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MINISTRY OF HEALTH OF UKRAINE

NATIONAL UNIVERSITY OF PHARMACY

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QUALIFICATION WORK

on the topic: «**ANALYSIS OF THE PROBLEMS OF PHARMACEUTICAL PROVISION OF GASTRIC ULCER PATIENTS IN THE COUNTRIES OF THE WORLD**»

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ANNOTATION

The qualification work presents the results of the analysis of pharmaceutical provision of patients with gastric ulcer. The analysis of indicators of socio-economic availability of drugs used in the treatment of gastric ulcers was carried out. In addition, an analysis was made of the National Lists of Essential Medicines in Morocco, Egypt, Algeria, Tunisia and Mauritania. The qualification work is presented on 49 pages of typewritten text and consists of an introduction, three chapters and a list of used literature, which contains 57 sources The work is illustrated with 3 tables and 9 figures.

Key words: physical availability of drugs, social and economic availability of drugs, gastric ulcer, pharmaceutical supply of the population

АНОТАЦІЯ

У кваліфікаційній роботі представлені результати аналізу фармацевтичного забезпечення хворих на виразкову хворобу шлунку. Проведено аналіз показників соціально-економічної доступності лікарських засобів, що застосовуються при лікуванні виразкової хвороби шлунку. Крім того, було проведено аналіз національних списків основних лікарських засобів у Марокко, Лівії, Алжирі, Тунісі та Мавританії. Кваліфікаційна робота викладена на 49 сторінках машинописного тексту і складається зі вступу, трьох розділів та списку використаної літератури, який містить 57 джерел. Робота ілюстрована 3 таблицями та 9 рисунками

Ключові слова: фізична доступність ліків, соціально-економічна доступність ліків, виразкова хвороба шлунку, фармацевтичне забезпечення населення.

CONTENT

ABBREVIATIONS

EMA – European Medicines Agency

EML – Essential Medicines List

EU – European Union

INN – International non-patent name

EC – European Commission

FDA – Food and Drug Administration

FIP – International Pharmaceutical Federation

HTA – Health Technology Assessment

OECD – Organisation for Economic Cooperation and Development

SDG 3 – Sustainable Development Goal 3

WHO – World Health Organization

WHO EML – WHO Essential Medicines List

WHO EMLc – Essential Medicines List for Children

UHC – Universal healthcare coverage

INTRODUCTION

Relevance of a subject. The main direction of the state policy in the field of health care is to provide the population with affordable, effective and high-quality drugs [43,50,55]. To solve this problem, it is necessary to introduce various mechanisms that regulate the circulation of medicines. Such mechanisms of state regulation of drug circulation operate in all national pharmaceutical markets [37-41]. Providing the population with pharmaceuticals is of great social importance. However, the solution of this problem is of particular importance for chronic patients who take drugs for a long period of time [34,39]. So, for example, patients with gastric ulcer need long-term use of drugs, primarily to prevent the occurrence of relapses of the disease [26,28,30].

Peptic ulcer disease affects four million people worldwide annually and has an estimated lifetime prevalence of 5,0−10,0% in the general population [1,5,23,26]. A stomach ulcer affects people of almost all ages, regardless of gender and country of residence [8,12,18,23].

Purpose of the study. To analyze the problems of drug provision of patients with gastric ulcer.

Research tasks: to analyze international experience in the implementation of activities aimed at increasing the level of access to medicines that have important medical and social significance for the population; to systematize the data of special literature, which highlights the issues of organizing the work of pharmacists in the conditions of increasing demands of the population for the efficiency of service in pharmacies; to analyze the data of special literature, which provides data on the epidemiology of gastric ulcers in the world and other countries of the world, incl. Morocco; to analyze the data of special literature, which presents data on the organization of the provision of effective medical aid and pharmaceutical aid to patients with gastric ulcer; to analyze the features and prospects for the development of the global market for medicines used in the treatment of gastric ulcer; to systematize the experience of implementing the

International Concept of Essential Medicines in the world, as well as in countries such as Morocco, Egypt, Algeria, Tunisia and Mauritania; to conduct a comparative analysis of macroeconomic indicators that determine the state of health financing in Morocco, Algeria, Tunisia, Egypt and Mauritania; to analyze the indicators of socio-economic availability of medicines that are used in the treatment of gastric ulcers; to identify the main problems in the organization of effective pharmaceutical support for patients with gastric ulcer.

The subject of the study. Modern approaches to the organization of effective and affordable pharmaceutical care for the population in general and patients with gastric ulcer in particular.

The objects of the study were: legislative and regulatory framework governing the issues of drug provision of the population in Morocco and Ukraine; data from special literature, which provides data that allow us to analyze the effectiveness of the introduction of the International Concept of Essential drugs in national health systems, namely in countries such as Morocco, Tunisia, Algeria, Egypt, Mauritania; data of special literature, which provides data that allow analyzing changes in the role of pharmacists in organizing the provision of medical and pharmaceutical care to the population in general and chronically ill patients in particular; epidemiology data on gastric ulcers; statistical data presented in open access for researchers and which reflect the dynamics of the development of the global pharmaceutical market, as well as its segment, which presents antiulcer drugs; statistical database that presents data on drugs that are used in the treatment of gastric ulcers in Ukraine for 2019-2022.

Methods of researches. In the research we used historical, logical, comparative, graphical methods. In addition, we also used the methods of mathematical and statistical analysis of price data and drug availability indicators.

The practical significance of the work. The results of the research can be used in the process of developing the main directions for solving the problems of pharmaceutical provision of patients with gastric ulcer.

Scientific novelty. The paper presents the results of an analysis of indicators of the socio-economic availability of drugs that are used in the treatment of gastric ulcers in Ukraine for 2019-2022.

Approbation of work .The results of the research were presented at the VI All-Ukrainian Scientific and Educational Internet Conference "Formation of the National Drug Policy in the Conditions of Health Insurance: Education, Theory and Practice", which was held on March 14-15, 2023 in Kharkiv on the basis of the Department of Organization and Economics of the National Pharmaceutical University (NUPh). At the end of the work, the abstracts that were published at this conference are presented, as well as a certificate confirming participation in the conference.

Structure and volume The qualification work consists of an introduction, three sections and a list of references, which contains 57 sources. The work is illustrated with 3 tables and 9 figures.

CHAPTER I
CHARACTERISTICS OF MODERN APPROACHES TO ENSURING THE AVAILABILITY OF DRUGS ON THE PHARMACEUTICAL MARKET

1.1. International Concept of Essential Medicines – history and development prospects

At the current stage of society's development, the health and quality of life of citizens are considered the highest values in the state. In most countries of the world, the strengthening of humanistic tendencies are the dominant characteristics of the development of society [3,9,25].

At the International Conference on Primary Health Care, which took place in Alma-Ata in 1978, the basic principles of building national health care systems in the direction of implementing humanistic concepts of the development of society were laid down [25,27].

Since that time, most countries of the world have already developed and are effectively implementing strategic plans to increase the level of availability of medical and pharmaceutical assistance to citizens, regardless of their social status in society and financial condition [3,9,25,38,39].

The WHO plays a key role in the implementation of humanistic principles in the activities of national health care systems [3,7,27,36,37]. For the effective implementation of the specified principles in the health care of different countries at the international level, a strategy for building the National Drugs Policy was developed [27,29,37,41].

The recommendations of the WHO regarding the construction of socially oriented models of relations between subjects in the system of pharmaceutical provision of the population provide for the following access solutions:

- equitable availability and affordability of essential medicines, including traditional medicine;

- quality: the quality, safety and efficacy of all medicines;
- rational use: the promotion of therapeutically sound and cost-effective use of medicines by health professionals and consumers [27,38,55].

Government has to assist in the formation of management, which is adequate to transformation of the whole society in general, to ensure the development of a transparent system of its functioning, to improve informational support and functioning of the whole industry in general. Moreover, government has to reform the system of scientific provision and professional education effectively, which will meet upto-date requirements of the society as to the formation of efficient ways of providing doctors, pharmacists and consumers of pharmaceutical services with necessary and demonstrative information [25,27,38,42]. As proved by the facts from special literature, the necessity to use the key goals of national politics has already been declared by the government in more than 150 countries of the world [3,9,25].

In different countries of the world the above-mentioned goals are achieved using various mechanisms and measures. In the opinion of international experts, one of the most important tools to achieve the goals of National Drug Policy development and implementation of the List of essential medicines at the international level [3,7,11,21,22,40]. It is worth mentioning that different countries of the world have already acquired certain experience of implementation some mechanisms of regulation of accessibility, quality and rational use of medicines in national systems of health protection [25,40]. It is interesting to know that prior to the development of the first edition of WHO Model List of Essential Medicines (1977) certain countries have already made some steps in using the concept of National lists of Essential Medicines in practical health protection [3,7,9,25]. For example, the first list of medicines financed by the government was developed in 1959 in Ceylon (today Shri Lanka) [7,25].

One of the first prototypes of National list of Essential Medicines was created in Tanzania in 1970 [3,9,25,40] . Since 1977 WHO Model List of Essential Medicines increased from 204 names of medicines to 433 medicines in the 20th

Essential Medicines List, published on 06 June 2017. The updated edition of WHO Model List of Essential Medicines (2017) included medicines to treat the viruses of immunodeficiency, hepatitis C, tuberculosis and oncological diseases [3,9,25].

At the moment, most countries of the world have already developed and constantly update National lists of Essential Medicines. To our mind, Ukraine requires experience of using the concept of essential medicines in practical health protection of those countries, which are at the stage of reformation of national health system or are developing under the conditions of insufficient government financing [3,7,22,25,29,40].

First of all, they are India, China, Malasia, Thailand, Brazil, Mexico, Africa and Middle East. Rational use of medicines, which are included in National lists of Essential Medicines, allowed to save significant material resources, which the government can use to solve more important problems of practical medicine and the society in general [3,9,25,40]. Herewith, efficiency of implementation of the above-stated plans in practical health protection depends on the whole set of indicators [7,22,38,40,41].

A significant role in this issue is given to the ability of political authorities of the countries to solve difficult problems of health protection and pharmaceutical provision under the condition of deficiency of resources and increase of requirements of the population to the quality of medical and pharmaceutical services.

Rapidly rising costs of health care and high medicine prices are a growing concern worldwide, especially in developing countries where patients often have to pay the full price of medicines [31].

As a result of the analysis of data from special literature, it can be said that in Morocco, the government has recently been implementing many projects to increase the availability of medicines for people. For example, in Morocco, drugs supplied through the public sector, such as through primary healthcare centres, can be obtained freely. However, reports suggest availability through the public sector is poor [31].

One of Morocco's health development goals is to ensure access to health services, mainly through the essential drugs program and the regulation of the pharmaceutical sector. Providing Universal healthcare coverage (UHC), which aligns to the United Nations Sustainable Development Goal 3 (SDG 3), is at the core of Morocco’s 2011 constitutional reforms, and the WHO strategic plan for Morocco [4]. Fundamental to this is providing medicines that are both safe and quality assured.

