrespective of its cause, is typically to make diet and lifestyle changes such as promoting adequate fluid and fiber intake, regular exercise, and dietary modifications. Laxatives are commonly used as the mainstay of long-term pharmacological treatment for patients who do not respond to lifestyle changes or dietary modifications. If a trial of laxatives fails, diagnostic testing is required to determine the underlying pathophysiology of anorectal and/or colonic dysfunction, as no single test can fully assess primary constipation. Dyssynergic defecation, which affects two-thirds of adult patients, is a type of functional defecation disorder that involves the inability to coordinate abdominal, recto-anal, and pelvic floor muscles during attempted defecation. Biofeedback therapy is the primary treatment for dyssynergic defecation, aimed at improving muscle coordination, and sensory retraining may also benefit patients with rectal hyposensitivity. The pathophysiology of STC is evolving, and high-resolution colonic manometry has provided better identification of colonic motor patterns, offering further insight into underlying mechanisms. In some cases of STC, colonic neuropathy may be identified, indicating a medically refractory condition that may require colectomy. The pathophysiology of IBS-C is not well understood, although various factors are implicated. There have been pharmacological advancements in the treatment of primary constipation, including

secretagogues, serotonergic prokinetics, and ileal bile acid transporter inhibitors, providing current and future medical treatment options for chronic constipation.

The aim of the study. Study of clinical and pharmaceutical aspects of the use of laxatives without prescription for the symptomatic treatment of constipation and development of recommendations for improving the effectiveness and safety of their use; develop recommendations to increase quality level of pharmaceutical care.

Study objectives:

— analyze the literature sources on the current state of the problem of constipation and the direction of its treatment;

— determine the structure of laxatives, which are purchased at the pharmacy by patients of different ages;

— to study the awareness of patients of different age groups about medicines;

— identify cases of irrational use of laxatives by patients of different ages;

— to study the motives of patients of different age groups to acquire laxatives;

— assess the level of pharmaceutical care during the release of laxatives and identify areas for improving the effectiveness and safety of treatment of constipation.

Subject of the study. Pharmaceutical care when dispensing over-the-counter drugs for the symptomatic treatment of constipation.

Object of study. Constipation and symptomatic treatment with laxatives, quality level of pharmaceutical care in patients with constipation. Methods of study. Collection and analysis of information from pharmacy visitors using specially designed questionnaires based on the "Protocol of the pharmacist during dispensing over-the-counter drugs (part 1.21. Symptomatic treatment of constipation)", approved by the Order of the Ministry of Health of Ukraine № 284 from 16.05.2011. Also, a specially developed questionnaire based on the questionnaire of the Committee of Experts on Quality and Safety Standards for Pharmaceutical Practice and Pharmaceutical Care

(CDP-PH / PC), coordinated by the European Directorate for the Quality of Medicines and Health (EDQM) (Council of Europe) was used. Analysis, abstraction, generalization and statistical methods were used in the work.

Scientific novelty. A study of patients' choice of drugs for the symptomatic treatment of constipation allowed to determine the structure of PP, which will be purchased at the pharmacy by patients of different ages. It is established that patients prefer traditional drugs that have a long experience and a wide range of side effects. At the same time, modern ones, which have a high degree of safety and efficiency, were purchased by only 30% of pharmacy visitors and, of these, only 33% were elderly. The survey found that more than half of the respondents had little information about their disease, and more than three quarters did not know anything about the possible side effects of the drugs they used. This is especially true for elderly patients. It was found that laxatives were often used irrationally, and more than half of such respondents were elderly. It was found that the motives for choosing laxatives are not always justified, which is due to their lack of trust in the authority of doctors and pharmacists.

The practical significance of the obtained results. The research conducted in this work is the basis for further implementation of the principles of optimization of symptomatic treatment of constipation within the framework of pharmaceutical care. Our main directions of improving pharmaceutical care will help increase the effectiveness and safety of treatment with laxatives. Namely:

• orientation of patients to purchase modern laxatives with strong evidence base of efficiency and safety of mainly generic production;

• purposeful detection of cases of irrational use of laxatives;

• informing patients about the features of laxatives and possible side effects of their use.

The results of the study will deepen the theoretical knowledge of the pharmacist, structure and standardize practical professional skills while providing a patient with constipation pharmaceutical care at the appropriate quality level.

CHAPTER 1
MODERN CONCEPTION ON CONSTIPATION AND DIRECTIONS OF TREATMENT OF THIS CONDITION

1.1. General data on constipation, prevalence, etiology, pathogenesis.

Constipation is a common gastrointestinal disorder in Western countries, with a worldwide prevalence estimated at 12-19%. Its occurrence is more frequent in North America and Europe compared to Asia, possibly due to differences in culture, diet, or environment. Constipation is defined as a decrease in the number of defecations per week, accompanied by symptoms such as incomplete evacuation, bloating, straining, hard stools, and the need for digital disimpaction. The disorder can be categorized into primary constipation, which includes IBS-C, functional constipation, slow transit constipation, and functional defecation disorders, and secondary constipation, which may be caused by various medical conditions or medications. Constipation negatively impacts patients' quality of life and can lead to physical and psychological distress, including dyspareunia, sexual dysfunction, urine retention, decreased work productivity, and social limitations. The diagnosis and treatment of constipation also incur significant economic costs, with testing alone costing almost $7 billion annually. Therefore, it is crucial to update our knowledge of chronic constipation and improve its management [1, 2].

Chronic constipation is described as a frequent complication determined by using tough and/or rare passage of stool or both. The difference in definition of constipation has led to a huge range of mentioned occurrence (i.e., between 1% and 80%). Various factors are involved in the pathogenesis of the disease, along with type of diet, genetic predisposition, colonic motility, absorption, social economic status, day by day behaviors, and biological and pharmaceutical factors. Diagnostic and therapeutic selections play a key position in the cure of persistent constipation [2, 3].

The prognosis of continual constipation is primarily based on whether or not it is major or secondary, which is determined through the patient's scientific history, physical examination, and laboratory checks. Primary constipation is similarly divided into three classes according to the Rome IV criteria, which are based on anorectal tests: purposeful constipation (FC), constipation-predominant irritable bowel syndrome (IBS-C), and defecatory disorders (DDs). The American Gastroenterological Association classified constipation by way of evaluating the transit of the colon and the characteristic of the anorectal area, which resulted in three subtypes: everyday transit constipation (NTC), sluggish transit constipation (STC), and dysfunction of the pelvic flooring or DDs [3, 4].

The Rome III definition of constipation consists of the following criteria:

The signs must have been current for more than six months, and at least two of the following signs ought to have been present for the duration of the closing three months [5]:

— Hard or lumpy stools (in extra than 25% of bowel movements)
— Straining throughout bowel actions (in greater than 25% of bowel movements)
— Feeling of incomplete evacuation (in extra than 25% of bowel movements)
— Feeling of anorectal obstruction/blockage (in more than 25% of bowel movements)
— Manual maneuvers to facilitate bowel moves (in extra than 25% of bowel movements)
— Fewer than three bowel actions per week
— Infrequent free stools except the use of laxatives
— Absence of diagnostic standards for irritable bowel syndrome
— Evaluation of the severity of constipation:
— Resistance to laxative treatment

— Less than one bowel movement per week

— Disability of standard of living.

Constipated patients experience infrequent bowel movements, typically fewer than three per week, and commonly present with symptoms such as straining during bowel movements, the feeling of incomplete evacuation, the need for manual assistance to pass stool, bloating, and hard or lumpy stools. To be diagnosed with functional constipation (FC) based on the Rome IV criteria, at least two of the symptoms listed should be present and affect more than 25% of bowel movements for a minimum of six months, with active symptoms in the last three months. On the other hand, irritable bowel syndrome with constipation (IBS-C) is characterized by abdominal pain associated with two out of three features, including altered stool form, altered stool frequency, or relief of abdominal pain with defecation [6,7,8].

The Bristol Stool Scale (fig. 1.1) is a visual scale designed to assist in the evaluation of patients with constipation. Using simple images, it illustrates the most common shape and consistency of stools on a 7-point scale. It has been validated in several studies and was developed to be easily understood by patients, allowing them to recognize and classify their stool type [8].

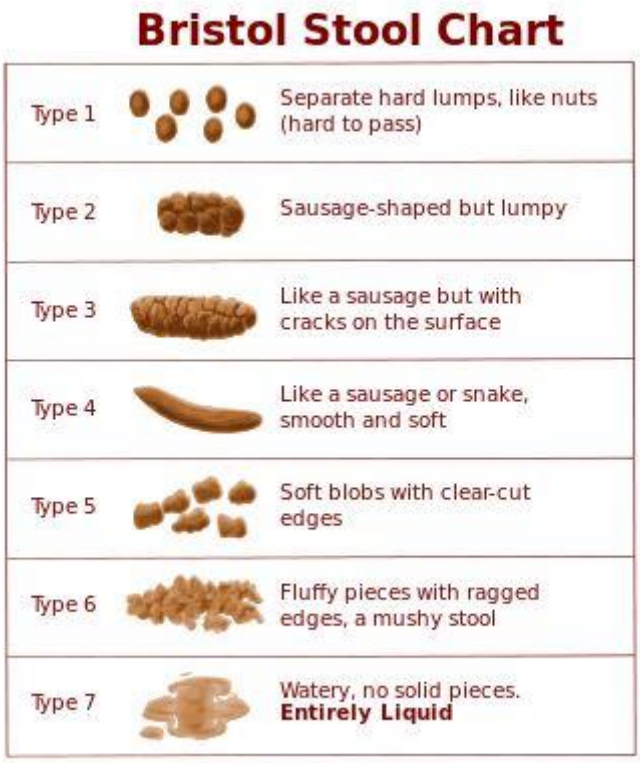

Fig. 1.1. Bristol stool scale

3-Functional constipation is generally described as a condition characterized by persistent difficulty with defecation or a sensation of incomplete evacuation and/or infrequent bowel movements (once every 3-4 days or less) in the absence of alarm symptoms or a secondary origin [7,9]. Differences in medical definition and variations in described symptoms make it problematic to establish reliable epidemiological data.

4-Constipation scales used in therapeutic trials around the world [8]

Bowel Function Index (BFI) [9 ,10]

This is a validated scale used in the evaluation of opioid-induced constipation in chronic cancer and non-cancer pain patients [11]. It is based on three simple parameters:

- Straining
- Sense of incomplete evacuation
- Perception of constipation symptoms

Each item is evaluated on a scale from 0 to 100, allowing for a total score ranging from 0 to 100 [8, 9].

The Constipation Assessment Scale (CAS) is a scale consisting of 8 items used to evaluate the existence and severity of constipation in cancer patients taking opioids or pregnant women. The items used include bloating, decreased intestinal gas, decreased number of bowel movements, leaking stools, feeling of rectal fullness, rectal pain during defecation, low volume of fecal matter or inability to defecate. Each item is scored from 0 to 2 (0: no problem, 1: some difficulty, 2: very difficult). A total score ranging from 0 (no constipation) to 16 (severe constipation) is calculated. The questionnaire is retrospective and asks about the stools of the previous week. No cut-off has been defined [10-12].

The different definitions of constipation and the variation in described symptoms make it difficult to establish reliable epidemiological data [7,13]. Some studies estimate the prevalence of constipation in the general population between 2 and 28% [14]. On average, it can be estimated between 10 and 20% in Europe. In North America, about 63 million people are affected by constipation according to the Rome II criteria. Constipation is a very common condition and, even if only a minority of patients seek medical care, it represents several million doctor's consultations each year in the United States, while in the United Kingdom, more than 13 million prescriptions for laxatives were issued by primary care physicians in 2006 [11,14,15].

