

# The role of the pharmacist in the prevention of gastrointestinal diseases

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## ABSTRACT

Pharmacists are health care professionals and their role is to provide health services, recommendations and support to all type of patients with a diversity of pathologies, including gastrointestinal diseases. In the last years, in countries where previously some gastrointestinal diseases were not so common, nowadays are augmenting, for example Crohn's disease. In some country as Asia, Africa and Eastern Europe the number of patients with this type of diseases is constantly growing. Considering its high incidence, physical, mental and economic impact, it is vital to prevent as much as possible its apparition. High risk factors are represented by inadequate diet and lifestyle, medication side effects, drugs interactions or administration and dosage errors. The aim of this paper is to analyse the important role of pharmacists in preventing some gastrointestinal effects by offering correct information and advices to patients. This paper includes information related to self-medication, over-the-counter medication, side effects and the importance of microbial flora, equilibrate diet and lifestyle.

**Keywords:** pharmacist, gastrointestinal diseases, prevention, side effects

## INTRODUCTION

The pharmacist is a provider of health services for all types of patients. The ease of access to quality information that professional pharmacists can provide is a great advantage for patients. Therefore, pharmacists are an important self-care and self-medication advisor, with a big influence in preventing adverse effects [1]. A responsible and active conversation between pharmacists and patients regarding their request of over-the-counter (OTC) medicines can reduce significantly adverse reactions, as a result of interactions with another OTC or a prescribed medicine [2].

One of the areas where pharmacists can put into the practice the information they hold is the gastrointestinal diseases (GID), such as acute gastrointestinal illness, which is a major public health problem around the world. For example, diarrhea is one of the causes of deaths in children under 5 years old [3]. Also, Crohn's disease (CD) has a prevalence of 157/100,000 in the UK and it's rapidly developing in regions such as Asia, Africa and Eastern Europe, where previously was uncommon [4,5]. In 2016, 3.7% of the population worldwide were affected by chronic GID (a percentage of about 23% higher compared to the number of cases in 1990). GID like irritable bowel syndrome (IBS) and gastro-oesophageal reflux disease (GERD) is

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common, but do not usually need ongoing medical review. Instead, CD, ulcerative colitis (UC) or celiac disease, are less common, but needs ongoing medical treatment and seriously affects physical and mental health. Dietary changes are very important in management of these diseases [6].

The impact of GID on economic health care system is substantial and the number of patients is increasing. For example, in the United States, health care expenditures for GID total \$135.9 billion dollars per year, more than expenditures for heart disease, trauma-related disorders and mental disorders [7].

## SELF-MEDICATION AND GASTROINTESTINAL DISORDERS

Self-medication is a frequently practice to treat health problems, and as consequence is delaying diagnosis, worsening disease evolution and may appear side effects [8]. When talking about dispensing OTC medicines, pharmacist counselling patients focuses on dosage and administration, as well as possible side effects [2]. Nonsteroidal anti-inflammatory drugs (NSAIDs), inhibit mucosal prostaglandin production, which has adverse effects both upper and lower gastrointestinal damages. Lower gastrointestinal events represent a percentage of 40% of all NSAIDs-related serious problems. Prevention of gastrointestinal side effects can be done by using alternatives to traditional NSAIDs, such as celecoxib and rofecoxib (selective COX-2 inhibitors). Misoprostol is also an alternative to NSAIDs, because it's considered that prostaglandins are important in the mediation of inflammation and help maintaining integrity of gastrointestinal tract. Also, has been suggested that NSAIDs-induced enteropathy could be reduced by administrating of probiotics, which modulate intestinal microbiota. Another type of medication, commonly recommended by pharmacists, is proton pump inhibitors (PPIs), to protect the upper gastrointestinal tract from NSAIDs which cause mucosal damage and bleeding. Thus, PPIs should be used cautiously, because of its risk factor associated with NSAIDs-induced enteropathy [9].

## PREVENTION OF GASTROINTESTINAL DISORDERS

### Pharmacological tools

*Gastric cancer* is the third leading cause of cancer-related death and despite medical progress, only a

percentage of 30% survives more than 5 years after diagnosis. Asia and Eastern Europe are the most affected, even if it is common too in certain areas of Middle and South America. The most important risk factor of gastric cancer is represented by *Helicobacter pylori*, but is not the unique determinant for the apparition of gastric cancer. Risk factors are related to lifestyle and adopting a quality diet, these can prevents and decreases the incidence of gastric cancer. A high risk of gastric cancer is associated with and increased intake of salt and decreases with the intake of fruits and vegetables, green tea, fibre and a low intake of vitamin C, D and A. Lifestyle factors are represented also by smoking and abuse of alcohol, influencing significantly the evolution of the disease. Recent studies have demonstrated that celecoxib is associated with 52% regression in premalignant gastric lesions comparative to placebo [10].

*Constipation* is a common health problem and can be defined as "infrequent passage of stools or difficulty with evacuation of stools". Constipation is associated with symptoms like sensation of anorectal blockage, incomplete evacuation, abdominal pain and bloating. It could be induced by metabolic disturbances, medications, neurological disorders, myopathy diseases and structural disorder.

Analgesics like opioids and NSAIDs are known to have as side effects constipation and in chronic administration, they have negative effects on gut microbiota. Anticholinergics, including antidepressants and antipsychotics, as a consequence of its mechanism may cause constipation. Anti-hypertensives, like calcium channel blockers, diuretics and iron supplementation are also medicines known for this side effect. The pharmacists can give important advice referring the more proper medications to avoid constipation. In this case, pharmacists must recommend the specific nutritional plan and effective laxatives medicines such as polyethylene glycol, psyllium, methylcellulose, sorbitol, magnesium citrate-based products [11].