1.2 Assessment of the modern rule of pharmacists in the organization of effective medical care for chronic patients

Pharmacies are institutions that function in the health care system and perform important functions. Pharmacies perform four main functions. These are trade, production, social and informational functions. Every year, the social function in the health care system is becoming increasingly important. Of particular relevance is the fulfillment of a social role in the organization of medical care for chronic patients. The complex of services that are provided to patients in pharmacies when dispensing drugs is called the term «pharmaceutical care». Let us dwell on the analysis of the development of pharmaceutical care in the history of the development of pharmacy.

Understanding the modern role of pharmacists in the pharmaceutical industry and society should be considered in the context of the development of such an important concept as «pharmaceutical care». The first stepers in this direction were American scientists and representatives of practical medicine and pharmacy. For the first time, a scientific understanding of changes in the practice of pharmacists under the influence of a set of factors was made in the works of great American scientist William E. Smith [14,15].

In the distant 1967 year, William E. Smith first identified the need to review the role of pharmacists in organizing the provision of effective pharmaceutical services to hospitalized patients as an important component of medical care

provided in hospitals [14,15]. It should be noted that the successful work of prominent American scientist in this area continues even now, as in his work he covers a range of issues in the work of clinical pharmacists as well, and pharmacists working in pharmacies of different ownership [12,27,29].

American experience of the active introduction of effective pharmaceutical services provided to patients in hospitals to form objective preconditions for the formulation of the very concept of "pharmaceutical care." With the emergence and introduction into scientific circulation of this scientific category (C.D. Helper and L.D. Strand, 1989-1990), the practical activity of pharmacists acquired a fundamentally new meaning [12,14,15].

The nature of the development of pharmaceutical activity has become consistent with the contemporary challenges of society, which began to grow more and more socially every year. At the same time, it should be noted that the works of scientists that have been carried out for several decades in this direction, as well as the consistent and balanced position of international organizations, primarily the WHO and the International Pharmaceutical Federation (FIP), have allowed the formation of a fundamentally new ideology in pharmaceutical practice [12,27,32,34].

Because of the active position of American scientists and consolidated and socially responsible policies of European scientists and international organizations currently global pharmaceutical community has modern concept of implementing pharmaceutical care and services [34,40,42,43].

Again that the WHO and the FIP played a key role in understanding the current role and direction of pharmaceutical workers [12,42,43,55]. It is the implementation of this concept that allows us to effectively address all the challenges of society in the direction of organizing the functioning of public health.

More and more popular in the world, especially in the United States, is expanding the modern model of relations between pharmacists and pharmacy visitors using modern mobile gadgets. First of all, in the national health systems,

conditions should be created for the free development of the pharmacy business, which must effectively perform its social functions to ensure that the population has quality, affordable and rational use of the drug. That is, the mechanisms of state regulation of pharmaceutical activity should not restrict the growth of professional and social activity of pharmaceutical workers. An interesting example of the expansion of the spectrum of pharmacists' districts was the active cooperation of Singaporean pharmacists (2017-2018 years) with the provision of medical and pharmaceutical services by clients of homes for the elderly and the American population vaccination program in pharmacies («US vaccine care model») [29,34,42,43]

Special attention is paid to the questions of formation of long-term relations between pharmacists and clients of pharmacies as an example «Belgian «family pharmacist» concept» [34,42,43]. The essence of this concept is to build a new relationship between the pharmacist and the pharmacy customer, based on the principles of trust and mutual understanding and active participation of the pharmacist in healthy life and preservation of decent quality. Thus, an agreement on the provision of pharmaceutical services for a whole spectrum of area is concluded between the pharmacist and the pharmacy client.

The so-called «Family pharmacist» in accordance with the conditions presented in the contract is a plan for the treatment of simple, from the therapeutic point of view of health disorders, prevention programs for recovery, the losing of the client and his family members. In addition, the family pharmacist helps to choose the most rational scheme of medicine consumption through the use of more affordable drugs are the pharmaceutical market. Now, in Belgium, approximately 80.0% of pharmacists work under the «family pharmacist» program. According to data from special literature, more than 400,000 contracts between pharmacists and pharmacy clients and members of their families have been concluded in Belgium today [42,43].

It should be noted that for the effective implementation of the concept in 2018, the «Association of Pharmacists of Belgium» received the FIP Award. One

of the most important and promising perspective areas for pharmacists is the maintenance of non-hospitalised patients with chronic diseases (arterial hypertension, diabetes mellitus, Atsegaymer's disease, etc.) [34,42,43,50]. Increasingly frequent cases are the active participation of pharmacists in the provision of palliative care to cancer patients outside hospitals and hospices [29,32,42,43].

September 2018 Cochrane report was published, together with «NHS Education Scotland Universities of Aberdeen, Brunel, California and Nottingham Tren», which reviewed and systematized the results of 116 scientific studies (up to 2015), in which 41851 patients from 25 countries of the world, mainly in the US, UK, Canada, Australia, etc., participated [32]. The aim of the study was to compare the effectiveness of provision of chronic services to patients with inpatient and outpatient care and services provided by pharmacists in pharmacies in the context of the implementation of the concept of provision of pharmaceutical assistance and services.

The researchers noted that 41 of the 111 studies analyzed the effectiveness of providing non-hospitalized patients with pharmaceutical care were significantly higher than those of patients who were provided with medical care, including specialized care. In general, specialists point out that pharmaceutical services provided by non-hospitalized patients may have significantly higher clinical outcomes than medical care provided by hospitals. This is especially true for patients with chronic diseases that require long-term care and treatment [29,32].

The said expansion of the spectrum of pharmacists' activities will allow more efficient use of limited health care resources, and the free allocation of funds to address more relevant and socially significant problems of public health [27,38,40]. In this direction, the expansion of the practice of pharmacists with each passing year becomes more relevant to the resilience of clinical pharmacists in the organization of treatment and prevention process at the level of hospitals and facilities of general health and social care [40,55].

The issue of expanding the range of pharmacists is not only relevant for countries with high levels of medical and pharmaceutical assistance. Particularly relevant, this direction of activity of pharmacists takes place in poor countries with low levels of access to medical care for ordinary citizens.

Unfortunately, in such countries, most pharmacy establishments are the only healthcare facilities that can be close to chronic patients by geographical indication, and pharmacists are the only healthcare providers who can professionally provide first-aid emergency care

CONCLUSIONS TO THE I CHAPTER

1. It has been established that the problem of ensuring the physical and socio-economic availability of medicines has been relevant for many countries of the world for the past 50 years. This problem is being addressed, but it remains relevant for many low-income countries.
2. To solve the problem of increasing the level of physical and socio-economic accessibility of medicines, it is necessary to introduce the International Concept of Essential Medicines into practical medicine and pharmacy.
3. As a result of the analysis of the data of special literature, the following conclusion can be drawn. The process of implementation of the International Concept of Essential Medicines began in the 70-s of the last century and is actively carried out now.
4. In the process of providing medical and pharmaceutical care to the population, an important role is assigned to pharmacists. They provide effective pharmaceutical assistance on various issues affecting the preservation of health, as well as help chronically ill patients in matters of rational drug intake.

CHAPTER II
ORGANIZATION OF EFFECTIVE MEDICAL AND PHARMACEUTICAL CARE FOR PATIENTS WITH STOMACH ULCER AS AN INTERNATIONAL PROBLEM

2.1. Epidemiology of gastric ulcer in Morocco and evaluation of the role of Helicobacter pylori in the spread of gastric ulcer and gastric cancer in the country

Peptic ulcer of the stomach refers to diseases that require a systematic approach to the organization of treatment of patients [18,21,26]. Especially in those cases where the pathology has become chronic. Significant resources can be expended on the treatment of such patients. In addition, not in all countries of the world, patients with stomach ulcers can count on financial assistance from the state or health insurance authorities. Therefore, the issues of early diagnosis and treatment of patients with gastric ulcer are of great importance. In the development of models of rational resource provision for patients with gastric ulcer, monitoring of epidemiological data is of great importance. According to the latest WHO data published in 2020 Peptic Ulcer Disease Deaths in Morocco reached 1,076 or 0.47% of total deaths. The age adjusted Death Rate is 3.45 per 100,000 of population ranks Morocco 79 in the world [1,5].

Worldwide, there are significant heterogeneities in coping approaches of healthcare systems with peptic ulcer in prevention, diagnosis, treatment, and follow-up. Quantifying and benchmarking health systems' performance is crucial yet challenging to provide a clearer picture of the potential global inequities in the quality of care [10,17,18,23].

Recently, in the epidemiology of the development of peptic ulcer and stomach cancer, experts began to pay very much attention to the issues of infection of the population with Helicobacter pylori. Epidemiological studies have shown

that H. pyloriare the major causative agent in the development ofseveral gastric diseases, such as:

- superficial gastritis;
- peptic ulcer;
- mucosal lymphoid lymphoma;
- and gastric adenocarcinoma [10,33,34,47,48,56].

Helicobacter pylori colonize the gastric mucosa of 50% of the world's population [10,16,20]. Helicobacter pylori can spread from person to person. Helicobacter pylori are found in saliva, plaque on teeth and poop. Infection can be spread through kissing and by transferring the bacteria from the hands of those who have not thoroughly washed them after a bowel movement [16,20,51]. Helicobacter pylori multiply in the mucus layer of the stomach lining and duodenum. The bacteria secrete an enzyme called urease that converts urea to ammonia. This ammonia protects the bacteria from stomach acid [12]. As Helicobacter pylori multiply, it eats into stomach tissue, which leads to gastritis and/or gastric ulcer multiply, it eats into stomach tissue, which leads to gastritis and/or gastric ulcer multiply in the mucus layer of the stomach lining and duodenum [10,11,16,20].

A group of scientists from Morocco conducted a study of the level of infection of the population of the country with Helicobacter pylori. Studies were conducted among patients who already had symptoms observed in diseases of the gastrointestinal tract, as well as in a group of people who did not have such symptoms [10]. Some of the results that were obtained by these scientists are shown in Figure 2.1. and 2.2.

As we can see from the data in Fig. 2.1, the level of infection of Helicobacter pylori was the highest among people aged 21 to 40 years. Moreover, it should be noted that these people did not have chronic diseases of the stomach. Whereas, atrophic gastritis appeared highly at range of age 41-50 years, intestinal metaplasia at range of age 51-60 years, gastric cancer at range of age 61-70 years, compared to chronic which manifests at early age of 21-40 years [10].