In a population study in Sweden, it was shown that the need to take a laxative represented the most common understanding of constipation (57% of respondents). In the same study, women, twice as much as men (41% vs. 21%), considered infrequent bowel movements to be characteristic of constipation. However, an equal proportion of women and men estimated that hard stools (43%), straining during bowel movements (24%), or painful defecation (23%) represented constipation. Based on different criteria - diagnostic definition, demographic factors, and sampling - studies on constipation show a prevalence ranging from 1% to >20% in the Western world. In

studies focusing on elderly populations. The prevalence of constipation is a significant issue, particularly among the elderly population. Studies have shown that up to 20% of older adults living at home and 50% of those living in institutional settings report symptoms of constipation. However, these figures must be considered in the context of the prevalence of constipation in the general population, which is estimated to be 16% among adults and 33.5% among individuals over 60 years of age [15,16]. 20% of people living at home and 50% of those in institutional care may be affected by constipation [11, 12, 13].

RISK FACTORS

Several risk factors for constipation have been identified. A lower socioeconomic status with a lack of education, particularly parental education, is associated with constipation, as well as female gender, sub-Saharan African ethnicity, and advanced age. Other factors, less frequently reported, also seem to influence the occurrence of constipation: less physical activity, use of certain medications, depression, physical and sexual abuse, and stress. The high prevalence of constipation in institutionalized patients is only partly related to the side effects of certain medications. Constipation has also been associated with low fiber intake in some countries and low calorie intake [15, 17, 18]. However, these associations do not necessarily indicate causality, so targeting these risk factors does not necessarily have a positive impact on bowel movements.

The prevalence of constipation increases with age with a peak after 70 years old. It seems that after 60 years old, the prevalence of constipation rises. An increase in prevalence among women between 18-23 years old and 45-50 years old is also noted. Institutionalized subjects are also a population at risk of constipation [19-21].

Most studies report a predominance of constipation in women with an average gender ratio of 2.1 women to men. Women are much more consumers of care and laxatives than men [20].

In terms of geographical distribution, a very high prevalence of constipation has been reported in Finland (average of 79%), South Africa (29%), and South America (26.8-28%). Oceania and Europe follow with an average constipation prevalence of 19%, North America (16%), and Asia (10%) [23, 24]. The lowest prevalence is reported in Italy (0.7%). However, given the different definitions of constipation used from one study to another, no statistical comparison is possible between different countries and continents. In China, the prevalence of constipation is lower compared to other countries, but with similar risk factors [18, 20].

The influence of ethnicity on constipation is not clear. Numerous studies report an increase in the prevalence of constipation among non-Caucasians, particularly black subjects [25].

Classification of constipation:

a. Occasional constipation [22].

Occasional constipation is a separate entity. The patient complains of constipation that has appeared quite suddenly in particular circumstances such as the last few months of pregnancy, bed rest, or travel.

b. Secondary constipation.

Among other causes of constipation, secondary constipation, which is due to an organic cause (symptomatic constipation), is opposed to idiopathic constipation (disease constipation).

The search for an organic cause, especially colonic stenosis, is necessary for any recent or recently aggravated constipation that produce bicarbonate for acid neutralization.

More detailed list of organic constipation causes is shown in Table 1.1 [23].

Table 1.1

Main causes of chronic secondary constipation

Metabolic abnormalities	***Diseases of the nervous system***
Diabetes	Parkinson's disease
Hypothyroidism	Medullar tumor
Hypercalcemia	Spinal cord injury
Hypomagnesemia	Peripheral neuropathy (diabetes, alcohol
Hyperuricemia	Stroke
Chronic renal failure	Multiple sclerosis
Pseudo-hypoparathyroidism	Pelvic Perineal Trauma
Pan hypopituitarism	Shy-Drager syndrome
Pheochromocytoma	hypo/hyperganglionosis
Glucagonoma	Chagas disease
Porphyria	Pseudo chronic intestinal obstruction
Mechanical obstruction	***Other***
Colorectal cancer	Colorectal cancer
Extrinsic compression	Extrinsic compression
Digestive stenosis	Digestive stenosis
Anal fissure or stenosis	Anal fissure or stenosis
Rectocele	Rectocele
Intussusception	Intussusception

A drug-induced or toxic cause should be systematically sought in patients complaining of recent constipation (table 1.2). In drug addicts, particularly those addicted to morphine, constipation is almost constant [24].

Table 1.2

Main pharmacological agents with constipating properties

Analgesics (opiates)	Anticonvulsants (carbamazepine)
Anticholinergics (oxybutirine)	Antihistamines
Antidepressants	Antispasmodics
Antipsychotics	Antineoplastic chemotherapy (vincristine)
Antihypertensives (verapamil)	Diuretics (furosemide)
Antidiarrheals (loperamide)	Resins (cholestyramine)
Antiparkinsonians	Calcitonic agents (aluminum, bismuth, calcium, iron, toxic: mercury, arsenic

The main causes of constipation are colonic sensorimotor disturbances and pelvic floor dysfunction, but other factors such as reduced caloric intake, anatomical issues, disturbances of the microbiome, or medications can also contribute. Isolated slow-transit constipation is used to indicate colonic motor dysfunction and manometry can reveal colonic motor disturbances, such as reduced propagated and nonpropagated activity, and reduced phasic contractile responses to a meal and/or to bisacodyl or neostigmine in patients with STC. Patients with STC may also have reduced fasting tone and tonic contractile responses to a meal and/or neostigmine, and colonic inertia, which represents profound motor dysfunction and is defined by reduced or absent contractile response to a meal and to pharmacologic stimuli such as bisacodyl or neostigmine, can only be identified by manometry or a barostat (fig. 1.2) [23-27].

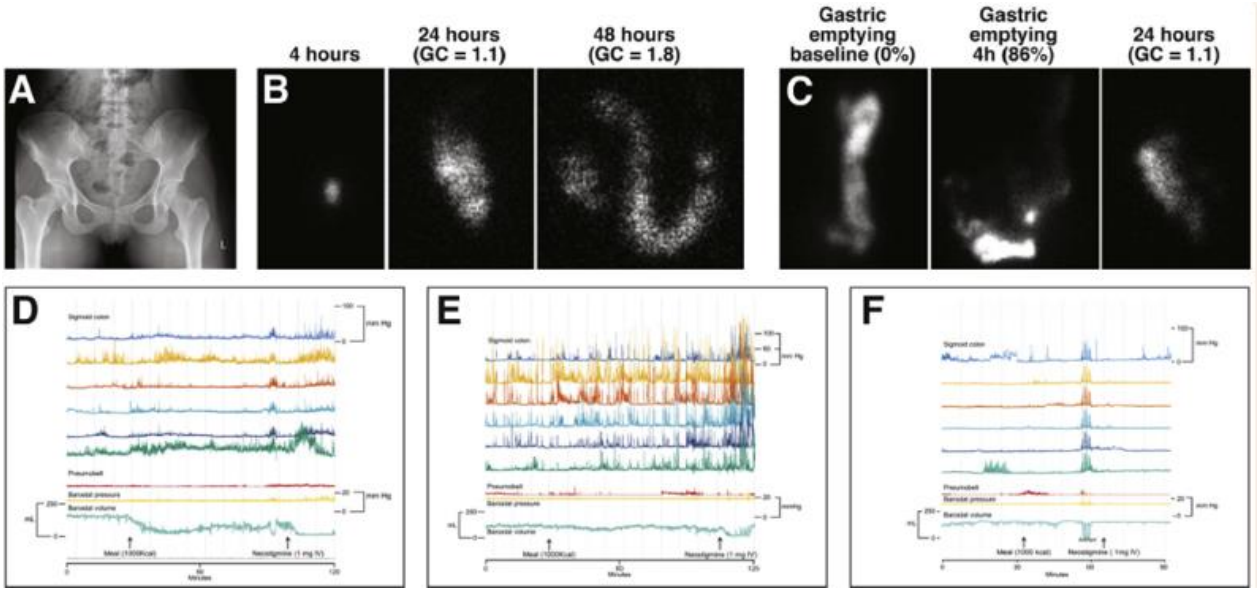

Fig. 1.2. Several examples of colonic motor dysfunctions in patients with constipation

The pronounced reduction in sigmoid colonic balloon volume indicates a normal tonic response to a meal (D) in a patient with excess colonic stool burden (A). Anorectal tests (not shown) identified a DD. During scintigraphy, colonic transit is usually measured using an isotope coated with a pH-sensitive methacrylate that dissolves in the terminal ileum. In (B), the isotope is in an intact capsule (left) observed in the ascending colon at 24 hours (center panel) and then in the transverse colon at 48 hours (right panel). The geometric center (GC), which is the weighted distribution of the isotope throughout the colon, indicates slow colon transit; normal values are 1.4–3.6 at 24 hours and 2.1–4.9 at 48 hours. In this patient, the colonic manometry (E) depicts considerable phasic pressure activity during the fasting period, increased phasic activity after a meal, and more so after intravenous neostigmine. However, the tonic contractile response to the meal was reduced. (C) shows a patient with delayed colonic transit with normal gastric emptying. In this patient, the colonic manometry (F) reveals sparse phasic pressure activity and tonic or phasic contractile responses to a meal [25,26].

This passage describes special patterns of colonic motor dysfunctions in sufferers with constipation. A patient with excess colonic stool burden and delayed defecation (DD) indicates a ordinary tonic response to a meal, as evidenced by a suggested reduction in sigmoid colonic balloon volume. Scintigraphy is used to measure colonic transit and gradual colon transit is indicated by a low geometric core (GC) value, which is the weighted distribution of the isotope at some stage in the colon. Another affected person with delayed colonic transit however regular gastric emptying indicates sparse phasic pressure exercise and a reduced tonic or phasic contractile response to a meal, as considered on colonic manometry. Finally, a 0.33 patient famous large phasic strain pastime at some stage in the fasting period and expanded phasic recreation after a meal or intravenous neostigmine, but a decreased tonic contractile response to the meal [19].

Regrettably, NTC and STC are no longer absolutely dependable indications of everyday and bizarre colonic motor function, respectively. In fact, reduced fasting and/or postprandial colonic tone and/or compliance were observed in 40% of NTC patients, 47% of STC patients, 53% of sufferers with DD and ordinary transit, and 42% of patients with DD and slow transit [23]. Additionally, 43% of STC sufferers had ordinary fasting colonic motility and motor responses to a meal and bisacodyl.25 Patients with NTC can also experience signs of FC or IBS-C, and 23% of FC or IBS-C patients had delayed colonic transit.26,27 Some patients exhibit improved understanding of fast distention and reduced grasp of gradual distention [28]. Increased rectal sensitivity is associated with stomach pain and bloating, which are indicative of IBS [29–31].

Germ-free mice colonized with fecal microbiomes from constipated patients developed sluggish colonic transit. Slow colonic transit is inversely correlated with colonic serotonin content, related with reduced relative abundance of Firmicutes and multiplied Bacteroidetes, and associated with altered fecal content material of short-chain fatty acids and bile acids. In humans, CC is associated with ameliorations in colonic mucosal microbiota, in particular the extra abundant phylum Bacteroidetes,

ensuing from a increased abundance of Flavobacterium. The colonic mucosal microbiome, adjusted for colonic transit, precisely exceptional sufferers with constipation from controls with accuracy, even after adjusting for diet and colonic transit. In contrast, fecal microbiomes have been associated with colonic transit and multiplied methane in breath samples, but not with constipation [30, 32].

DDs, which are also known as functional outlet obstruction, pelvic flooring dysfunction, or anorectal dyssynergia, are the end result of an make bigger in resistance to evacuation or decreased rectal propulsive forces. This can occur due to high anal resting pressure, paradoxical contraction, or incomplete rest of the external anal sphincters, which is not related with any precise medical patterns or the response to pelvic flooring retraining. The main cause of DDs is maladaptive pelvic ground contraction all through defecation, whilst different abnormalities like decreased rectal sensation and structural deformities can also exist and be primary or secondary to constipation. Retained stool can obstruct the passage of contents or evoke rectocolonic inhibitory reflexes. Excessive straining can weaken the pelvic floor, leading to an increased risk of other conditions such as rectal intussusception, pudendal neuropathy, and fecal incontinence [24, 25].