*Stress ulcers* are an important cause of morbidity and mortality in patients from intensive care unit. This risk can be reduced to 1.5% from 15% in patients who receive prophylactic medicines. Acid suppression is one of the methods utilised to prevent ulcer formation, a practice known as stress ulcers prophylaxis. The PPIs and histamine H2 receptor antagonists (H2 antagonists) are the most used agents for stress ulcers prophylaxis. The problem is that chronic use of PPIs is associated with enteric infections, including

*Clostridium difficile*, increases the risk of acquiring of pneumonia, malabsorption of vitamin B12, iron, magnesium and calcium. In addition, elderly people are exposed to osteoporosis caused by chronic administration of PPIs. Also, interstitial nephritis, chronic kidney disease and atrophic gastritis (which may increase risk of gastric cancer) are associated with PPIs use. The role of pharmacists is to prevent over utilization of prophylaxis drugs and moreover to analyse if there is a major risk of stress ulcers or a low one, in which case isn't necessary their use [12].

*Diarrhea* is a well-known problem which continues to affect worldwide patients. It has three phases: mild, when diarrhoea is tolerable and doesn't interfere with normal activities, moderate, when it interferes with planned activities and severe, which is incapacitating. If the diarrhea lasts more than 2 weeks, it is considered persistent. The predominant cause of diarrhea involves bacterial etiologies and guidelines indicate the use of antibiotic and non-antibiotic therapies. Pharmacists should be vigilant and educate the patients on any current medication they are taking, because diarrhea could be also a side effect of the treatment they may be taken. An important step is to prevent dehydration and recommend adequate supplements and OTC medicines for symptomatic relief. In terms of drug interactions, pharmacists should advice if loperamide can or cannot be taken with simethicone, because high doses of loperamide can cause serious cardiac adverse effects. Instead, there are studies suggesting that the association of antibiotic and loperamide has an improved efficacy compared to antibiotics alone. Besides treatment and management of diarrhea a very important thing is prevention and a good informing is vital.

Antimicrobial therapy should not be used routinely as prophylaxis, instead it should be used by patients at high risk of health related complications. When antibiotics are indicated as prophylaxis, rifamixin is recommended, comparing to fluoroquinolones which are not a good option [13,14].

### **Nonpharmacological tools**

*Healthy lifestyle.* Another important role of the pharmacist is to provide patients with nutritional education as well as a healthy lifestyle that can promote and improve their quality of life. This nutrition counselling aims to provide dietary advice and to assist the selection of OTC supplements. Discouragement of smoking and excessive alcohol intake, encouragement of healthy eating and physical

activity represent efficient ways to improve overall quality of life and decrease consequences of poor nutrition [15]. IBS are conditions influenced by diet and unfortunately the role in their course is often under estimated. UC and CD are considered two types of IBS. A low fiber diet during exacerbation periods is unquestionable and for CD patients it is recommended a balanced diet [16]. CD and UC can be remitted by medication, nutritional support and smoking cessation, which needs care support from both pharmacist and doctor [5]. For chronic constipation (CC), which is associated with immobility, low intake of fiber and dehydration, the pharmacists, in addition to pharmacological treatment, can advise for increased intake of fibre, sufficient intake of fluid and increased physical activity [17].

Diet and a quality lifestyle can prevent and improve also symptoms associated with GERD. Some modifications in diet and lifestyle which can surely help are represented by eating smaller meals, avoiding problematic and high-fat foods, not eating before exercise, quitting smoking. Also, drinking water or other fluids during meals is not recommended. After meals it is important to avoid lying down or going to bed soon after meals (within 2-3 hours) [18].

*Gut microbiota.* The human body hosts approximately 10<sup>14</sup> microorganism, represented by bacteria, fungi, protozoa and viruses. Today's lifestyle, diet and medical interventions, including medicines as antibiotics, PPIs have a negative impact on the diversity of gut microbiota. A disturbance in the relationship nutrition, metabolism and microbiome is an important factor of deregulation of microbiota. Dysbiosis can increase the risk of inflammatory bowel disease consisting of CD, UC and colorectal cancer.

A healthy gut microbiota plays a fundamental role in the development of immune system, helps in case of intestinal disorders and against pathogens. Many studies described a good impact of microbiota in ameliorating livers disease, irritable bowel syndrome, chronic inflammation, constipation, food allergies and cancers, type 2 diabetes, cardiovascular diseases and Parkinson's disease. Probiotics associated with prebiotics are a good option to restore the normal function of microbiota. A non-pharmacological way to keep a healthy gut microbiota is to have an adequate diet. The type and amount of protein, carbohydrates and fat influence the gut microbiota. Also, the apport of dietary fibre is very important, because they are acting like source of energy and are considered prebiotics. The Mediterranean diet, based on fruits,

grains, vegetables, polyunsaturated fats, is considered the best way to have a healthy lifestyle [19,20].

## CONCLUSIONS

In conclusion, GID are extremely frequent and it's vital to prevent it and consequently to decrease

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gravity of symptomatology, economic impact and to raise the quality of patient's life. Pharmacists are the most accessible medical health professional care with the necessary knowledge and experience and their role is very important in preventing GID, caused by diet, lifestyle, medication interactions and drugs side effects.

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