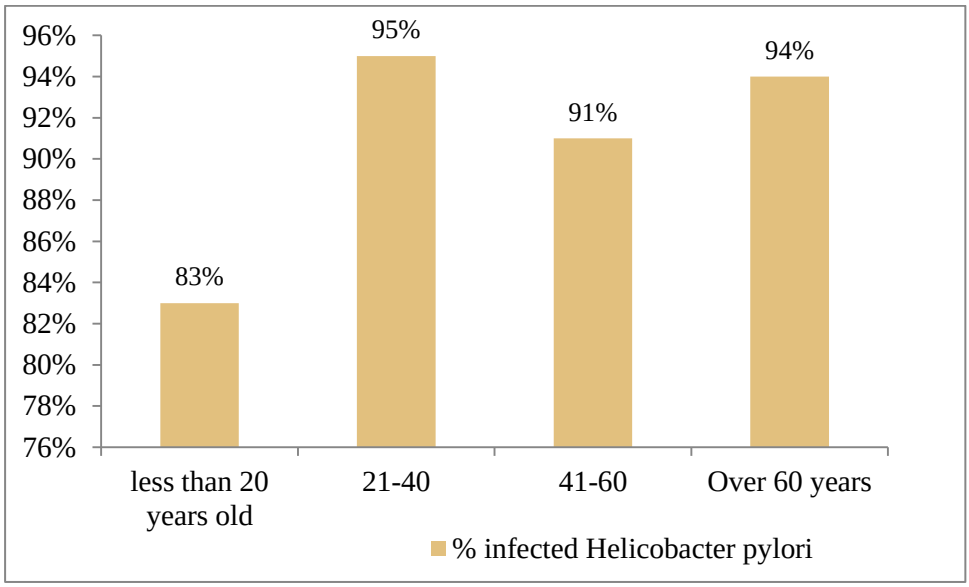

Fig. 2.1. % of people infected with Helicobacter pylori without a history of stomach disease [10]

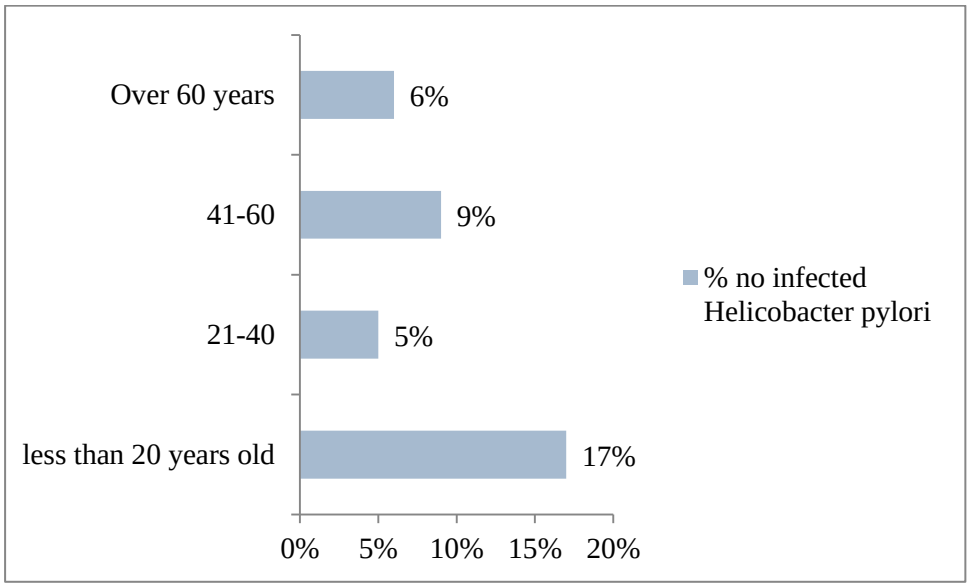

Fig. 2.2. % of people negative Helicobacter pylori without a history of stomach disease [10]

Moroccan scientists found that atrophic gastritis manifested quite often in the age range 41-50 years old, intestinal metaplasia in the age range 51-60 years old, stomach cancer at the age of 61-70 years old, compared to chronic, early onset 21-40 years old [10].

In the majority of cases, Helicobacter pylori infection induces chronic gastritis with a rate of 80% to 90% and to 10% of infected individuals can develop peptic ulcers and 1-3% presents a risk of developing gastric cancer [8,10,55,56]. The highest percentage of absence of Helicobacter pylori in the obtained analyzes were people under the age of 20 years. It is worrying that the rate of infection of Helicobacter pylori among the people who were studied ranged from 83,0% to 95,0% [10].

By systematizing the data of the analysis of those data that are presented in the special literature, one can draw such a conclusion. In order to save thousands of people who may be vulnerable to the development of gastric ulcers, it is necessary in countries to more actively apply methods for the early diagnosis of this pathology. It will also help save a significant amount of money that can be directed to the provision of medical and pharmaceutical care to those patients who need it.

2.2. Analysis of the features and development prospects of the global market for drugs used in the treatment of gastric ulcers

One of the important components of the international economic system is the pharmaceutical market. This is a complex structure that plays a special role in the development of any state. In the pharmaceutical market, the interests of various entities representing drugs and pharmaceutical services are realized.

Despite the coronavirus pandemic, the global pharmaceutical market is characterized by growth. The sales of those drugs that have significant prospects in practical medicine have especially increased. For 2022, the total global pharmaceutical market was estimated at 1.48 trillion U.S. dollars. This is a only a slight increase from 2021 when the market was valued at 1.42 trillion U.S. dollars. The pharmaceutical market plays a key role in how people get medications and what people pay for medication [45,46].

In the organization of effective medical support for the population, the issues of achieving the physical availability of medicines that are presented on the

pharmaceutical market are of great importance. Therefore, the purpose of our further research was to analyze the segment of the global pharmaceutical market, which presents preparations used in the treatment of stomach ulcers. In the research, we used data that are presented in the public domain on websites on the Internet, as well as in specialized literary sources [45,46].

The global peptic ulcer drugs market size was valued at $4,25 billion 2019 & is projected to reach $5,15 billion by 2027, exhibiting a CAGR of 2,4% in forecast period [45,46]. The indicators of sales of antiulcer drugs in the global pharmaceutical market in 2019-2022 and the indicators that are forecast for 2023-2025 are shown in Fig. 2.1. In 2022, sales were $4.71 billion, up 10.8% from 2019.

As a result of the analysis of data from special sources of information, it can be said that the largest volumes of sales of antiulcer drugs are carried out in the European and American pharmaceutical markets. However, it should be noted that every year the sales of antiulcer drugs in the pharmaceutical markets of countries represented in Latin America are increasing [46]. In addition, the activation of the sale of anti-ulcer drugs in China, India and North Africa is of great importance in increasing these sales [46]. The increase in the consumption of generic drugs around the world also significantly affects the increase in the sale of antiulcer drugs in the global pharmaceutical market. Policies to stimulate the consumption of generic drugs, which have recently been implemented in many countries, also affect the increase in the volume of sales of antiulcer drugs.

The main companies that represent anti-ulcer preparations on the world pharmaceutical market include: F. Hoffmann-La Roche Ltd. (Switzerland); Mylan N.V. (U.S.); Teva Pharmaceutical Industries Ltd. (Ireland); Sanofi (France); Pfizer Inc. (U.S.); GlaxoSmithKline plc (U.K.); Novartis AG (Switzerland); Merck & Co., Inc. (U.S.); Allergan (Ireland); AstraZeneca (U.K.); Johnson & Johnson Private Limited (U.S.); Hikma Pharmaceuticals PLC (U.K.); Bristol-Myers Squibb Company (U.S.); Bayer AG (Germany); Boehringer Ingelheim International GmbH. (Germany); Dr. Reddy’s Laboratories Ltd. (India); Gilead Sciences, Inc.

(U.S.); Amgen Inc. (U.S.); Eli Lilly and Company (U.S.); AbbVie Inc. (U.S.); Lupin (India); Allergan (Ireland).

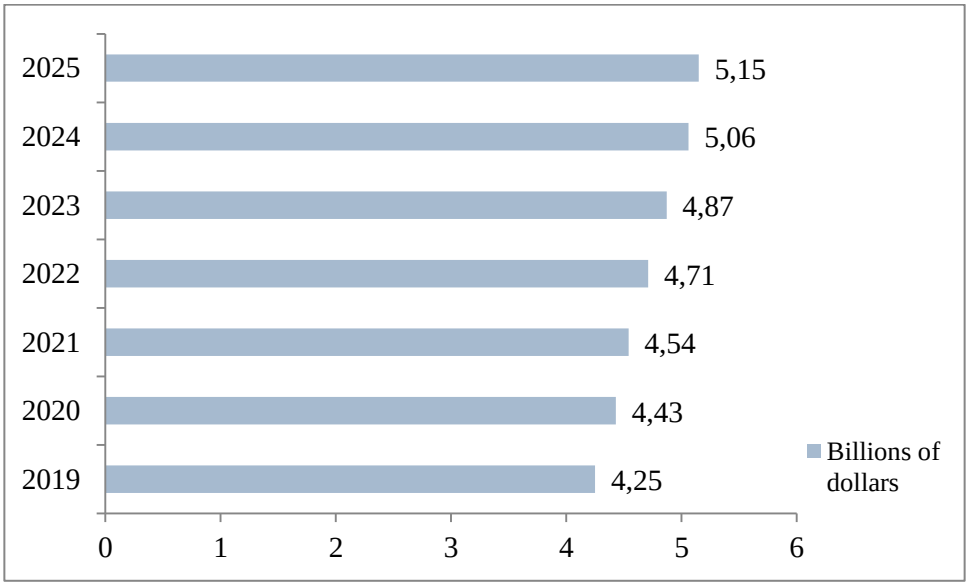

Fig. 2.1. Analysis of sales of antiulcer drugs in the global pharmaceutical market in 2019-2022 and indicators that are predicted for 2023-2025 [46]

In the following figures 2.2. and 2.3. the data of the analysis of sales of antiulcer preparations in the North American segment of the pharmaceutical market are presented. Over the period from 2016 to 2022, drug sales in the North American segment of the pharmaceutical market increased from $1.71 billion to $1.87 billion. Thus, the volume of sales of drugs increased by 9.4%. It should be noted that the North American segment of the pharmaceutical market is characterized by a systematic increase in sales during 2016-2022.

The indicators of drug sales in the North American segment of the pharmaceutical market, which are forecast for the period from 2023 to 2027, are shown in Fig. 2.2. As can be seen from Figure 2.3, drug sales in 2027 are expected to reach USD 2.05 billion. This is 7.8% more than similar data that we can observe in 2023. In 2025, drug sales may have a high growth rate (%) compared to the data that was presented in 2024. Drug sales could reach $1.97 billion in 2025.