It remains uncertain how an awful lot dyssynergia contributes to impaired evacuation as dyssynergia has been suggested in both asymptomatic people and patients experiencing rectal pain. A possible reason for this is that it is hard to simulate defecation in a laboratory setting. When structural abnormalities such as massive rectoceles overlap with dyssynergia, it can be challenging to decide the actual purpose of symptoms. Delayed colonic transit is one of the facets that occur as a end result of DD, however it improves following biofeedback therapy. Factors such as stool structure additionally affect the improvement of signs in patients with DD. The actual pathogenesis of DD remains unclear, however it is thought to result from maladaptive sphincter contraction learning, doubtlessly initiated with the aid of ache avoidance or

trauma. Up to a third of adolescents with constipation continue to have severe signs and symptoms past puberty, and obstetric trauma has not been linked to DD [33].

In medical evaluations, questionnaires are useful for shortly and effectively assessing constipation signs and symptoms. However, a two-week bowel diary presents a greater sophisticated evaluation of every day editions and the relationship between stool form and other symptoms. Analyzing bowel diaries recorded by sufferers when they are off laxatives can help decide the contribution of laxatives to symptoms, such as bloating. Collecting data on prior bowel habits, changes in bowel habits, and patients' perceptions of normality is additionally critical as perceptions, influenced with the aid of societal and cultural norms, can have an effect on symptom reporting. Some patients document constipation because they do not ignore an each day bowel movement, whereas others may additionally have slight and/or intermittent signs for longer than firstly acknowledged. Withholding due to aversion to public toilets, constipation after current surgery, remedy changes, or coexisting urinary signs are also no longer uncommon. Addressing the most bothersome symptoms of constipation can enhance patients' fine of life [26-28].

Patients who have not replied to a high-fiber diet and simple laxatives might also require anorectal testing, such as manometry and BET. However, get entry to to these assessments isn't always universal, so some medical doctors prescribe laxatives before testing. Nevertheless, much less than a quarter of sufferers with IBS-C are very cozy with prescription laxatives, indicating the significance of anorectal testing. To minimize embarrassment and false-positive results, privateness ought to be maintained at some point of testing. While no criterion popular test exists for diagnosing DD, results of anorectal HRM, BET, and MR imaging are substantially correlated with each other. The Rome IV criteria propose that DD be recognized through ordinary findings from two out of 4 tests, including manometry, rectal BET, surface electromyography, or barium or MR defecography. Rectal BET is the most useful check considering diagnostic utility, usability, availability, risk, and expense [36-38].

The Balloon Expulsion Test (BET) is a straightforward technique generally carried out alongside anorectal manometry to determine the time taken to expel a 50-mL balloon filled with heat tap water whilst in a seated position. The general values differ based on the kind of rectal balloon employed for the test. Typically, most clinics employ either a party or business balloon, and the upper restrict of everyday is round 1 minute. When a Foley catheter is utilized with 50 mL of inflation, which is above the manufacturer's counseled restriction of 30 mL, the higher restrict of ordinary is 2 minutes. However, even with the 2-minute threshold, roughly 25% of healthy individuals may also be misclassified as strange due to taking longer than 2 minutes [33, 36, 37].

In a study of 106 patients with FC and 24 sufferers with DD, the BET had an 88% sensitivity and 89% specificity in identifying those with DD, which used to be tested with defecography; the superb and terrible predictive values had been 64% and 97% for DD diagnosis, respectively. However, this uncontrolled learn about excluded sufferers with secondary constipation caused via medication. The rectal balloon was not inflated to a constant quantity however as an alternative until patients felt the urge to defecate, averaging 183 mL, which might compensate for diminished rectal sensation in some patients with DD [20, 27, 30].

Anorectal manometry can be carried out the use of exclusive kinds of catheters, which include water-perfused, air-charged, or solid-state sensors, high-resolution manometry (HRM), and high-definition anorectal manometry. The latter two preferences have sensors that are nearer together and cover the entire anal canal, supplying higher spatial resolution besides requiring a pull-through maneuver. While traditional and HRM catheters grant comparable precision in measuring anal pressures, the pressures measured with the aid of HRM or high-definition anorectal manometry are generally higher [29,30]. Normal values for anorectal pressures fluctuate primarily based on the approach used, and comparisons be made inside the equal technique. Patients with DD commonly show off lower rectoanal strain gradients in the course of

evacuation in contrast to wholesome individuals, and this sample can grant insights into the reasons of DD. However, the negative rectoanal gradient measured by HRM in asymptomatic humans limits its usefulness for diagnosing DD. Anorectal manometry is most positive when carried out in a seated position, and DD can be identified via a greater anal resting pressure and/or reduced voluntary augmentation for the duration of pelvic ground contraction [26, 30].

The BET is a simple procedure generally performed in conjunction with anorectal manometry to evaluate the time required to evacuate a 50-mL water-filled balloon (warm faucet water) in the seated position. The ordinary values rely on the kind of rectal balloon used for the test.76–78 Most facilities use a birthday party or industrial balloon, for which the top restriction of regular is 1 minute. For a Foley catheter inflated to 50 mL, which is above the manufacturer-recommended limit of 30 mL, the upper restrict of normal is 2 minutes.76 Even with the 2-minute cutoff, 25% of wholesome people would be misclassified as ordinary due to the fact they require more than 2 minutes [36].

The Balloon Expulsion Test (BET) is a simple method commonly performed alongside anorectal manometry to verify the time taken to expel a 50-mL balloon crammed with warm faucet water while in a seated position. The preferred values vary based on the type of rectal balloon employed for the test. Typically, most clinics hire either a party or commercial balloon, and the upper restriction of everyday is round 1 minute. When a Foley catheter is utilized with 50 mL of inflation, which is above the manufacturer's suggested restriction of 30 mL, the higher restriction of everyday is 2 minutes. However, even with the 2-minute threshold, roughly 25% of healthy humans may be misclassified as bizarre due to taking longer than 2 minutes [35-38].

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excluded patients with secondary constipation triggered through medication. The rectal balloon was once now not inflated to a constant extent however instead till sufferers felt the urge to defecate, averaging 183 mL, which might compensate for diminished rectal sensation in some patients with DD [39,40].

Among 106 patients with FC and 24 patients with DD, the BET recognized these with DD, documented with defecography, with 88% sensitivity and 89% specificity; wonderful and terrible predictive values had been 64% and 97% for prognosis of DD, respectively. However, this uncontrolled study excluded patients with secondary (such as medication-induced) CC. The rectal balloon used to be inflated now not to a fixed volume however till patients experienced the wish to defecate, averaging 183 mL, which can also compensate for reduced rectal sensation identified in some sufferers with DD [37-40].

The Balloon Expulsion Test (BET) is a straightforward approach usually carried out alongside anorectal manometry to examine the time taken to expel a 50-mL balloon filled with heat faucet water whilst in a seated position. The well-known values vary based on the kind of rectal balloon employed for the test. Typically, most clinics hire both a party or business balloon, and the upper limit of normal is round 1 minute. When a Foley catheter is utilized with 50 mL of inflation, which is above the manufacturer's recommended limit of 30 mL, the upper restrict of regular is two minutes. However, even with the 2-minute threshold, roughly 25% of healthful people may additionally be misclassified as extraordinary due to taking longer than two minutes [39].

In a find out about of 106 patients with FC and 24 patients with DD, the BET had an 88% sensitivity and 89% specificity in identifying those with DD, which used to be confirmed with defecography; the superb and terrible predictive values had been 64% and 97% for DD diagnosis, respectively. However, this uncontrolled learn about excluded patients with secondary constipation induced by using medication. The rectal balloon was not inflated to a fixed quantity but as an alternative until sufferers felt the

urge to defecate, averaging 183 mL, which may compensate for diminished rectal sensation in some sufferers with DD [35, 37-39].

Conventional catheters that comprise water-perfused, air-charged, or solid-state sensors, HRM, or high-definition manometry can be used. HRM and high-definition anorectal manometry catheters have more intently spaced sensors that straddle the entire anal canal. They supply better spatial resolution, and permit pressures to be assessed besides a pull-through maneuver. Although conventional and HRM catheters measure anal pressures with same tiers of precision, pressures are a great deal greater with HRM or high-definition anorectal manometry than traditional catheters.84 Anorectal pressures differ amongst techniques, so they should be compared with normal values measured via the same technique. Compared with wholesome individuals, patients with DD have lower rectoanal pressure gradients (rectal–anal pressure) during evacuation [37-39]. The rectoanal stress sample can additionally point out motives of DD, such as diminished propulsive force, paradoxical contraction, or both [27]. However, the rectoanal gradient measured by means of HRM is poor in many asymptomatic people, which limits the utility of this parameter for making a diagnosis of DD [39]. Anorectal manometry is quality performed in a seated rather than a left lateral, recumbent position [41]. Other facets of DD consist of a greater anal resting stress (anismus) and/or reduced voluntary augmentation all via pelvic floor contraction [42].

Anorectal manometry can be performed using special sorts of catheters, inclusive of water-perfused, air-charged, or solid-state sensors, high-resolution manometry (HRM), and high-definition anorectal manometry. The latter two picks have sensors that are nearer collectively and cover the complete anal canal, imparting better spatial decision barring requiring a pull-through maneuver. While traditional and HRM catheters grant comparable precision in measuring anal pressures, the pressures measured by means of HRM or high-definition anorectal manometry are usually higher.practitioners choose defecography to the BET [41].

Others use defecography as a backup method, when the one-of-a-kind anorectal exams produce results that are inconsistent with clinical findings, to perceive anatomic abnormalities, or for sufferers with persistent symptoms after biofeedback therapy [39-41]. Abnormalities include insufficient (such as a spastic disorder) or excessive (such as in descending perineum syndrome) widening of the anorectal attitude and/or perineal descent at some point of defecation. Internal intussusception, solitary rectal ulcers, rectoceles, and rectal prolapse are additionally observed. Enteroceles, bladder, and uterovaginal prolapse can be visualized when the vagina and small gut are opacified [43].

The methods used for barium defecography are not completely standardized and some radiologists do not show much interest in the test. Even people without symptoms of defecation disorders can still have some aspects of the condition. However, the use of standardized techniques can help overcome the methodological challenges associated with barium defecography, such as the limited reproducibility of anorectal perspective measurements [40,43]. On the other hand, MR defecography is performed in the supine position and does not expose patients to radiation. It is better at visualizing pelvic organ prolapse and bony landmarks, which are important in measuring pelvic floor motion. MR defecography is particularly helpful for patients who have defecation disorders with a normal BET, which includes over 90% of patients with a large rectocele, enterocele, peritoneocele, and/or peritoneocele [44].

Electrodes placed on an acrylic anal plug or perianal skin record average anal electromyographic activity, which is used to detect dyssynergia and provide biofeedback training for defecation disorders. A reduction of at least 20% in anal electromyographic activity during evacuation is considered normal, whereas impaired reduction indicates abnormality and is linked to rectoanal dyssynergia. Defecography is preferred by some healthcare providers over the BET test and used as a secondary method to detect anatomic abnormalities or for patients with ongoing symptoms after biofeedback therapy. It can uncover various abnormalities such as inadequate or

excessive widening of the anorectal angle, perineal descent, internal intussusception, solitary rectal ulcers, rectoceles, and rectal prolapse. If the vagina and small intestine are visible, it can also reveal bladder, uterovaginal prolapse, and enteroceles. However, there is a lack of standardization in the techniques for barium defecography, and some radiologists are not interested in the procedure. Even asymptomatic individuals may display features of defecation disorders. The use of standardized techniques can minimize the limitations of barium defecography, whereas MR defecography is performed in the supine position, provides better visualization of pelvic organ prolapse and bony landmarks without radiation exposure. It is particularly helpful for patients with normal BET results but believed to have defecation disorders. Additionally, average anal electromyographic activity is recorded and used to identify dyssynergia and provide biofeedback training for defecation disorders [33-35].