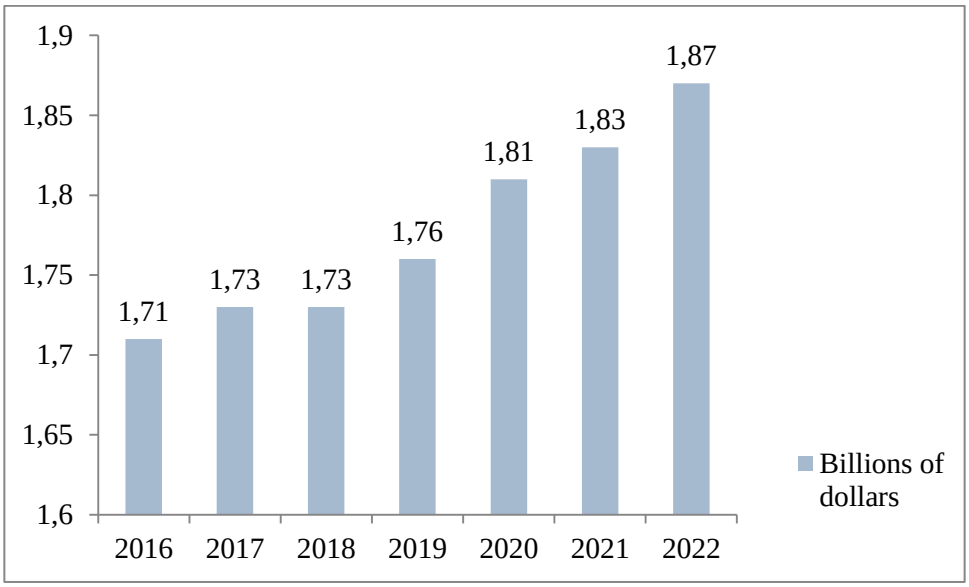

Fig. 2.2. Analysis of the dynamics of the development of the North American segment of the pharmaceutical market, which presents anti-ulcer drugs for the period from 2016 to 2022 [46]

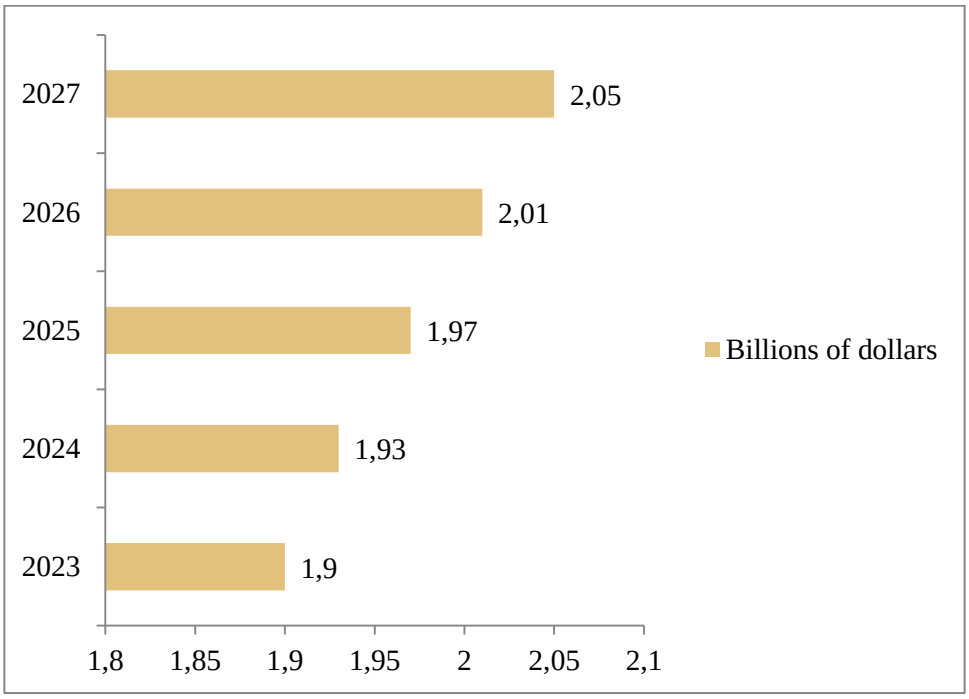

Fig. 2.3. Sales of antiulcer drugs in the North American segment of the global pharmaceutical market, which are forecast for the period from 2023 to 2027 [46]

An analysis of the list of companies representing anti-ulcer drugs in the world suggests that the leading positions belong to those companies that represent the

North American and European segments of the pharmaceutical market. However, it should be noted that the influence of Indian companies on the dynamics of sales of antiulcer drugs in the world is also very high.

In the pathogenetic and symptomatic treatment of gastric ulcers, drugs from different pharmacotherapeutic groups are used. In the past few decades, important changes have taken place in practical medicine in the organization of medical care for patients with gastric ulcer [2,48,49,54]. Priorities in the treatment of these patients have changed significantly. We have already mentioned this in our work. This significantly affected the sales volumes of antiulcer drugs, which are presented in different pharmacotherapeutic groups [2,18,54,57]. Figure 3.4 shows the structure of sales of antiulcer drugs in the global pharmaceutical market according to 2019 data.

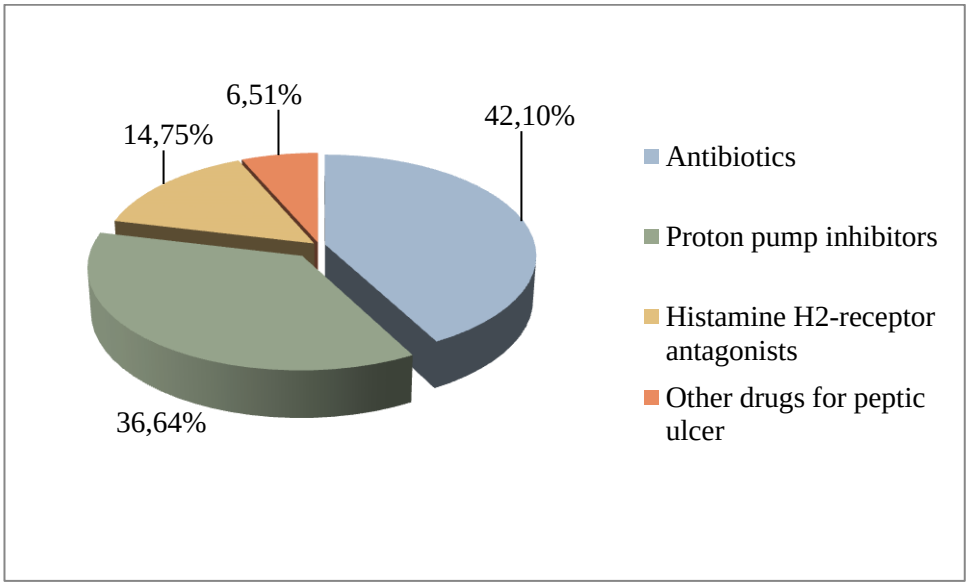

Fig. 3.4. Structure of sales of antiulcer drugs in the global pharmaceutical market according to 2019 data [46]

As you can see, the largest volumes in sales of antiulcer drugs, expressed in %, are occupied by antibiotics (42.1%). This is due to the priorities that are currently being implemented in the process of providing effective medical and pharmaceutical care to patients with stomach ulcers. Treatment of infection, which is one of the key etiological factors in the occurrence of gastric ulcers, is of great

importance in modern gastroenterology [8,11,33]. Drugs from the group of proton pump inhibitors account for 36.65% of the sales of antiulcer drugs that were sold on the global pharmaceutical market in 2019.

The segment of antiulcer drugs in the global pharmaceutical market has prospects for development, as research continues to evaluate the clinical effectiveness of drugs. In addition, sales of these drugs may increase due to the growth of generic drugs that are represented in the national pharmaceutical markets. We believe that anti-ulcer drugs also have good development prospects in the Moroccan pharmaceutical market. The vast majority of antiulcer drugs belong to the group of drugs dispensed in pharmacies without a doctor's prescription. In addition, the country's government has recently pursued a policy that is aimed at stimulating the consumption of generic drugs. This is carried out in order to reduce the costs associated with providing the country's population with affordable and effective medical and pharmaceutical care. All this will, of course, affect the dynamics of sales of antiulcer drugs in the pharmaceutical market of Morocco.

CONCLUSIONS TO THE II CHAPTER

1. In accordance with the data presented by WHO in Morocco, the death rate of the population from stomach ulcers was 1076 cases. This represents 0.47% of the total deaths in the country.
2. The death rate of the population of Morocco from stomach ulcers is 3.45 per 100,000 population. At the same time, it should be noted that in terms of mortality from stomach ulcers, Morocco ranks 79th in the world.
3. An important problem in the organization of effective medical and pharmaceutical care is the prevention of Helicobacter pylori infection. In addition, early diagnosis of gastric ulcer in humans is of great importance.
4. The segment of antiulcer drugs is the most important component of the global pharmaceutical market. Anti-ulcer drug sales in 2019 were $4.25 billion. It has been established that the volume of sales of antiulcer drugs in the global

pharmaceutical market is steadily growing. The average annual growth rate (%) of this segment is 2.4%.

5. According to forecasts, in 2027, the volume of sales of antiulcer drugs in the global pharmaceutical market may be equal to 5.15 billion US dollars

6. The largest sales volumes of antiulcer drugs are presented in the North American and European segments of the global pharmaceutical market.

7. In most cases, antiulcer drugs are positioned on the global pharmaceutical market by American and European companies. At the same time, it should be noted that every year the role of Indian companies in this segment of the market is increasing.

8. An important component of the global market for antiulcer drugs is the North American segment. Thus, it was established that the volume of sales of drugs on it from 2016 to 2022 will increase from 1.71 billion US dollars to 1.87 billion US dollars. Experts predict that this figure in 2027 may be 2.05 billion US dollars.

9. We found that the largest volume of sales, expressed in% in 2019, had drugs that are used in the etiological treatment of gastric ulcers. The volume of sales of antibiotics used in the treatment of gastric ulcers amounted to 42.1% (2019) of the total sales in the global segment of antiulcer drugs. Further, with a slight margin in the sales rating, drugs from the group of proton pump inhibitors (36.64%) were presented.

10. Overall, we believe that the anti-ulcer segment has significant growth potential globally. In addition, significant sales of these drugs can be expected in those countries that have policies aimed at stimulating the consumption of generic drugs.

11. This will be especially true for chronic patients who require the use of drugs for a long period of time. This group includes patients with gastric ulcer, which can become aggravated and have a chronic type of course throughout life.

CHAPTER III
ANALYSIS OF THE PROBLEMS OF PHARMACEUTICAL SUPPLY FOR PATIENTS WITH STOMACH ULCERS

3.1. Results of a comparative analysis of lists of essential medicines in Morocco, Egypt, Algeria, Tunisia and Mauritania

The main goals of the National Drug Policy, which is a strategic direction for the development of health care, include the achievement of three main parameters [7,25,27]. Thus, in national health systems it is necessary to provide people with affordable, safe and effective medicines. Thus, the availability of medicines for patients is a very important parameter that is used in the process of assessing the effectiveness of the functioning of the entire health care system in the country

Ensuring the availability of drugs for various segments of the population is an important task for the functioning of national health systems. To solve this important socio-economic and medical problem, different mechanisms are used in different countries [7,27,31,38]. Reimbursement of the cost of treating a disease is one of the important mechanisms that allow patients to receive affordable pharmaceutical care.

In the specialized literature, there are two terms that make it possible to assess the level of availability to drugs for the population in the system of drug provision of the population [27,38]. This is the physical and socio-economic availability of drugs [37,40].

The physical availability of drugs is achieved through the use of various mechanisms operating in the pharmaceutical supply system [31,37,40]. As a result of the effective implementation of these mechanisms in the state, the availability of drugs for the general population is ensured. This, for example, is the availability of drugs in pharmacies, hospitals, clinics for patients.

A special place in ensuring the physical availability of drugs is the implementation of the International Concept of Essential Medicines [7,40]. Currently valid 22 th WHO EML, (30 September 2021) and the 8th WHO EMLc.

These lists of drugs are recommended by WHO for the formation of national lists of drugs that have important social and medical significance for the population of the country. It should be noted that these lists are reviewed almost every two or three years. On fig. 3.1 presents the results of the analysis of the WHO EML for the period from 2005 (14h WHO EML, March 2005) to 2021.

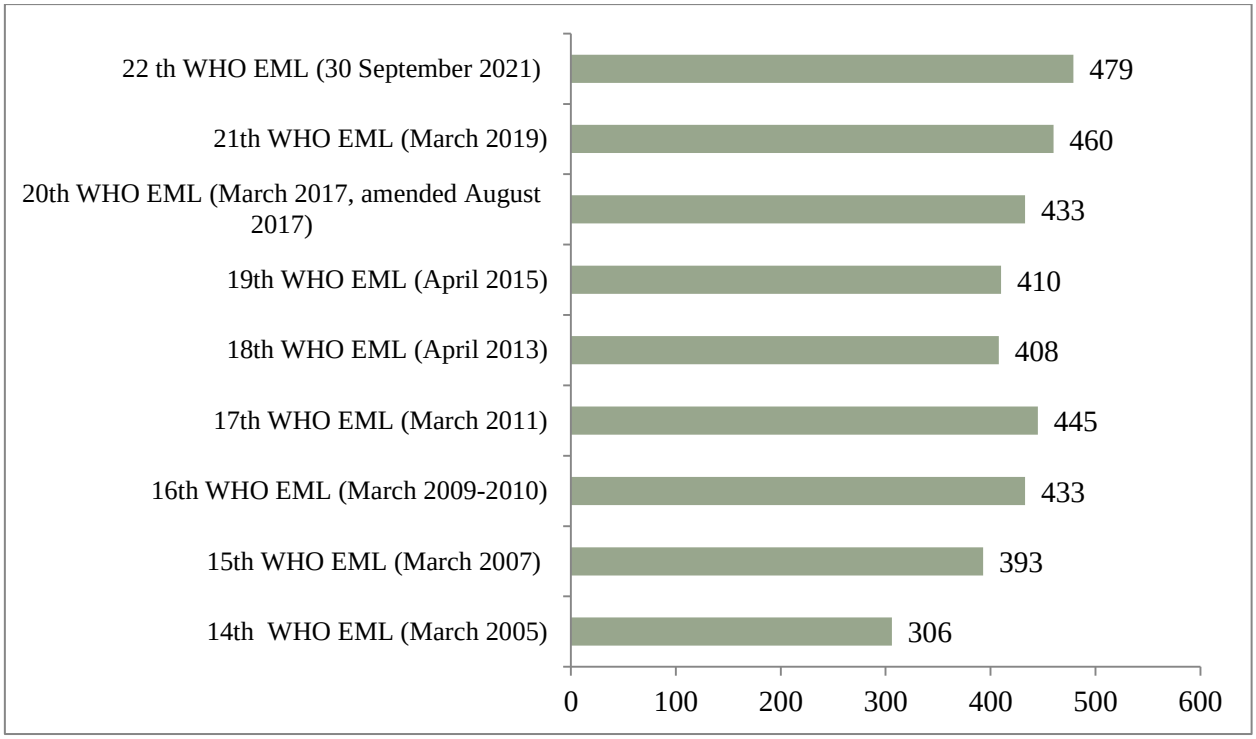

Fig. 3.1. The results of the analysis of the WHO EML since 2005 (14h WHO EML, March 2005 – 22 th WHO EML (30 September 2021)

After analyzing the data presented in Fig. 3.1, we can draw the following conclusion. There has been a gradual increase in the number of drugs included in these important drug lists. Thus, from 2005 to 2021, the number of drugs included in the Essential Medicines List WHO increased from 306 to 479 drugs.

Under the term «socio-economic availability of drugs» (conventional sign of indicator D) we understand the opportunity to satisfy the demand of the population in the whole or some categories of patients to buy drugs to provide therapy

Ensuring the socio-economic accessibility of medicines for the population is carried out through the use of complex mechanisms for regulating the consumption of medicines in the pharmaceutical market.

The next stage of our research was a structural analysis of the National List of Essential Medicines approved in Morocco, Egypt, Algeria, Tunisia and Mauritania. We used the data that are presented on the official website of the WHO and in the specialized literature [36]. It should be noted that for comparison, we have chosen countries bordering Morocco. In addition, countries were selected that have historical, economic and social ties with Morocco that have developed over many years (Fig.3.2).

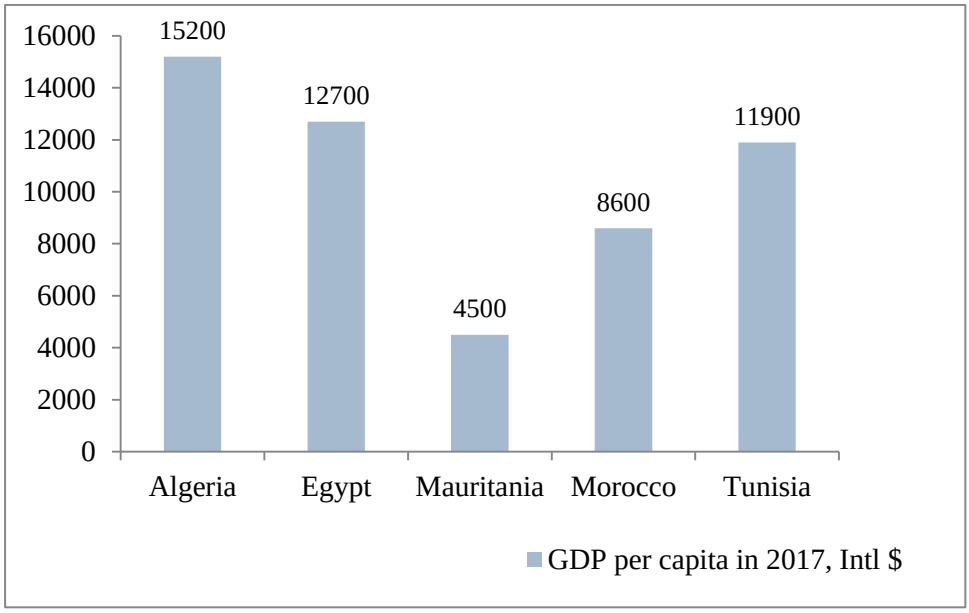

Fig. 3.2. Results of comparative analysis of indicator GDP per capita in 2017 (Intl $) in the group of reference countries

We analyzed several indicators. For example, these were such data by country:

- GDP per capita in 2017 (Intl $);
- health expenditure per capita in 2014 (Intl $);
- total no. of medicines on list;
- similarity with WHO Model List, no. (%);
- dissimilarity with WHO Model List, no. (%).

As we can see from the data of the indicators, which are presented in Fig. 3.2, the largest data are presented in Algeria, and the smallest in Mauritania. According to 2017 data, in Morocco, the indicator GDP per capita was 8600 dollars.

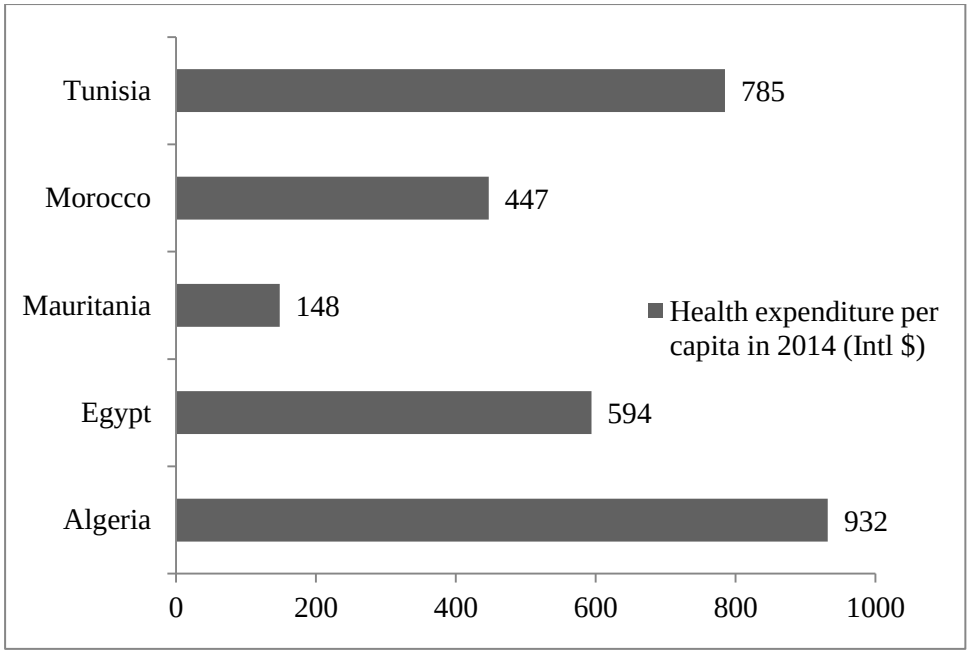

Fig. 3.2. Results of a retrospective analysis of the indicator health expenditure per capita in the countries we analyzed

We found that the indicator health expenditure per capita varies significantly across countries. It ranged from $148 (Mauritania) to $932 (Algeria). In Morocco, this important macroeconomic indicator was $447. Positive is the fact that this indicator in the dynamics of years (2015-2022) in Morocco is systematically increasing.

This is an important trend in the development of Morocoo's national health care and its funding. In general, it should be noted that, in recent years, Morocco has undergone significant changes in health care and especially in the pharmaceutical market, which are aimed at increasing the level of physical and socio-economic access to medicines. For example, in 2014, the government carried out a reform in the pricing of medicines, which made it possible to reduce prices for drugs that are of great medical and social importance for patients.