Colon Transit and Intraluminal Measurements of Motor Activity

Up to 50% of patients with DD exhibit slow colon transit, therefore, anorectal testing should be performed prior to colonic transit assessment according to the algorithm (fig. 1.3). Pelvic biofeedback is a common treatment for DD, regardless of colonic transit, so colonic transit evaluation should only be conducted when necessary after anorectal testing. This evaluation can be done using radiopaque markers, colon scintigraphy, colonic manometry, or wireless motility capsules, and only after discontinuing medications that can affect colonic transit. While stool form is modestly linked to colonic transit, stool frequency is not. Radiopaque marker studies, such as Sitz-Mark from Konsyl Pharmaceuticals in Fort Worth, TX, are convenient, easily accessible, low-cost, and entail minimal radiation exposure [45-47].

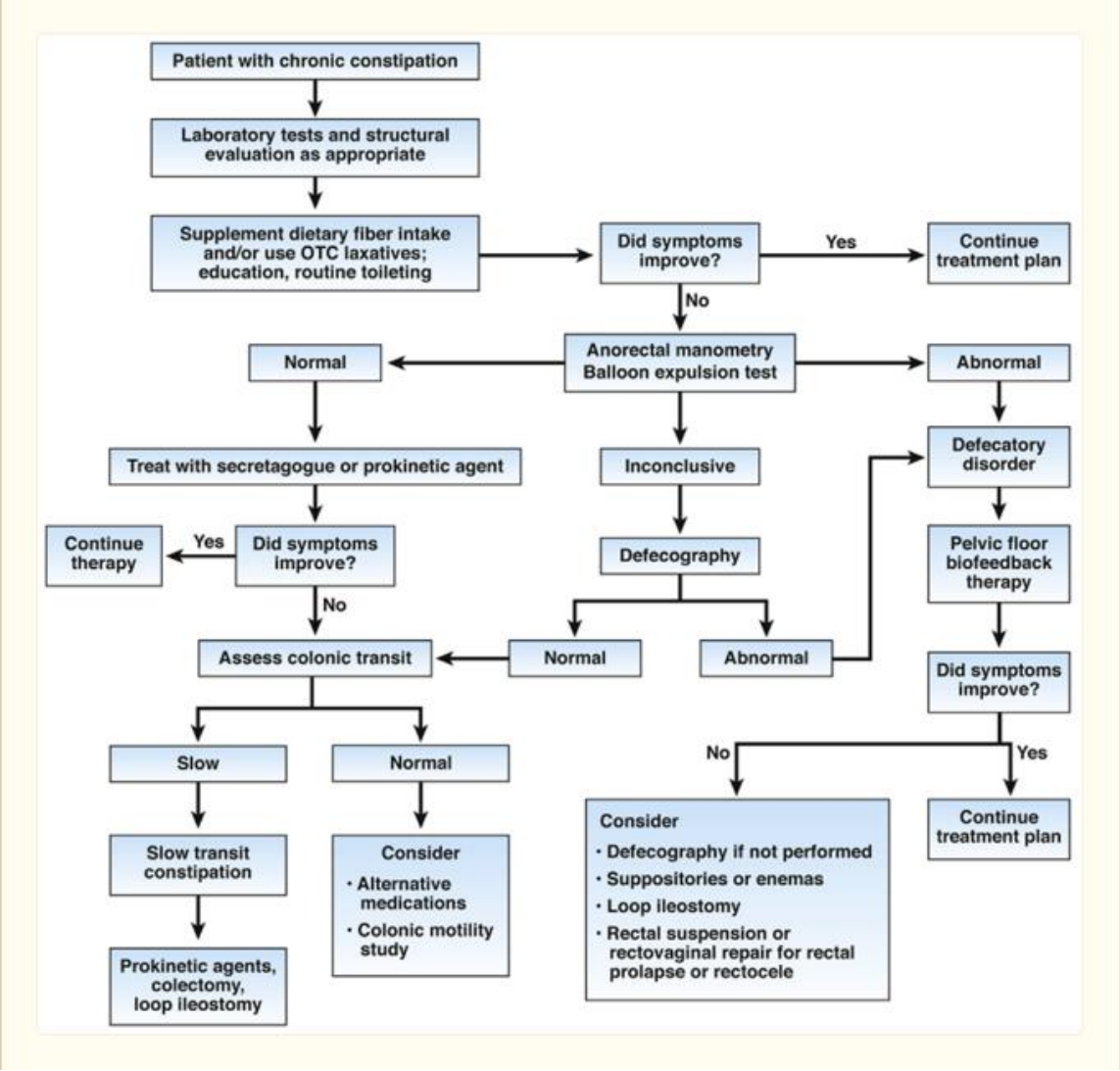

Fig. 1.3. Treatment algorithm for CC

One of the easiest methods for evaluating colonic transit involves taking an abdominal x-ray image 120 hours after ingesting 20 or 24 markers. If more than 80% of the markers have passed, then colonic transit is considered normal, although the exact transit time is not determined. Using the Metcalf technique, a plain x-ray image is obtained on the fourth day after ingesting 24 markers over three days, and the maximum detectable colonic transit time is 72 hours. The total colonic transit time can be calculated based on the number of markers, and a time less than 62 hours is considered

normal (according to Michel Bouchoucha). The number of markers in each section (right, left, and rectosigmoid colon) provides the segmental transit time. In patients with slow colonic transit, the exact transit time can be more accurately determined from a single x-ray image taken on the seventh day after ingesting 12 markers on days 1-6, with a maximum detectable colonic transit time of 144 hours [18, 21, 25-28].

Evaluating colonic transit is a reliable method for patients with simple constipation but may not be as accurate for those with DD or STC. Therefore, colonic transit should be rechecked before surgery to confirm STC diagnosis. In contrast to previous research, a recent study showed that the distribution of markers in the rectosigmoid colon is not linked to DD. However, patients with a rectal evacuation disorder have greater rectal gas volume, as measured by computed tomography [25,28,30, 32].

Alternative approaches like radionuclide gamma scintigraphy or a wireless pH-pressure capsule can be used to measure gastric emptying and small intestinal transit. However, these methods are more costly and not widely used. Scintigraphy requires 24-48 hours of monitoring, compared to 5-7 days for radiopaque marker tests. Nonetheless, colonic transit measured using radiopaque markers correlates well with scintigraphy and the wireless motility-pH capsule. The capsule can also measure colonic motor activity. Bowel cleansing is unnecessary as it does not affect the characterization of patients with normal or slow colon transit [15,25,33].

While all three techniques for measuring colonic transit are equally accurate, only radio-opaque markers and scintigraphy are able to assess regional colonic transit. Among these techniques, the radio-opaque marker method is the simplest, least expensive, and therefore the most suitable for measuring colonic transit. However, scintigraphy or the motility pH capsule should be used when it is necessary to measure gastric emptying and/or small intestinal transit. Scintigraphy is preferred when patients can only discontinue medications for a few days. Differentiating between normal and slow transit can assist in determining whether colectomy is required [24,30].

Even in healthy individuals, the colonic phasic motor activity that is recorded with manometry can vary. Some centers have the capability to assess colonic tone and phasic pressure activity using a barostat manometry assembly, which has extensive normal values available. For some patients who have medically refractory slow transit constipation (STC), it can be helpful to evaluate colonic motility with either colonic manometry or barostat manometry to document colonic motor dysfunction. These findings can support the decision to proceed with subtotal colectomies for patients who do not have pelvic floor dysfunction. This approach is more commonly used for children with STC than for adults [35-39].

After the initial clinical assessment, patients with symptoms of constipation can be tentatively categorized as having either non-neurogenic or slow transit constipation, dyssynergic defecation syndromes (which includes anismus/dyssynergia-failure of relaxation, descending perineal syndrome, and other flaccid disorders), or a combination of these (fig. 1.3). Patients may also have organic constipation, which can be caused by a mechanical obstruction or medication side effects. The severity of pain experienced by patients can further categorize them as either mild pain/painless constipation or painful constipation [22,30,34].

c. Idiopathic constipation.

From a pathophysiological point of view, idiopathic constipation, functional (or constipation disease), is a chronic constipation that can be due to either a slowing of transit, or to a distal obstruction that hinders rectal evacuation, or to both mechanisms at the same time. In the case of distal obstruction without slowing of transit, the number of weekly bowel movements may be normal [40].

i. Slowing of colonic transit.

Disorders of progression at the colon level are related either to a reduction in motor activity or paradoxically to hyperactive motor activity.

Hypomotility (atonic colon) is characterized by a decrease in the amplitude and frequency of large amplitude colonic contractions that propagate along the colonic frame, causing mass movements [42].

1.2. Economic and quality of life impact

Although only a minority seek medical care for their constipation (for example, 22% of the population in the USA), constipation represents a significant cost in terms of public health due to its high prevalence19. In the USA, the total cost of managing constipation was almost multiplied by 8 between 1997 ($188,109,249) and 2010 ($851,713,263)20. In the USA, the annual direct cost of constipation is estimated to be over $230 million. The direct cost of constipation care during the last 15 years amounted to $64,000 per person [39-43].

A person with constipation costs around $26,000 per year, compared to $46,000 for a person without [50].

Among patients seeking outpatient care for digestive disorders, constipation is one of the five most common diagnoses [21]. Recent American data suggest that outpatient visits for constipation have doubled in a recent period (from 4 million per year between 1993 and 1996 to 8 million per year between 2001 and 2004) [45].

In addition to the cost of visits, prescriptions, and sometimes hospitalizations, the socioeconomic dimension must also be taken into account, with work absences, decreased productivity, social disconnection, and isolation. There is an average annual absenteeism related to constipation in the USA of 2.4 days/month, resulting in a loss of $13.7 million/year. Sun et al. report a 9% absenteeism rate in constipated subjects compared to 5.2% in control subjects. A significant decrease in productivity and impact on work activity can also be observed [23].

The quality of life in adults with constipation is often impaired and comparable to that found in other chronic conditions such as osteoarthritis, rheumatoid arthritis,

allergies, and diabetes. The impact on physical quality of life also varies according to socio-geographical factors. In 2007, Wald et al. reported a more marked impairment of quality of life in women and in South America (especially Brazil) [25,36, 39-44].

Patients with chronic constipation are also more frequently subject to mood disorders such as depression as well as anxiety disorders compared to the general population. Up to 65% of constipated individuals present with psychological disorders [15-18]

The impact on sexual life, especially in women with terminal constipation, is not negligible (for example, dyspareunia) [19].

1.3. General approaches for the constipation treatment.

Proper assessment and treatment are essential for individuals diagnosed with constipation, a common condition. To manage chronic constipation, patient education, behavior modification, dietary changes, and laxative therapy are commonly used. It is important to understand that the use of laxatives is not the only option for treating constipation. The initial approach should focus on lifestyle changes such as increasing fluid and fiber-rich food intake, such as vegetables like asparagus, broccoli, Brussels sprouts, cabbage, and spinach. Laxatives should only be considered when lifestyle changes are insufficient. This article explains the various modes of action of laxatives, including their mechanisms of action, pharmacology, potential side effects, and their suitability for different patient populations. It also highlights the important role of an interprofessional team in managing conditions where laxative therapy is beneficial [44,47,50].

Constipation is a prevalent condition that requires appropriate evaluation and treatment. While laxatives are a common treatment option, they are not the only solution. The management plan for chronic constipation involves patient education, lifestyle adjustments, and laxative therapy. Dietary changes such as consuming fiber-

rich foods like asparagus, broccoli, Brussels sprouts, cabbage, and spinach and increasing fluid intake should be the first line of management. If lifestyle modifications fail to alleviate constipation, osmotic or stimulant laxatives can be considered [35, 41, 45, 48].

If osmotic or stimulant laxatives do not control constipation, prokinetics and secretagogues can be used as the next step. Laxatives are also effective in treating patients with irritable bowel syndrome (IBS), chronic idiopathic constipation (CIC), constipation, and opioid-induced constipation. The prophylactic use of laxatives has been described in ICU patients to prevent constipation, and they are also recommended during opioid administration in patients with sickle cell disease, particularly in post-surgical patients and even younger children. Laxatives are also used to empty the bowels before colonoscopy procedures, in addition to treating constipation [45-49].

The mechanism of action for bulk-forming laxatives is to retain fluid in the stool, increasing stool weight and consistency. Common examples include psyllium, dietary fiber, and methylcellulose. It is important to drink ample amounts of water for bulk-forming agents to work effectively, as a lack of water can lead to bloating and bowel obstruction [9, 18, 21-25].

The various types of laxatives are classified based on their mechanisms of action in the body. Bulk-forming laxatives increase stool weight and consistency by retaining fluid in the stool. Examples of these include psyllium, dietary fiber, and methylcellulose. Osmotic agents, such as milk of magnesia, lactulose, sorbitol, and polyethylene glycol (PEG), draw water into the lumen of the bowel and are poorly absorbable. Prokinetic agents like cisapride and tegaserod stimulate 5-Hydroxytryptamine receptors, which release acetylcholine and induce mucosal secretion. Lubricants such as mineral oil aid in stool passage by lubricating the intestines. Stimulants such as bisacodyl, senna, cascara, and sodium picosulfate (SPS) stimulate myenteric and Auerbach plexus, increasing intestinal secretions and motility. Surface-active agents like docusate lower surface tension, allowing water and fats to

penetrate the stool. Guanylate cyclase agonists like linaclotide induce cGMP, leading to cystic fibrosis transmembrane conductance regulator (CFTR) activation and water and electrolyte secretion into the lumen. Chloride channel activators like lubiprostone cause water and chloride secretion into the stool and lead to softer stool consistency [24,34,45].

Administration:

The Laxatives are reachable in one of a kind forms, such as tablets, capsules, powders, chewable tablets, and liquids, and can be taken orally or as suppositories. The dosage and administration of laxatives fluctuate primarily based on the type used, and the data presented in this area is primarily based on product labeling [52].

To use bulk-forming laxatives, psyllium can be ingested orally with a tablespoon once to thrice daily. Methylcellulose, on the other hand, can be taken three times per day with a tablespoon of powder or 2000 mg fiber caplets [51].

In the case of osmotic agents, lactulose can be administered orally once daily with a dose of 10-20 g (15-30 mL) for constipation, which can be expanded to forty g (60 mL) as soon as daily. For hepatic encephalopathy, a dose of 20-30 g (30-45 mL) can be administered orally each hour to result in speedy bowel movement. Sorbitol can be given orally as soon as daily with a dose of 30-150 mL or as a rectal enema with a 120 mL (30%) solution. Polyethylene glycol can be administered with a dose of 17 grams alongside with sufficient hydration for constipation. When used as bowel instruction earlier than surgery, a powder for answer (240 mL reconstituted solution). The recommended method for administering PEG is to give a powder for solution (240 mL reconstituted solution) orally every 10 minutes until 4 L is consumed, and the rectal effluent is clear. Prior to administering PEG, the patient should fast for at least 3-4 hours [49-51].

Magnesium sulfate can be dissolved in water with 2 to four teaspoons (approximately 10 to 20 grams) of granules, and the dose may additionally be repeated in 4 hours. However, taking extra than two doses per day ought to be avoided. Glycerin

(glycerol) can be administered as one suppository (2 or 3 grams) per rectum for 15 minutes once daily [21, 33]

Stimulant Laxatives

Dosages and administration instructions for a variety of types of laxatives are as follows:

For bulk-forming laxatives, psyllium can be taken orally once to three times a day using a tablespoon. Methylcellulose, on the other hand, can be taken three times daily using a tablespoon of powder or 2000 mg fiber caplets [35, 40].

As for stimulant laxatives, Bisacodyl can be taken either as enteric oral tablets at 5 to 15 mg once a day or as a 10 mg suppository per rectum once a day for 15 to 60 minutes. Senna is available as 8.6 mg tablets and can be taken orally once to twice daily at 1 to 2 tablets [36, 40-43].

For prokinetic agents, Tegaserod comes in 6 mg oral tablets and should be taken orally 30 minutes before a meal twice daily for 4 to 6 weeks of treatment. Prucalopride is on hand as 1 mg and 2 mg oral capsules and can be administered orally as soon as every day (one to two tablets) [43].

Lubricants: Mineral oil can be given as single or divided doses orally up to a complete of forty five mL in 24 hours and rectally up to a total of 118 mL in a single dose [43-46].

Surface lively agents: Docusate is available in three different forms: 100 mg oral soft gels, 283 mg/5 mL rectal enema, and 50 mg/5 mL oral solution. Orally, a dose of 50 to 100 mg is given once daily, with a maximum dose of 300 mg. Rectally, a 283 mg enema can be administered one to three times a day [44,47].

Linaclotide is available in three different oral capsule doses: 72 mcg, 145 mcg, and 290 mcg. For patients with chronic idiopathic constipation, a daily dose of 72 to 145 mcg is given. For patients with IBS and constipation, 290 mcg is taken orally once daily as a dose [50, 51].

Lubiprostone is available as oral capsules in doses of 8 mcg and 24 mcg. In the case of CIC, 8 mcg is taken orally twice daily. For opioid-induced constipation, a maximum of 24 mcg is used orally twice a day [45,49].

Adverse Effects

When used correctly and with patients who do not have contraindications, laxatives are generally considered safe [32-34]. Osmotic agents such as lactulose can produce negative side effects like bloating, vomiting, diarrhea, and nausea [37].

Stimulant laxatives are known to cause abdominal pain.

The drug Cisapride was removed from the market after causing adverse cardiovascular effects, including prolonged QT interval that raises the risk of Torsades de Pointes [40].

The use of mineral oil can result in aspiration and lipoid pneumonia.

Osmotic agents such as magnesium can cause metabolic disruptions, particularly if renal problems are present. Additionally, magnesium excretion is dependent on renal function, making its use risky in patients with renal impairment [45-47].

Osmotic agents cause volume overload and should be used with caution in individuals with renal or cardiac dysfunction [21].

Adverse effects such as headache, nausea, and diarrhea have been documented with the use of prokinetic agents.

Occasional diarrhea has been noted with the use of secretagogues like linaclotide.

The extended use of stimulant laxatives has been linked to the loss of haustral folds in the colon. This could suggest damage to the nerves or muscles caused by these drugs [33-35].

Studies conducted in vitro have suggested a possible association between neoplastic potential and stimulant laxatives like bisacodyl and senna. However, human data is currently insufficient to make any conclusions regarding this matter [36-38].

There are certain contraindications to the use of laxatives. Patients who have exhibited hypersensitivity reactions to any of the active drug or excipients should avoid

using the medication. Pregnant patients should also avoid laxatives, although bulk-forming agents are generally considered safe. Stimulant laxatives are not recommended initially. Bedridden patients and those with altered cognition should avoid bulk-forming agents. Psyllium agents are not advised for individuals with a history of allergic reactions. Lactulose should be used with caution in elderly, pediatric, and debilitated patients, as well as patients with hepatic impairment. Sorbitol should be used with care in patients with renal impairment. Tegaserod use is not recommended for patients with severe renal or hepatic impairment [35-40].

Laxative abuse is a common issue, particularly in elderly patients, individuals with anorexia nervosa or bulimia nervosa, and those who experience surreptitious diarrhea. Symptoms associated with laxative misuse include diarrhea, alternating constipation, nausea, and vomiting. This can lead to electrolyte imbalances, dehydration, and various other complications, such as hyponatremia, hypokalemia, hyperuricemia, and hyperaldosteronism. Moreover, dehydration and hypokalemia can cause renal insufficiency, as an increased secretion of aldosterone can further worsen hypokalemia. The primary treatment for laxative abuse is discontinuing the causative agent. However, there may be challenges with rebound symptoms such as weight gain, edema, and constipation, which can be distressing for the patient. Retention of water in the kidneys can result in edema, and diuretics should be used cautiously to address constipation and edema while enhancing patient tolerance during discontinuation of the medication. Regular monitoring of electrolytes and renal function is necessary, and diuretics can be gradually tapered off over three months [36-41].

Non-pharmacological Management

The principal management method for constipation is non-pharmacological treatment, which includes teaching patients about diet, fiber and fluid intake, bodily activity, and bathroom training [50-52].

Low fiber intake increases the possibility of constipation. Dietary fibers, which are carbohydrate polymers that are digested in the colon, can be soluble or insoluble.

Soluble fibers, such as Psyllium, are frequently endorsed and have been shown to extend defecation frequency and enhance stool weight and consistency, however they do not improve colon transit. Insoluble fibers, such as bran, improve intestinal transit time. However, increasing fiber intake can purpose aspect effects such as gas, discomfort, flatus, or bloating. Patients who ride chronic gaseousness might also need to change to a special fiber supplement. Additionally, now not all sufferers with constipation reply to therapy with fiber, particularly those with refractory constipation, gradual transit constipation, or dyssynergic defecation [46-49].

Physical undertaking has a nice have an effect on on patients with constipation. Moderate to full of life endeavor can alleviate signs and improve the quality of lifestyles in patients with IBS. Studies have proven a correlation between higher bodily recreation and expanded bowel movements at some stage in one week, and a lower risk of constipation [4,45,47].

Increasing fluid consumption is only positive in dehydrated patients, and negative water consumption is now not related with a higher chance of evacuation disorders [48].

Biofeedback therapy is specifically advantageous in sufferers with defecatory disorders. This cure targets to repair everyday defecation patterns, right dyssynergia between abdominal, rectal, and anal sphincter muscles, and make bigger rectal perception. Biofeedback remedy makes use of gadgets such as balloons, electromyography sensors, or manometry to train the patient how to use respiration to extend stress in the abdomen, and how to coordinate leisure of the anal and pelvic floor muscle mass during evacuation. This therapy can be performed in an workplace or home setting, with the latter being more cost-effective. Randomized scientific trials have shown improvements in defecation and affected person satisfaction. Recent research also suggest the use of electrical stimulation to set off neuromodulation of the colon and pelvic ground to resource defecation [36-38].

Conclusions for chapter 1

Thus, the data covered in the scientific literature, according to the results of various authors, indicate the prevalence of constipation, the variety of etiological factors of development, the complexity of the pathogenetic mechanism. All this makes it difficult to select the most rational therapy for the treatment of patients with constipation. Most laxatives are over-the-counter, which people can buy without consulting a doctor for self-medication. The pharmacist's task is to inform patients about the rational use of this range of drugs, as well as to notify about side effects and contraindications.

CHAPTER 2
MATERIALS AND METHODS

To achieve the goal and the identified objectives, a survey of 109 patients who purchased drugs for themselves in a pharmacy was conducted. The study did not include pharmacy visitors who purchased medicines for others (including children) or pregnant women. Children's age and pregnancy belong to the category "Threatening symptoms" (according to the "Protocol of the pharmacist under dispensing over-the-counter drugs (part 1.20. Symptomatic treatment of constipation)", approved by the Order of the Ministry of Health of Ukraine № 7 from 05.01.2022. In the survey of pharmacy visitors, in the case of respondents taking prescription drugs (antidepressants, neuroleptics and / or psychotropic drugs, calcium antagonists, opioids, etc.) they were classified as threatening symptoms, recommended to consult a doctor and were not involved in the current study.