As a result of the introduction of reference pricing mechanisms in the pharmaceutical market, success has been achieved in regulating the availability of drugs that are used to treat various diseases [31]. The process of regulating the availability of medicines that are presented on the Moroccan pharmaceutical market is still ongoing. This tells us that the government pays great attention to this issue. We hope that these important processes will be effectively implemented by the state, and pharmacies will remain profitable and will be able to perform their functions normally in the pharmaceutical market in the future

The results of comparing the data of the National Lists by countries that we analyzed are presented in table 3.1. [36]

Table 3.1.

Analysis results National List of Essential Medicines approved in Morocco, Egypt, Algeria, Tunisia and Mauritania

Country	Analysis indicators			
	Year of list	Total no. of medicines on list	Similarity with WHO Model List, no. (%)	Dissimilarity with WHO Model List, no. (%)
Algeria	2016	445	161 (36%)	284
Egypt	2012	323	263 (81%)	60
Mauritania	2008	215	168 (78%)	47
Morocco	2012	344	252 (73%)	92
Tunisia	2012	719	265(54%)	454

As we can see from table 3.1 the largest number of drugs is presented in the National list of Tunisia (719 drugs), and the smallest in Mauritania (215 drugs). It should be noted that the highest percentage of matches with the EML WHO list is observed in Egypt (81,0%). The indicated figure, which we analyzed in Morocco, was 73,0%.

In general, it should be noted that in the countries we observed significant differences in the composition of the National List of Essential Medicines. Health professionals in countries continue to review the composition of national drug lists. Such processes occur because the global pharmaceutical market has been actively developing recently. In addition, approaches and methods of treatment of various groups of patients are changing in medicine.

Such processes are of particular relevance in countries that belong to states with low incomes. As you know, in accordance with the data of the National List of Essential Medicines, the state regulates the prices of drugs in the pharmaceutical markets.

3.2. Analysis of the dynamics of changes in the availability of antiulcer drugs presented on the Ukrainian pharmaceutical market

Peptic ulcer is a polyetiological disease [18,20,21,26,54]. Therefore organization of efficient treatment of this disease requires a complex use of the whole range of drugs, which are represented in different pharmacotherapeutical groups (antisecretory, antacid and enveloping, gastroprotective, antihelicobacterial drugs and combined drugs). At the previous stage of research the issue was raised as to the definition of a group of drugs according to which we would deliver the investigation [2,26,57].

Thus the key stage of our researches was the selection of antiulcer drugs, which were planned to investigate further on as to changing their social and economic availability for the population. The above-stated selection of drugs was formed by us according to the analysis of international requirements to treatment of peptic ulcer, and data taken from national unified clinical protocol of primary, secondary (specialized) medical aid for patients with peptic ulcer and duodenum in adults, which was confirmed by the decree of the Ministry of Healthcare of Ukraine as of 03.09.2014 № 613 with changes and amendments. Moreover, we

have analyzed data of open informational sources, where instructions for using drugs in pathogenic systematic treatment of peptic ulcer were presented.

This is especially important for chronic patients who require the use of drugs throughout life or over a long period of time. Patients with a stomach ulcer can be attributed to the group of chronic patients, since the treatment of this disease depends on many reasons. As is known from the data of special literature, if patients with a stomach ulcer do not receive the necessary medical care, this can lead to serious consequences [26,33,54,57]. In the treatment of gastric ulcer, which has a chronic course, it is necessary to spend a lot of resources. Therefore, the analysis, monitoring and regulation of the availability of drugs that are used in the pathogenetic and symptomatic treatment of gastric ulcers are of great importance in public health. The next section of our work will be devoted to the solution of this issue.

By ATC–classification system (3rd level) the following drugs were taken from these groups:

- A02-Drugs for acid-dependant diseases;
- A02A-Antacids;
- A02B-Drugs for peptic ulcer and gastroesophageal reflux disease;
- A02X-Other drugs for acid-dependant diseases.

Further on, according to the data of retrieval system «PharmX-plorer»/»Pharmstandard» of the company «Proxima Research» and due to the codes of drugs by ATC-classification system, we have formed the total number of drugs by trade names, which have been represented at the pharmaceutical market of Ukraine during 2019-2022.

Then we have calculated average retail prices for all trade names of drugs taking into account all forms of their production in the dynamic of years. The required formulas for calculation of indicators, which have been used in the analysis, are shown in table 3.2.

All necessary macro-economic indicators, which are used for indicator of availability (D) calculations, have been obtained from official website of State Committee of Statistics of Ukraine, which are an open source of information.

The analysis of dynamics of D indicators has been done with the help of calculation of chain indexes, which have been delivered first for each separate trade name including the form of production (individual index), and then for each drug according to their international non-proprietary names (group indexes) (table 3.2).

Table 3.2.

Order of calculation for indicator of availability (D) and individual and group indexes of their changes in the dynamic of years

Indicator of analysis and objects of analysis	Formula of calculation	Order of calculation for indicators, which have been used in the analysis
1	2	3
Average retail price (for trade names of drugs including forms of their production)	$P_i = \frac{\sum p_i \times f_i}{\sum f_i}$,	p_i – retail price of 1st antiulcer drug (trade names including certain form of production); f_i – frequency of using this drug by this price during certain period of time (2019-2022) [13].
Availability (for trade names of drugs including forms of production and drugs by international non-proprietary names – INN)	$D = \frac{Ix \times Z\min}{Is \times Vk}$,	I_x – index of changing average salary during certain period of time in Ukraine (2019-2022); I_S – consolidated index of prices for drugs, which are included in the National List of Essential Medicines, which is valid at the time of calculation; Z_{min} – indicator of minimum salary in the country during a certain period of time in Ukraine; V_k – cost of consumer basket in the period which is investigated, that is during 2019-2022 [37]

Table 3.2 continuation

1	2	3
Chain index of prices (I_p) changes D (for trade names of drugs including forms of production)	$I_p = \frac{\overline{P_i}}{\overline{P_{io}}}$,	$\overline{P_i}$ – indicator of availability of 1st drug in the current period; $\overline{P_{io}}$ – indicator of drug availability in the previous period [13,37].
Chain group index (I_g) changes D (for trade names of drugs including forms of production and drugs by INN)	$I_g = \frac{1}{n}\sum_{i=1}^{n} Ip$	I_p – chain index of change of drugs availability; n – number of antiulcer drugs, which is investigated by the appropriate group, first of all, by INN [13,37]

All the necessary statistical data processing was performed by using the modern licensed software (StatSoft. Inc., 2014; STATISTICA version 12.7, May 2015), also standardized tables of variation statistics. A value of $p < 0.05$ was considered statistically significant. Results of the research of D indicators are shown in table 3.3. and dynamics of their changes during 2019-2020 – in table 3.4. Let us dwell in more detail on the analysis of the data that we obtained as a result of our research. We believe that the results we have obtained will allow us to assess the situation that has developed in the segment of antiulcer drugs in Ukraine during 2019-202. In addition, they allow to give a scientific assessment of the changes that have occurred with the availability of drugs that are used in the treatment of gastric ulcers.

3.3 The study of the dynamics of changes in the availability of drugs that are used in the treatment of gastric ulcer

Ensuring the availability of drugs is important for all groups of patients and for the entire population of the country as well. At the same time, the availability of drugs is of particular importance for those groups of patients who need to take

drugs for a long period of time due to the possibility of developing relapses of the disease. Such groups of patients include patients who have a history of gastric ulcer or other diseases of the gastrointestinal tract. According to experts, the likelihood of recurrence of gastric ulcers is high in those patients who do not comply with the treatment regimen and do not take the necessary drugs on time. All that we said earlier determined the purpose of our further research.

During the analysis of dynamics of changes of D indicators, it is necessary to take into account the following. If D indicator was ≥ 1.0, we could state about relative availability of drugs for an average citizen at the internal pharmaceutical market. If D indicator was ≤ 1.0, we could make a conclusion that drugs from this group, by INN, were not available from social economic point of view for an average citizen at the pharmaceutical market of Ukraine [37].

As a result of the analysis of D indicators, we found that during 2019-2022, on the Ukrainian pharmaceutical market, a significant majority of drugs were not available to patients according to their price characteristics. So, for example, in 2022, from the A02A-Antacids group, only drugs from the A02AF02 group - Ordinary combinations of salts with carminatives (D = 1.11) and A02AX - Antacids, other combinations (D = 1.03) were available to patients.

From the A02B-Drugs for peptic ulcer and gastroesophageal reflux disease group of drugs in 2022, drugs with the following INN were available to the population of the country:

- A02BA03 – Famotidine (D = 1.02);
- A02BC02 – Pantoprazole (D = 1.06);
- A02BX02 – Sucralfate (D = 1.04).

The group of the A02B-Drugs for peptic ulcer and gastroesophageal reflux disease contains the largest number of drugs (15 drugs). This explains the fact that this group had the most drugs available for gastric ulcer patients in 2022.

Table 3.3.

Analysis of dynamics of changes of D indicators by the group of drugs, which have been used for treatment of gastroenterological pathologies (group A02-Drugs for acid-dependent diseases) for 2019-2020

Drug by INN	D			
	2019	2020	2021	2022
1	2	3	4	5
A02 – Drugs for acid-dependent diseases				
A02A – Antacids				
A02AB03 – Aluminum phosphate	1,09	0,85	0,87	0,97
A02AB10 – Combinations	1,02	1,08	0,95	0,78
A02AD01 – Ordinary salt combinations	1,22	1,23	1,03	0,92
A02AD02 – Magaldrat	1,31	1,06	0,97	0,78
A02AF – Antacids with antiflatulents	1,17	1,13	1,23	0,89
A02AF02 – Ordinary salt combinations with antiflatulents	0,91	0,97	0,83	1,03
A02AX – Antacids, other combinations	1,12	1,05	0,86	1,11
A02B – Drugs for peptic ulcer and gastroesophageal reflux disease				
A02BA02 – Ranitidine	1,19	1,08	0,88	0,84

Table 3.3 continuation

1	2	3	4	5
A02BA03 – Famotidine	1,17	0,99	0,76	1,02
A02BB01 – Misoprostol	1,23	1,26	0,98	0,78
A02BC – Inhibitors of proton pump	1,35	1,23	0,89	0,96
A02BC01 - Omeprazole	1,13	1,25	0,91	0,82
A02BC02 - Pantoprazole	1,23	1,18	0,79	1,06
A02BC03 – Lansoprazole	1,01	1,07	0,89	0,78
A02BC04 – Rabeprazole	1,36	1,27	1,08	0,81
A02BC05 – Ezomeprazole	1,24	1,13	1,09	0,79
A02BC06 – Dexlansoprazole	-	-	-	0,97
A02BD – Combinations for eradication	1,22	1,05	0,85	0,79
A02BX – Other drugs for peptic ulcer and gastroesophageal reflux disease	1,07	1,06	0,95	0,83
A02BX02 – Sucralfate	1,13	0,95	0,85	1,04
A02BX05 – Bismuth subcitrate, combinations	1,15	1,06	0,81	0,91
A02BX13 – Alginic acid	1,09	0,92	0,83	0,76

A02X – Other drugs for acid-dependent diseases				
A02X – Other drugs for diseases connected with acidity disorders	1,08	0,99	0,82	0,96

Table 3.4.

Dynamics of changes of D data for drug from group A02-Drugs for acid-dependent diseases

Drug by INPN	D change index (chain)			
	2020/2019	2021/2020	2022/2021	Average value of the indicator
1	2	3	4	5
A02 – Drugs for acid-dependent diseases **A02A – Antacids**				
A02AB03 - Aluminum phosphate	0,78	1,02	1,11	0,97
A02AB10 - Combinations	1,06	0,88	0,82	0,92
A02AD01 - Ordinary salt combinations	1,01	0,84	0,89	0,91
A02AD02 - Magaldrat	0,81	0,92	0,80	0,84
A02AF - Antacids with antiflatulents	0,97	1,09	0,72	0,93
A02AF02 - Ordinary salt combinations with antiflatulents	1,07	0,86	1,24	1,06

Table 3.4 continuation

1	2	3	4	5
A02AX - Antacids, other combinations	0,94	0,82	1,29	1,02
A02B – Drugs for peptic ulcer and gastroesophageal reflux disease				
A02BA02 - Ranitidine	0,91	0,81	0,96	0,89
A02BA03 - Famotidine	0,85	0,77	1,34	0,97
A02BB01 - Misoprostol	1,02	0,77	0,80	0,86
A02BC- Inhibitors of proton pump	0,91	0,72	1,08	0,90
A02BC01 - Omeprazole	1,11	0,73	0,90	0,91
A02BC02 - Pantoprazole	0,96	0,67	1,34	0,99
A02BC03 - Lansoprazole	1,06	0,83	0,88	0,92
A02BC04 - Rabeprazole	0,93	0,85	0,75	0,84
A02BC05 - Ezomeprazole	0,91	0,96	0,72	0,86
A02BC06 - Dexlansoprazole	–	–	–	–
A02BD - Combinations for eradication	0,86	0,81	0,93	0,87
A02BX - Other drugs for peptic ulcer and gastroesophageal reflux disease	0,99	0,90	0,87	0,92

Table 3.4 continuation

1	2	3	4	5
A02BX02 - Sucralfate	0,84	0,89	1,22	0,98
A02BX05 – Bismuth subcitrate, combinations	0,92	0,76	1,12	0,93
A02BX13 – Alginic acid	0,84	0,90	0,92	0,89
A02X – Other drugs for acid-dependent diseases				
A02X– Other drugs for diseases connected with acidity disorders	0,92	0,83	1,17	0,97

From the group of drugs A02A – Antacids in 2022, drugs with the following INN were available to the population of the country:

- A02AF02 – Ordinary salt combinations with antiflatulents (D = 1.03);
- A02AX – Antacids, other combinations (D = 1.11);

In 2022, all drugs from the group A02X - Other drugs for the treatment of acid-related diseases were not available to patients (D = 0.96).

Thus, in 2022, there were only 5 drugs available for patients on the pharmaceutical market that were presented by INN. The lowest D value (0.76) was observed for the A02BA03 - Famotidine (A02B-Drugs for peptic ulcer and gastroesophageal reflux disease) drug group in 2021. In turn, the highest value of indicator D was observed in 2019 for the group of drugs A02BC04 – Rabeprazole. An analysis of the availability of anti-ulcer drugs during 2019-2022 suggests that every year the number of drugs available for patients with gastric ulcer is decreasing. This is due to the action of many factors. First of all, it should be noted the unstable financial situation in the Ukrainian market, as well as the significant import dependence of the pharmaceutical market. Unfortunately, even generic drugs produced by Ukrainian companies may be unaffordable for a significant part of the population, since their production uses imported raw materials, which become more and more expensive every year.

The data of the analysis of indicators of the availability of antiulcer drugs for 2019-2022 allowed us to determine the most affordable among them. To do this, we calculated the indicators of group indices of accessibility data for 2019-2022, and then determined their average values. Thus, we found that in the course of 2019-2022, the most accessible for Ukrainian consumers on the pharmaceutical market were such names of anti-ulcer drugs:

- A02AF02 – Ordinary salt combinations with antiflatulents (I_g=1.06);
- A02AX – Antacids, other combinations (I_g=1.02).

These preparations are presented in the A02A-Antacids group. All other antiulcer drugs can be attributed to a conditional group, which includes drugs that are

unaffordable for a significant part of patients. For these drugs, the value was $I_g \leq 1.00$.

We observed the lowest I_g (≤ 0.90) values for such drugs:

- A02AD02 – Magaldrat (I_g=0.84);
- A02BA02 – Ranitidine (I_g=0.89);
- A02BB01 – Misoprostol (I_g=0.86);
- A02BC04 – Rabeprazole (I_g=0.84);
- A02BC05 – Ezomeprazole (I_g=0.86);
- A02BD – Combinations for eradication (I_g=0.87);
- A02BX13 – Alginic acid (I_g=0.89).

As you can see, the lowest I_g were typical for such drugs as A02BC04 – Rabeprazole and A02AD02 – Magaldrat.

So, one can state that the efficiency of government regulation of the indicators of drugs availability should meet not only the humanistic dominants of the development of society, but also take into account actual trends of medicine and pharmacy development.

First of all, we should develop and introduce not only the programs for support socially important pathologies, for example, cardiovascular, bronchial asthma, diabetes, oncological pathologies [38,40]. For the last years, pathologies, which require significant financial aid are becoming more and more important, especially taking into account the necessity of chronic patients to take drugs during a long period of time. In the perspective, taking into account modern tendencies of transition from hospital to outpatient assistance, the issue of providing efficient medical aid and pharmaceutical provision of chronic acid-dependent patients under the supervision of pharmacist is becoming more and more important. In turn, a complicated character of changes of indicators, which characterize social and economic availability of antiulcer drugs, causes the necessity to introduce government target programs and events, which are focused on the financial and

economic support of patients with acid-dependent pathologies, including peptic ulcer, as soon as possible.

So, one can state that the efficiency of government regulation of the indicators of drugs availability should meet not only the humanistic dominants of the development of society, but also take into account actual trends of medicine and pharmacy development. First of all, we should develop and introduce not only the programs for support socially important pathologies, for example, cardiovascular, bronchial asthma, diabetes, oncological pathologies [14,23].

For the last years, pathologies, which require significant financial aid are becoming more and more important, especially taking into account the necessity of chronic patients to take drugs during a long period of time. In the perspective, taking into account modern tendencies of transition from hospital to outpatient assistance, the issue of providing efficient medical aid and pharmaceutical provision of chronic acid-dependent patients under the supervision of pharmacist is becoming more and more important. We believe that pharmacists should be more actively involved in providing information services to patients with gastric ulcers on a wide range of problems. For example, pharmacists can actively help patients in choosing generic drugs that are available on the pharmaceutical market, advise the patients on proper nutrition and maintaining a healthy lifestyle, etc. At the same time, it is very important to maintain effective communications not only with the patient, but also with the doctor who provides medical care to this patient. To maintain effective communications with doctors, a pharmacist must have high professional knowledge and practical skills, which he must constantly improve.

In turn, a complicated character of changes of indicators, which characterize social and economic availability of antiulcer drugs, causes the necessity to introduce government target programs and events, which are focused on the financial and economic support of patients with acid-dependent pathologies, including peptic ulcer, as soon as possible.

CONCLUSIONS TO THE III CHAPTER

1. The availability of medicines is an important indicator that is used to assess the performance of national health systems.
2. In the system of drug provision of the population, two types of availability of drugs availability for the population can be distinguished. This is the physical and socio-economic availability of drugs in the pharmaceutical market for the population of the country.
3. It has been established that an important mechanism that allows providing the population with affordable medicines is the introduction of the International concept of Essential Medicines.
4. As a result of the analysis of the composition of the WHO EML, it was found that each new version of it contained more drugs than its previous version. So, for example, in 2005(14h WHO EML), the specified list included 306 drugs, and in 2021 (22 th WHO EML), 479 drugs were already presented. Such changes are due to the fact that in medicine and the pharmaceutical market there are significant changes both in approaches to the treatment of patients and in the range of drugs offered to patients. It should be noted that this process will be developed further.
5. As a result of a comparative analysis of the composition of the National List of Essential Medicines in Morocco, Tunisia, Algeria, Mauritania, Egypt, we found that in all these countries these lists differ from each other in various ways. In addition, thanks to the data presented in the specialized literature, it can be argued that the National List of Essential Medicines presented in these countries differ from the WHO EML as well.
6. It has been established that the largest number of medicines is presented in the National List of Tunisia (719 medicines), and the smallest – in Mauritania (215 medicines). It should be noted that the highest percentage of matches with the

WHO EML is observed in Egypt (81.0%). The indicator that we analyzed in Morocco was 73.0%.

7. It should be noted that one of the important directions in the development of the International Concept of Essential Medicines in the countries studied by us is the gradual harmonization of the data presented in their National List of Essential Medicines with those presented in the WHO EML.

8. As a result of a comparative analysis of macroeconomic indicators that determine the level of healthcare financing, the following conclusions can be drawn. We found that per capita health spending varies significantly across countries. It ranged from $148 (Mauritania) to $932 (Algeria). In Morocco, this important macroeconomic indicator was $447. It is positive that this indicator in the dynamics of years (2015-2022) in Morocco systematically increases. This is an important trend in the development of Moroccan national health care and its financing.

9. We have conducted studies on the availability of antiulcer drugs, which were presented on the Ukrainian pharmaceutical market during 2019-2022. It was found that over the years, the availability of antiulcer drugs for patients has steadily decreased.

10. We believe that the unsustainable nature of the development of the country's financial market has a strong influence on the decrease in the availability of antiulcer drugs. The pharmaceutical market of Ukraine is highly dependent on imports, so changes in the exchange rate of the national currency against the dollar or the euro greatly affect the prices of medicines, including those from the group of antiulcer drugs.

11. We found that in 2022 the vast majority of anti-ulcer drugs were not available to a significant part of the country's population. Thus, drugs from the A02AF02 – Ordinary salt combinations with antiflatulents and A02AX – Antacids, other combinations group were available for patients with antiulcer drugs. For drugs that are presented in these groups, the indicators D were 1,06 and 1,02 respectively.

12. From the A02B-Drugs for peptic ulcer and gastroesophageal reflux disease group of drugs in 2022, drugs with the following INN were available to the population of the country: A02BA03 – Famotidine (D = 1.02);A02BC02 – Pantoprazole (D = 1.06);A02BX02 – Sucralfate (D = 1.04).