A questionnaire based on the "Protocol of the pharmacist under dispensing over-the-counter drugs (part 1.20. Symptomatic treatment of constipation)" was developed to fulfill the tasks that were defined. The questionnaire contained questions on the demographic data of patients, their disease or condition that requires the use of laxatives, as well as the presence of significant concomitant pathology that could affect the relevance and rationality of a particular laxative. Some sections of the questionnaire reflected the motives of patients for the purchase of this drug and the patient's awareness of the side effects of the drug. The developed questionnaire was proposed to pharmacy visitors in local language.

The following is a copy of the questionnaire that was given to patients.

SURVEY

of clinical and pharmaceutical analysis of aspects of laxative over-the-counter drugs for symptomatic treatment of constipation

Name _____

Gender _____ Age _____

The drug that the patient will buy _____

Disease or condition that requires the use of drug

_____

Concominant disease

Patient has:

arterial hypertension _____

signs of heart failure _____

diabetes _____

Motives for purchasing a specific drug

High efficiency _____ Convenience of the dosage form _____

Price _____ Advertising _____

Lack of information on other drugs _____

Recommendation of a person without medical training _____

Medical worker's recommendation _____

Recommendation of a pharmacy specialist _____

Other _____

What side effects are possible under the useof the purchased drug

_____

Note _____

As part of the pharmaceutical care of patients with complaints of constipation, the pharmacist should use the following algorithm of the pharmacist's conversation with the patient when dispensing laxatives (table 2.1).

Table 2.1

Algorithm of conversation of the pharmacist with the pharmacy visitor during release of laxatives

	Pharmacist's question to the patient	**Patient's responses**	**Recommendations**
1.	Whether defecation is absent for more than 48 hours	yes	Continue survey
		no	Defecation once every 2-3 days is not a constipation and is considered physiological; for normal bowel function it is necessary to follow a rational diet, drink enough fluids, increase (if possible) physical activity
2.	Does the patient have one or more threatening symptoms	yes	To clarify the diagnosis and prescribe treatment, the patient must immediately see a doctor
		no	Continue survey
3.	Does the patient take the folowing medication: - antacids containing Al ++ compounds	yes	As these medication can cause constipation, it is necessary to consult a doctor for advice and correction of treatment

	- antihistamines; - antidepressants; - neuroleptics and / or psychotropic drugs; - calcium antagonists; - iron preparations; - enterosorbents; - - opioids (codeine, etc.)	no	Continue survey
4.	Whether there are systemic connective tissue diseases or other diseases that have caused the patient's immobility	yes	It is necessary to consult a doctor for treatment
		no	Continue survey
5.	Does constipation occur in the patient constantly	yes	In addition to the use of laxatives, it is necessary to follow the recommendations for non-drug treatment of constipation (nutrition, physical activity, etc.)
		no	Treatment of constipation should begin with non-drug methods; it is possible to prescribe any laxative drug, taking into account the duration of laxative action

First of all, we found out information about the following:

- who has the problem (patient, family members, acquaintances - children or adults);

- how long ago the illness occurred and how long it lasts;

- what measures were taken before applying to the pharmacy;

- What medications have already been taken to alleviate the condition.

Threatening symptoms that require immediate medical attention by the physician include:

- constipation is accompanied by aroused body temperature;

- the presence of blood in the stool and pain during defecation;

- severe abdominal pain;

- sharp bloating;

- constipation is accompanied by nausea, vomiting, dizziness, headache, skin discoloration (pale or grayish);

- weight loss;

- constipation in young children and pregnant women;

- known poisoning by toxic substances (mercury, lead, etc.).

To assess the level of pharmaceutical care, a survey of 27 pharmacists working in pharmacies was conducted. To perform this task, a questionnaire based on a questionnaire of the Committee of Experts on Quality and Safety Standards for Pharmaceutical Practice and Pharmaceutical Care (CDP-PH / PC), coordinated by the European Directorate for Quality in Medicines and Health (EDQM) (Council of Europe) was developed [10, 48].

The following is a copy of the questionnaire.

Dear colleagues! We kindly ask you to take part in the survey on the level of the pharmaceutical care quality during dispensing over-the-counter drugs to treat constipation in elderly people. Thank you in advance!

In the following table, please, indicate the frequency on giving some kind of information to pharmacy visitor during conversation.

Information provided by the pharmacist to the patient when dispensing an over-the-counter drug

	Information provided during dispensing	Frequency			
		never	rarely	often	always
1.	Detect threatening symptoms that require medical attention by physician				
2.	You help the patient to make a choice of OTC drug				
3.	Provide recommendations for rational use - dose, method of administration				
4.	Inform about the duration of treatment				
5.	Inform about storage of the drug at home				
6.	Inform about possible side effects				
7.	Inform about the measures to be taken in case of side effects				
8.	Inform about the compatibility of the drug with other drugs				

9.	Inform about the compatibility of the drug with food and alcohol				

1. **In your opinion, is the information that patients receive at the pharmacy sufficient for the effective and safe use of over-the-counter constipation medications?** *(underline the needed answer)*

Yes

No

If not, why (please choose no more than 3)?

- the patient is not ready to receive information (lack of time, desire);
- pharmacy staff do not have enough professional information on certain issues (for example, lack of medical knowledge);
- there is a large concentration of patients in the pharmacy, pharmacist experiences lack of time;
- management orients staff to increase sales, not consultations;
- consultations do not bring financial benefits;
- other, please specify:_____

_____

The questionnaire covered questions about pharmacists informing patients about constipation medicines: what information does the pharmacist provide during dispensing over-the-counter drugs and whether it is enough for effective and safe use of a particular drug. The opinion of pharmacy experts was determined on how the system will affect the provision of pharmaceutical services, to what extent information on medicines in general should be provided.

The obtained results of the survey were processed using Microsoft Excel 2010 (Microsoft inc.).

Methods of analysis, synthesis, abstraction and generalization were also used in the work to overview the present state of spreadness, current recommendations and guidelines.

CHAPTER 3
CLINICAL AND PHARMACEUTICAL ANALYSIS OF THE USE OF LAXATIVES AND THE ACTIVITIES OF THE PHARMACIST TO IMPROVE THE RATIONALITY OF THEIR USE

A total of 109 respondents filled out the questionnaire: 61 women (56%) and 48 men (44%) (fig. 3.1). Among them, 42 people (38.5%) were elderly (over 65 years).

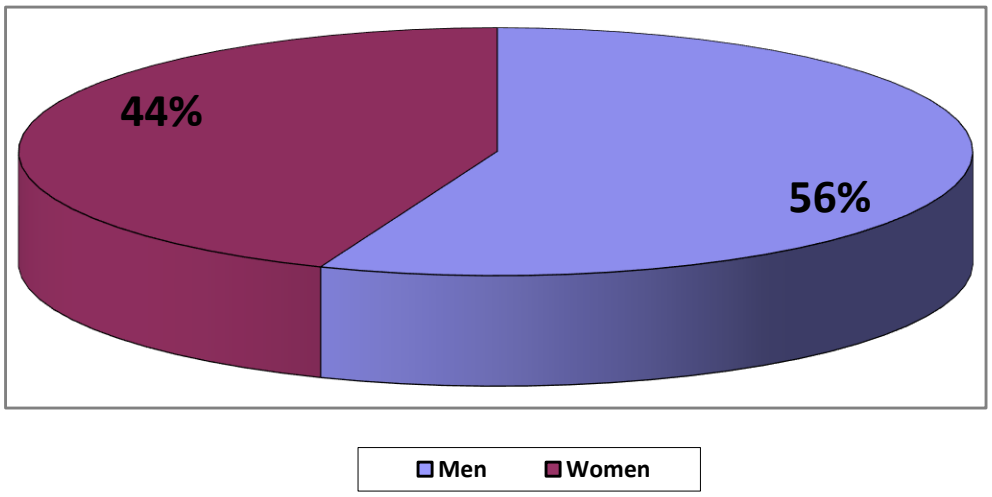

Fig. 3.1. Distribution of respondents on gender

According to the objectives of the study, the structure of drugs' names, which were purchased at the pharmacy, was determined.

The general results of the study are shown in the table 3.1. The purchased drugs were combined together according to the international name. However, some results and conclusions are made based on the brand names of some medications.

Table 3.1

The structure of over-the-counter laxatives purchased at a pharmacy for the symptomatic treatment of constipation

Laxative groups	Drugs	Number of cases	
		Number	%
Contact laxatives	Bisacodyl	5	4.6
	Senna	9	8.3
	Ononis	5	4.6
	Buckthorn bark	4	3.7
	Sodium picosulfate	15	13.7
	Castor oil	7	6.4
	Vaseline oil	5	4.6
Drugs that increase the volume of intestinal contents	Plantago (semeni Psyllium)	12	10.9
	Fiber	8	7.3
	Slate kelp	4	3.7
Osmotic laxatives	Lactulose	17	15.7
	Magnesium sulfate	6	5.5
	Macrogol	6	5.5
	Macrogol + Potassium chloride + Sodium chloride + Sodium Bicarbonate	6	5,5
Total		109	100

As can be seen from the table. 3.1 "Contact laxatives" were purchased by 50 (45.9%) respondents, "Drugs that increase the volume of intestinal contents" - 24 (22%) and "Osmotic laxatives" - 35 (32.1%). Among the contact laxatives, a subgroup containing anracoglycosides purchased 13 people (9 hay and 4 buckthorn bark), 12 oils (7 castor and 5 vaseline), and 5 people got bisacodyl and Ononis.

All these drugs are traditional, have a long use experience and a wide range of side effects [8, 49-51]. At the same time, modern sodium picosulfate, which has a high degree of safety and efficacy, was purchased by only 15 pharmacy visitors (30%) and out of which only 5 visitors (33.3%) were elderly people.

Drugs that increase the volume of intestinal contents were represented by 20 plantain medicines (12 Plantago and 8 Fiber) and 4 - Laminariales.

In the group "Osmotic laxatives" lactulose containing drugs were more common - 17 cases, while this modern drug was purchased by only 5 patients (29.4%) in elderly people. Macrogol was used in 6cases and in 6 more cases magnesium sulfate, but still were used less often than others.

Thus, laxatives of imported production purchased at the pharmacy amounted to 47.7% (52 respondents), which is too much. Imported medicines could be replaced by the cheaper ones.

According to various authors, the effectiveness of generic drugs is not worse than imported, but the price is much lower, which will be positive in socio-economic terms, especially for the elderly. An important task of the study was to identify cases of irrational use of laxatives. And such cases, unfortunately, were not uncommon.

According to the results of the questionnaire, the use of Bisacodyl by three elderly patients with signs of chronic heart failure was revealed. This drug is known to disrupt electrolyte metabolism and may complicate cardiac pathology that already occurs in this patient.

This situation also applies to the four elderly respondents who bought Sena. The drug helps to remove potassium from the body, which, in turn, has a negative effect on

the heart muscle. A similar effect has a drug-combination containing macrogol, potassium chloride, sodium chloride, sodium bicarbonate. It interferes intensively with electrolyte metabolism, which is a negative background that contributes to the progression of cardiovascular pathology. According to the questionnaire, it was found that it was purchased by 2 elderly respondents.

Two elderly patients with hypertension acquired Magnesium Sulfate. The drug intensively removes water from the body, which may be accompanied by a drop in blood pressure and the development of collapse, especially in the elderly.

Among the visitors to the pharmacy who intended to buy laxatives at the pharmacy were five patients with diabetes. Two of them bought Plantago. It contains carbohydrates, which can lead to hyperglycemia. Another drug - Fiber. Regarding the Fiber it can be noted that the drug slows down the absorption of carbohydrates, which can cause hypoglycemia, especially in insulin-deficient type of diabetes. All three respondents were over 65 years old.

There were also three cases of irrational combination of iron supplements and drugs that increase the volume of intestinal contents (2 - Plantago and 1 - Fiber). These rugs are known to bind iron and reduce its absorption.

It is impossible to recognize the rational use of "Vaseline oil" by an elderly man (1 case) against the background of peptic ulcer disease. The substance can irritate the ulcer, and with prolonged use to turn it into a tumor.

Among the three respondents who purchased kelp, one patient had elevated thyroid function. Due to the fact that kelp contains iodine, it could contribute to the progression of the pathology.

One case of receiving "Stalnyk" by a young woman who constantly drives a car has been established. The tincture is made from 90% ethyl alcohol and this could have negative consequences.

The survey identified two nursing mothers who acquired drugs of plant origin (1 sena and 1 buckthorn bark). Anthracoglycosides, which are part of the drug, get into

breast milk, and because they have a bitter taste, it is possible for the child to refuse breastfeeding.

Thus, the results of the survey revealed 24 cases (22%) of irrational use of drugs. At the same time, 14 respondents (58.3%) were elderly. This emphasizes the special importance of full-fledged pharmaceutical care for this group of patients.

The study of the motivation for the acquisition of drugs showed that the main one was the factor of the cost of the drug. Fifty-four respondents (49.5%) bought the drug because of the low price. Twenty-one (19.3%) according to the results of advertising in the media. Another 17 (15.6%) after the recommendations of people who did not have medical training (relatives, friends, employees, neighbors and others). And only 17 patients (15.7%) purchased the drug on the principles of rationality. The drug was recommended either by a medical professional - 10 cases (9.2%), or a pharmacist - 7 cases (6.4%). This group of patients received advice based on concomitant pathology and was aware of the possible side effects of the drugs they used. The distribution of patients was independent of age.

Thus, in a significant number of cases, the motives for choosing a particular drug were not sufficiently substantiated, and this, in turn, did not allow to ensure proper safety and effectiveness of treatment.

According to the results of the analysis of the questionnaires, about 66% of respondents had little information about their disease, and 87.3% did not know anything about the possible side effects of the drugs they used. The distribution of patients was also independent of age.

With the development of the concept of responsible self-medication and the use of over-the-counter drugs, the role of the pharmacist as a consultant increases. In order to develop approaches to improving pharmaceutical care during the release of laxatives, it is necessary to assess the attitude of pharmacy professionals to this issue.

The results of the survey on what information the pharmacist provides to the patient are shown in the table 3.2.

Table 3.2

Information provided by the pharmacist to the patient when dispensing over-the-counter laxatives

	Information provided during dispensing	**Frequency**							
		never		**rarely**		**often**		**always**	
		N	%	N	%	N	%	N	%
1.	Detect threatening symptoms that require medical attention by physitian	1	3,8	4	15,4	18	69,2	3	11,5
2.	You help the patient to make a choice of OTC drug	2	7,7	5	19,2	10	38,5	9	34,6
3.	Provide recommendations for rational use - dose, method of administration	2	7,7	4	15,4	11	42,3	9	34,6
4.	Inform about the duration of treatment	9	34,6	6	23,1	5	19,2	6	23,1
5.	Inform about storage of the drug at home	8	30,1	5	19,2	6	23,1	7	26,9

6.	Inform about possible side effects	3	11,5	3	11,5	11	43,2	9	34,6
7.	Inform about the measures to be taken in case of side effects	3	11,5	3	11,5	11	43,2	9	34,6
8.	Inform about the compatibility of the drug with other drugs	4	15,4	4	15,4	8	30,1	10	38,5
9.	Inform about the compatibility of the drug with food and alcohol	6	23,1	8	30,1	7	26,9	5	19,2

According to the data in table 3.2, the largest number of surveyed pharmacists 69.2% (18 respondents) often show threatening symptoms during the release of laxatives. 3 more respondents always detect threatening symptoms in patients, which is 11.5% of the total number of specialists surveyed. Rarely threatening symptoms in patients are found in only 15.4% of respondents (4 respondents). 3.8% of patients (1 respondent) never noticed threatening symptoms.

38.5% of the surveyed pharmacy specialists (10 respondents) often help the patient to choose the OTC drug for the treatment of constipation, and more than a third - 34.6% (9 respondents) always help the patient. Approximately 20% rarely help pharmacy visitors with drug selection (5 respondents). But a small number of respondents 7.7% (2 respondents) said they never help patients make a choice of OTC drug.

42.3% (11 respondents) of specialists who participated in the study provide recommendations for rational reception - dose, method of administration is often about half of the pharmacists. Another 34.6% of respondents said that they always acquaint patients with information about the rational use of medicines (9 respondents). A small number of pharmacy specialists who participated in the survey rarely provide patients with this information 15.4% (4 respondents). Only 7.7% of respondents (2 respondents) never announce information on the rational use of the drug).

The largest number of surveyed pharmacy specialists - 34.6% who took part in the survey (9 respondents) never inform about the duration of treatment. About a quarter of 23.1% of respondents (6 respondents) rarely reported on the course of treatment, slightly fewer participants in the study, 19.2% (5 respondents), often inform patients about this area of pharmaceutical care. 23.1% of respondents (6 respondents) always provide information on the duration of drug treatment).

8 respondents, which is 30.1%, never inform about the storage of the drug at home. Another 19.2% (8 respondents) rarely provide this information. Pharmacists were approximately equally divided on information on storage of the drug at home: 6 respondents, which is 23.1% of the total number of respondents, often inform and 7 respondents, which is 26.9% always.

Most pharmacists (11 respondents) often inform about possible side effects and measures to be taken in their event, which accounted for 43.2% of the total number of respondents. 9 more respondents are always informed about possible side effects, which is 34.6%. Information on side effects and measures to be taken in their event are never provided, and rarely, the lowest number of respondents took part, 3 respondents (11,5%).

The vast majority of pharmacy specialists who were surveyed, 38.5% (10 respondents) said that they are always informed about the compatibility of the drug with other drugs. About a third of respondents - 30.1% (8 respondents) often inform patients about the interaction with other drugs. 4 pharmacists (15.4%) never inform about

compatibility with other drugs and so many provide such information seldom - 4 respondents (15,4%)

Regarding the compatibility of the drug with food and alcohol, the majority of surveyed pharmacy specialists, 30.1% (8 respondents) rarely inform. About a third of survey participants often provide this information - 7 respondents, which is 26.9%. And only a quarter of the total number of specialists who took part in the survey always warn patients about the interaction of the drug with food and alcohol, 23.1% (6 respondents). The smallest number of pharmacists who took part in the survey never provide this information to patients - 19.2% (5 respondents).

Thus, information about drug during their release to the patient is always provided in the range from 11.5% to 38.5%. Together with the pharmacists who provide it, the range is often extended from 42.3% to 80.7%.

To the question "Do you think that the information you provide is sufficient for the effective and safe use of OTC drugs?", more than half (54%) of respondents (14 specialists), answered that they believe that the information provided to patients is sufficient for effective and safe use of OTC drugs. Another 46% (12 respondents) answered that the information provided was not sufficient for the rational use of OTC drugs for the treatment of constipation.

Further, the analisys of different factors according to the specialists opinion was conducted to know whether there are possible ways to awoid them and so increase the level of patients informing. The distribution of factors that cause insufficient information to patients are given in table 3.3.

Table 3.3

Factors that, according to pharmacists' opinion, cause insufficient informing of patients

Factor that causes insufficient informing of patients	**Number of respondents**	
	N	%
The patient is not ready to receive information	3	12
Pharmacist doesn't have enoygh time	8	31
Pharmacy staff do not have enough professional information on certain issues	4	15
Pharmacy management orients staff to increase sales, not consultations	4	15
Consultations do not bring financial benefits	5	19
No suggestions	2	8

According to the table 3.3, pharmacists who consider insufficient information attribute this primarily to the pharmacist's lack of time (31%). The second position (19%) is occupied by the fact that the reason is the lack of financial gain. According to 15% of pharmacists who took part in the survey, insufficient information is due to lack of professional knowledge, and another 15% believe that "Pharmacy management orients staff to increase sales, not consultations" 12% of respondents believe that the patient is not ready to receive information. And 8% of pharmacists who took part in the survey had no arguments at all.

The level of pharmaceutical care during the release of laxatives was assessed as low, which requires additional measures to improve the quality of pharmaceutical care of this contingent of pharmacy visitors.

The main areas of improving the effectiveness and safety of over-the-counter drugs for the symptomatic treatment of constipationin elderly people, according to pharmacists opinion, are:

• orientation of patients to purchase modern laxatives with strong evidence base of efficiency and safety of mainly generic production;

• purposeful detection of cases of irrational use of laxatives;

• informing patients about the features of laxatives and possible side effects of their use.

Such ways could optimize responsible self-medication in elderly people who suffer from constipation, decrease the nuber of irrational drug use cases and increase the quality level of pharmaceutical care.

Conclusions for chapter 3

1. A total of 109 respondents were surveyed during the study - 61 women (56%) and 48 men (44%). Among them, 42 people (38.5%) were elderly (over 65 years). In the structure of laxatives purchased at the pharmacy, "Contact laxatives" accounted for 45.9%, "Means that increase the volume of intestinal contents" - 22% and "Osmotic laxatives" - 32.1%. In the structure of laxatives it is noteworthy that modern drugs that have a high degree of safety and efficacy (sodium picosulfate, lactulose drugs) are rarely used. This is especially true for elderly patients.

2. According to the survey results, about 66% of respondents had little information about their disease, and 87% did not know anything about the possible side effects of the drugs they used. This is especially true for elderly patients.

3. The survey found that in 22% of cases laxatives were used irrationally, with 58.3% of respondents were elderly. Namely, the latter circumstance gives reasons for special concern due to a significant increase in the side effects of constipation treatment.

4. The motives for choosing laxatives were not always justified. Only 15.7% of patients acquired a sufficient amount of information about a particular drug, as well as a clear understanding of its safety and specifics of its use. Quite interesting was the fact that the motives for choosing the drug did not depend on patients' age.

5. In general, it can be concluded that the level of pharmaceutical care under release of laxatives was quite low and needed improvement. The opinion of the interviewed pharmacists agreed with this conclusion.

6. The wasys on increasing the quality level of pharmaceutical care in studied patients group were suggested.

CONCLUSIONS

1. Data from the scientific literature indicate the prevalence of constipation, the variety of etiological factors of its development and the complexity of the pathogenesis. All this makes it difficult to select the most rational therapy for the treatment of patients with constipation.

2. The study of the drugs choice was conducted. In the structure of laxatives purchased by patients at the pharmacy by groups, "Contact laxatives" accounted for 45.9%, "Medicines that increase the volume of intestinal contents" - 22% and "Osmotic laxatives" – 32.1%.

3. The results showed that modern drugs that have a high degree of safety and efficacy (sodium picosulfate, lactulose drugs) have been used quite rarely. In the first case, they were used by less than 30% of visitors, and only five were elderly people. And in the second case - there were only a few cases of acquisition.

4. According to the results of the survey, about 66% of respondents had little information about their disease, and 87% did not know anything about the possible side effects of the drugs they used. This is especially true for elderly patients. Also, this could decrease the level of pharmaceutical care.

5. According to the results of the survey, 22% of cases of irrational use of laxatives were identified. At the same time, 58.3% of such respondents were elderly people.

6. The motives for choosing the drug did not depend on age. Reasonable choice of laxative drug, based on a sufficient amount of information about a particular drug, was found only in 15.7% of patients, which is quite a low number and could b considered as indirect indicator of pharmaceutical care quality level.

7. The quality level of pharmaceutical care during the release of laxatives was assessed as low. The main areas of improving the effectiveness and safety of over-the-

counter drugs for the symptomatic treatment of constipationin elderly people, according to pharmacists opinion, are:

• orientation of patients to purchase modern laxatives with strong evidence base of efficiency and safety of mainly generic production;

• purposeful detection of cases of irrational use of laxatives;

• informing patients about the features of laxatives and possible side effects of their use.

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Faculty for foreign citizens' education
Department of clinical pharmacology and clinical pharmacy

Level of higher education master

Specialty 226 Pharmacy, industrial pharmacy
Educational program Pharmacy

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Acting Head of
Department of
clinical pharmacology and
clinical pharmacy

_____
Tetiana SAKHAROVA
"02" September 2022

ASSIGNMENT
FOR QUALIFICATION WORK
OF AN APPLICANT FOR HIGHER EDUCATION

Kawtar MORCHID

1. Topic of qualification work: « The clinical and pharmaceutical analysis of the market of the drugs from the group of laxatives in Morocco », supervisor of qualification work: Tetyana KOLODYEZNA, PhD,

approved by order of NUPh from " 06 " February 2023 № 35

2. Deadline for submission of qualification work by the applicant for higher education: April 2023.

3. Outgoing data for qualification work: develop recommendations to increase quality level of pharmaceutical care of constipation

4. Contents of the settlement and explanatory note (list of questions that need to be developed): analyze the literature sources on the current state of the problem of constipation and the direction of its treatment; determine the structure of laxatives, which are purchased at the pharmacy by patients of different ages

5. List of graphic material (with exact indication of the required drawings):
Tables – 6, figures – 4.

6. Consultants of chapters of qualification work

Chapters	Name, SURNAME, position of consultant	Signature, date	
		assignment was issued	assignment was received
1	Tetyana KOLODYEZNA, assistantof department of clinical pharmacology and clinical pharmacy	02.09.2022	02.09.2022
2	Tetyana KOLODYEZNA, assistantof department of clinical pharmacology and clinical pharmacy	02.09.2022	02.09.2022
3	Tetyana KOLODYEZNA, assistantof department of clinical pharmacology and clinical pharmacy	02.09.2022	02.09.2022

7. Date of issue of the assignment: "02" September 2022.

CALENDAR PLAN

№ з/п	Name of stages of qualification work	Deadline for the stages of qualification work	Notes
1	Stating the topic, aim and objectives of the study	September 2022	**done**
2	Literature review	September-October 2022	**done**
3	Survey and analyzing results	October 2022 - January 2023	**done**
4	Preparation of full-text of qualification work	February-March 2023	**done**
5	Submission of qualification work	April 2023	**done**

An applicant of higher education _____ Kawtar MORCHID

Supervisor of qualification work _____ Tetyana KOLODYEZNA

ВИТЯГ З НАКАЗУ № 35
По Національному фармацевтичному університету
від 06 лютого 2023 року

нижченаведеним студентам 5-го курсу 2022-2023 навчального року, навчання за освітнім ступенем «магістр», галузь знань 22 охорона здоров'я, спеціальності 226 – фармація, промислова фармація, освітня програма – фармація, денна форма здобуття освіти (термін навчання 4 роки 10 місяців та 3 роки 10 місяців), які навчаються за контрактом, затвердити теми кваліфікаційних робіт:

Прізвище студента	Тема кваліфікаційної роботи		Посада, прізвище та ініціали керівника	Рецензент кваліфікаційної роботи
• **кафедри клінічної фармакології та клінічної фармації**				
Моршід Кавтар	Клінічко-фармацевтичний аналіз ринку послаблюючих лікарських засобів в Марокко	The clinical and pharmaceutical analysis of the market of the drugs from the group of laxatives in Morocco	асистент Колодєзна Т.Ю.	професор Оклей Д. В.

Підстава: подання декана, згода ректора

Ректор

Вірно. Секретар

Ф А2.8-47-110

ВИСНОВОК

Комісії з академічної доброчесності про проведену експертизу щодо академічного плагіату у кваліфікаційній роботі здобувача вищої освіти

№ 114325 від « 30 » травня 2023 р.

Проаналізувавши випускну кваліфікаційну роботу за магістерським рівнем здобувача вищої освіти денної форми навчання Моршід Кавтар, 5 курсу, _____ групи, спеціальності 226 Фармація, промислова фармація, на тему: «Клінічко-фармацевтичний аналіз ринку послаблюючих лікарських засобів в Марокко / The clinical and pharmaceutical analysis of the market of the drugs from the group of laxatives in Morocco», Комісія з академічної доброчесності дійшла висновку, що робота, представлена до Екзаменаційної комісії для захисту, виконана самостійно і не містить елементів академічного плагіату (компіляції).

Голова комісії,
професор **Інна ВЛАДИМИРОВА**

2%
25%

Ф А 2.2.1-32-353

REVIEW

of scientific supervisor for the qualification work of the master's level of higher education of the specialty 226 Pharmacy, industrial pharmacy

Kawtar MORCHID

on the topic: «The clinical and pharmaceutical analysis of the market of the drugs from the group of laxatives in Morocco »

Relevance of the topic. Despite significant advances in the medical and pharmaceutical industry in the field of gastroenterology, many unresolved issues remain. One such problem is constipation. The high prevalence of constipation among the elderly is noteworthy.

Practical value of conclusions, recommendations and their validity. The research conducted in this work is the basis for further implementation of the principles of optimization of symptomatic treatment of constipation within the framework of pharmaceutical care. The main directions of improving pharmaceutical care that are suggested in work will help increase the effectiveness and safety of treatment with laxatives.

Assessment of work. During the work on master thesis Kawtar MORCHID showed high interest to the topic, good skills in scientific literature sources analysis and performing research by herself. All tasks were done in a timely manner. The present work contains recommendations on treatment with efflux pump inhibitors and alternatives, the importance of providing good professional pharmaceutical care.

General conclusion and recommendations on admission to defend. Qualification work is performed at a good level and can be admitted to the defense.

Scientific supervisor _____ Tetyana KOLODYEZNA

«11» of April 2023

Ф А 2.2.1-32-356

REVIEW

for qualification work of the master's level of higher education, specialty 226 Pharmacy, industrial pharmacy

Kawtar MORCHID

on the topic: «The clinical and pharmaceutical analysis of the market of the drugs from the group of laxatives in Morocco»

Relevance of the topic. Chronic constipation is a persistent and widespread condition that affects many people globally, causing significant economic burdens and healthcare utilization. Sometimes this pathology leads to a disability during the most active period of life. The difficulty in choosing treatment should be noted separately. All this does not call into question its relevance. In addition, the problem of constipation turns into medical and social.

Theoretical level of work. The manuscript provides a full review of the literature, a meaningful main part, recommendations, and conclusions. The results of the work are presented in the form of tables and diagrams for a clearer understanding and accompanied by explanations.

Author's suggestions on the research topic. It is established that patients prefer traditional drugs that have a long experience and a wide range of side effects. At the same time, modern ones, which have a high degree of safety and efficiency, were purchased by only 30% of pharmacy visitors and, of these, only 33% were elderly. It was found that laxatives were often used irrationally, and more than half of such respondents were elderly. It was found that the motives for choosing laxatives are not always justified due to their lack of trust in the authority of doctors and pharmacists.

Practical value of conclusions, recommendations, and their validity. The results of the study will deepen the theoretical knowledge of the pharmacist, structure and

standardize practical professional skills while providing a patient with constipation pharmaceutical care at the appropriate quality level.

Disadvantages of work. There are minor grammatical inaccuracies in the work that do not affect the overall positive impression of the work.

General conclusion and assessment of the work. Qualification work of the student Kawtar MORCHID «The clinical and pharmaceutical analysis of the market of the drugs from the group of laxatives in Morocco» fully corresponds to the master's thesis requirements and can be presented to the defense in the Examination Commission.

Reviewer _____ ass. prof. Denys OKLEI

«15th» of April 2023

МОЗ України
Національний фармацевтичний університет

ВИТЯГ З ПРОТОКОЛУ №10

Засідання кафедри клінічної фармакології та клінічної фармації

м. Харків «19» квітня 2023 р.

СЛУХАЛИ: Про представлення до захисту в Екзаменаційній комісії випускної кваліфікаційної роботи на тему: **«Клініко-фармакологічний аналіз ринку послаблюючих лікарських засобів в Марокко» / «The clinical and pharmaceutical analysis of the market of the drugs from the group of laxatives in Morocco»**
здобувача вищої освіти 5 курсу, спеціальність – 226 Фармація, промислова фармація, освітня програма – Фармація, ступінь вищої освіти – магістр, термін навчання – 4 р. 10 міс., денна форма навчання, НФаУ 2023 року випуску

Моршід Кавтар
прізвище, ім'я та по батькові

Керівник: асистент кафедри клінічної фармакології та клінічної фармації, PhD (Фармація), Колодєзна Т.Ю.

Рецензент: професор закладу вищої освіти кафедри хірургічних хвороб Харківського національного університету імені В.Н. Каразіна, д.мед.н., доцент Оклей Д.В.

В обговоренні кваліфікаційної роботи брали участь:
В.о. зав. кафедри, професор Т.С. Сахарова; професор В.А. Мороз; професор С.К. Шебеко; доцент О.О. Андрєєва; доцент Н.П. Безугла; доцент В.В. Пропіснова; доцент С.В. Місюрьова; доцент І.А. Отрішко; доцент О.О. Тарасенко; доцент К.М. Ткаченко; асистент С.М. Зімін; асистент Т.С. Жулай; асистент Н.В. Давішня; асистент Т.Ю. Колодєзна; асистент К.В. Вєтрова; асистент Ю.В. Тимченко

ПОСТАНОВИЛИ: Рекомендувати до захисту в ЕК кваліфікаційну роботу здобувача вищої освіти

Моршід Кавтар
прізвище, ім'я та по батькові

На тему: **«Клініко-фармакологічний аналіз ринку послаблюючих лікарських засобів в Марокко» / «The clinical and pharmaceutical analysis of the market of the drugs from the group of laxatives in Morocco»**

В.о. завідувача кафедри _____ Тетяна САХАРОВА
(підпис)

Секретар _____ Катерина ТКАЧЕНКО
(підпис)

Ф А2.2.1-32-042

НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ

ПОДАННЯ
ГОЛОВІ ЕКЗАМЕНАЦІЙНОЇ КОМІСІЇ
ЩОДО ЗАХИСТУ КВАЛІФІКАЦІЙНОЇ РОБОТИ

Направляється здобувач вищої освіти Кавтар МОРШІД до захисту кваліфікаційної роботи
за галуззю знань 22 Охорона здоров'я
спеціальністю 226 Фармація, промислова фармація
освітньою програмою Фармація
на тему: «The clinical and pharmaceutical analysis of the market of the drugs from the group of laxatives in Morocco».

Кваліфікаційна робота і рецензія додаються.

Декан факультету _____ / Світлана КАЛАЙЧЕВА /

Висновок керівника кваліфікаційної роботи

Здобувач вищої освіти Кавтар МОРШІД виконала роботу відповідно до вимог, тема кваліфікаційної роботи є актуальною та добре розкритою у тексті роботи. Кваліфікаційну роботу може бути подано до захисту.

Керівник кваліфікаційної роботи

_____ Тетяна КОЛОДЄЗНА

«11» квітня 2023 р.

Висновок кафедри про кваліфікаційну роботу

Кваліфікаційну роботу розглянуто. Здобувач вищої освіти Кавтар МОРШІД допускається до захисту даної кваліфікаційної роботи в Екзаменаційній комісії.

В.о. завідувачки кафедри
клінічної фармакології
та клінічної фармації

_____ Тетяна САХАРОВА

«19» квітня 2023 року

Qualification work was defended

of Examination commission on

« ___ » _____ 2023

With the grade _____

Head of the State Examination commission,

DPharmSc, Professor

_____ / Oleh SHPYCHAK /