13. We have established the following. The lowest B value (0.76) was observed for the A02BA03 – Famotidine (A02B-Drugs for peptic ulcer and gastroesophageal reflux disease) drug group in 2021. In turn, the highest value of indicator D was observed in 2019 for the group of drugs A02BC04 – Rabeprazole.

14. Among the least available anti-ulcer drugs that were presented on the Ukrainian pharmaceutical market, one can identify drugs from such groups: A02AD02 – Magaldrat (I_g = 0.84); A02BA02 – Ranitidine (I_g = 0.89); A02BB01 – Misoprostol (I_g = 0.86); A02BC04 – Rabeprazole (I_g = 0.84); A02BC05 – Ezomeprazole (I_g = 0.86).

15. It should be noted that most of the drugs that had a value of D≤1,00 were noted by us in 2022. This fact gives us the opportunity to say that it was in 2022 that there was a significant decrease in the socio-economic availability of antiulcer drugs for patients in Ukraine. It is also important to note that every year there is a growing trend towards a decrease in the availability of antiulcer drugs in the pharmaceutical market.

16. By summarizing the results of the researches, one can state that the efficiency of the equal availability of the population of Ukraine to drugs from different pharmacotherapeutic groups, including antiulcer drugs, requires from the government the implementation of the whole complex of mechanisms and approaches to the regulation of the consumption of drugs according to the financial status of patients in the society and medical social importance of pathologies treatment.

GENERAL CONCLUSIONS

1. The analysis of foreign experience in the implementation of measures aimed at increasing the level of availability of medicines of great medical and social importance for the population was carried out.
2. The systematization of the data of special literature was carried out, in which the issues of organizing the work of pharmacists in the context of increasing public requirements for the efficiency of service in pharmacies were highlighted.
3. As a result of the work carried out, we analyzed the data of special literature, which provides data on the epidemiology of gastric ulcer in the world and other countries of the world, incl. Morocco.
4. The analysis of special literature was carried out, which presents data on the organization of the provision of effective medical aid and pharmaceutical aid to patients with gastric ulcer.
5. The analysis of features and development prospects of the world market of medicines used in the treatment of gastric ulcer was carried out.
6. We have carried out a comparative analysis of macroeconomic indicators that determine the state of health care financing in Morocco, Algeria, Tunisia, Egypt and Mauritania.
7. The experience of implementing the International Concept of Essential Medicines in the world, as well as in such countries as Morocco, Egypt, Algeria, Tunisia and Mauritania has been systematized.
8. The analysis of indicators of socio-economic availability of medicines used in the treatment of gastric ulcer by years (2019-2022) was carried out.
9. The main problems in the organization of effective pharmaceutical aid for patients with gastric ulcer are identified.
10. Groups of antiulcer drugs were identified that were presented on the pharmaceutical market of Ukraine and which had the lowest indicators of socio-economic accessibility for patients during 2019-2022.

11. As a result of processing the results of research and systematization of the material, we identified the main problems in the organization of pharmaceutical aid for patients with gastric ulcerю

12. In general, we can say that the problem of increasing the availability of medical and pharmaceutical care requires a comprehensive solution, as well as attracting a significant amount of resources. It is important, at the same time, to rationally use these resources, as well as to control the targeted nature of their distribution in the state.

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APPENDICES

Appendice A

ФОРМУВАННЯ НАЦІОНАЛЬНОЇ ЛІКА́РСЬКОЇ ПОЛІТИКИ ЗА УМОВ ВПРОВАДЖЕННЯ МЕДИЧНОГО СТРАХУВАННЯ: ПИТАННЯ ОСВІТИ, ТЕОРІЇ ТА ПРАКТИКИ

МАТЕРІАЛИ

VI Всеукраїнській науково-освітній internet конференції

(м. Харків, 14-15 березня 2023 р.)

Харків 2023

Application continuation A

МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ
КАФЕДРА ОРГАНІЗАЦІЇ ТА ЕКОНОМІКИ ФАРМАЦІЇ

ФОРМУВАННЯ НАЦІОНАЛЬНОЇ ЛІКА́РСЬКОЇ ПОЛІТИКИ ЗА УМОВ ВПРОВАДЖЕННЯ МЕДИЧНОГО СТРАХУВАННЯ: ПИТАННЯ ОСВІТИ, ТЕОРІЇ ТА ПРАКТИКИ

МАТЕРІАЛИ

VI Всеукраїнській науково-освітній internet конференції (м. Харків, 14-15 березня 2023 р.)

Харків
2023

Application continuation A

УДК: 615.12

Реєстраційне посвідчення УкрІНТЕІ від 19 грудня 2022 р. №540

Формування Національної лікáрської політики за умов впровадження медичного страхування: питання освіти, теорії та практики: матер. VI Всеукр. наук.-практ. конф., м. Харків, 14-15 березня 2023 р. / ред. кол.: А.С. Немченко та ін. – Х. : Вид-во НФаУ, 2023. – 384 с.

Збірник містить матеріали VI Всеукраїнської науково-освітньої Internet конференції «Формування Національної лікáрської політики за умов впровадження медичного страхування: питання освіти, теорії та практики», в яких розглянуті питання: підходів до формування Національної лікарської політики виходячи з досвіду впровадження системи оцінки технологій в охороні здоров`я (Health Technology Assessment - HTA); тенденцій розвитку фармацевтичного ринку; розробки сучасних механізмів ціноутворення на лікарські засоби; дослідження механізмів компенсації (реімбурсації) вартості ліків та методів їх впровадження у практичну охорону здоров'я та систему фармацевтичного забезпечення населення, а також у медичне страхування; проведення фармакоекономічних досліджень.

Матеріали відредаговані членами редакційної ради у відповідності до вимог, які представлені у Інформаційному листі. Збірник друкується в авторській редакції. Відповідальність за достовірність наданого для видання матеріалу несуть автори одноосібно. Будь-яке відтворення тексту без згоди авторів забороняється.

Application continuation A

Application continuation A

RESULTS OF MARKET RESEARCH OF ANTI-ULCER DRUGS PRESENTED IN UKRAINE

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Gastric ulcer is a polyetiological disease. The introduction of new approaches in the treatment of gastric ulcers, which have taken place in recent decades, as well as the increase in society's demands for the effectiveness of the treatment of these patients under conditions of limited funding in the health care system, have led to significant structural changes in the pharmaceutical market. The appearances of fundamentally new drugs, as well as the expansion of the range of generic drugs, make it necessary to monitor their socio-economic availability for consumers and state special funds and programs.

The purpose of the study is to analyze the data characterizing the availability of drugs used in the treatment of gastric ulcer and presented on the pharmaceutical market of Ukraine. In the studies, we calculated the indicators of drug availability (D). Based on the results of the research, it can be stated that in 2022, compared to the data of 2018, there is a general tendency to increase D indicators for the A02A-Antacids group. Thus, the highest value of D indicators was observed in 2022 for the A02AB03-Aluminum phosphate group of drugs (1.45). According to the group of drugs A02B-Means for the treatment of peptic ulcer and gastroesophageal reflux disease, the highest indicators of D were for drugs A02BC02-Pantoprazole (1.32). According to group A02B-Means for the treatment of peptic ulcer and gastroesophageal reflux disease, the highest D values were observed for LP A02BC06-Dexlansoprazole (1.45). According to the group A02X-Other drugs for the treatment of diseases associated with acidity disorders during 2018-2022, we observed a tendency towards the dominance of relatively low values of drug availability. Yes, only according to the data of 2018, drugs from this group were relatively affordable (1.04), and later D indicators were ≤1.0. Thus, it can be stated that, in general, the group of drugs used in the treatment of gastroenterological patients with gastric ulcer in 2022 showed a positive trend towards an increase in D indicators for ordinary citizens. For all groups of drugs, except LP from the group A02BX-Other drugs for the treatment of peptic ulcer and gastroesophageal reflux disease and A02BX13-Alginic acid in 2022, compared to the data of 2019, we observed an increase in data D.

Application continuation A

For drugs, from the above groups the group index of changes in D indicators in 2022 was equal to 0.76 and 0.91, respectively. It should be especially noted that the data of D indicators for drugs from the A02BX03-Pirenzepine group increased almost twice. According to the results of studies of the dynamics of changes in D indicators for drugs used in the treatment of acid-dependent pathologies (group A02 according to the ATC classification system) in 2020, there was a tendency to increase the availability of drugs. The only exception was the data for drugs from groups A02BX-Other drugs for the treatment of peptic ulcer and gastroesophageal reflux disease (0.87) and A02BX13-Alginic acid (0.93). In this way, it can be stated that the effectiveness of state regulation of indicators of drug availability should correspond not only to the humanistic dominants of the development of society, but also take into account the current trends in the development of medicine and pharmacy. First of all, it is necessary to develop and implement not only programs to support socially significant pathologies, such as cardiovascular, bronchial asthma, diabetes, and oncological pathologies. In the future, taking into account the current trends in the transition from inpatient to outpatient care, the issue of organizing the provision of effective medical care and pharmaceutical support for chronic patients with acid-dependent diseases under the patronage of pharmacy workers becomes important. In turn, the complex nature of changes in indicators that characterize the socio-economic availability of anti-ulcer drugs necessitates the earliest implementation of government targeted programs and measures aimed at financial and economic support for patients with acid-dependent pathologies, including gastric ulcers.

Appendice B

МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ`Я УКРАЇНИ
НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ
Кафедра організації та економіки фармації

VI Всеукраїнська науково-освітня Internet-конференція
„Формування Національної лікарської політики за умов впровадження медичного страхування: питання освіти, *теорії та практики”*
м. Харків, 14-15 березня 2023 р.

СЕРТИФІКАТ УЧАСНИКА № 029

Hamza RAMZI

брав(ла) участь у науково-практичному семінарі ***«Здобутки організаційно-економічних досліджень – проблеми та перспективи впровадження у практичну медицину та фармацію»***
за програмою обсягом 7 годин / 0,2 кредити ЄКТС

Досягнуті результати навчання:
використання у професійній діяльності знань основних принципів формування та реалізації Національної лікарської політики, а також механізмів і методів щодо забезпечення доступності фармацевтичної допомоги населенню

В. о. Ректора Національного фармацевтичного університету,
доктор фармацевтичних наук, професор,
Заслужений діяч науки та техніки України — **Алла КОТВІЦЬКА**

Завідувачка кафедри організації та економіки фармації НФаУ,
доктор фармацевтичних наук, професор,
Заслужений діяч науки та техніки України — **Алла НЕМЧЕНКО**

Ф А 2.2.1–32-366

National University of Pharmacy

Faculty for foreign citizens' education
Department of organization and economics of pharmacy

Level of higher education second master's

Specialty 226 Pharmacy, industrial pharmacy
Educational program Pharmacy

APPROVED
The Head of Department
of organization and economics of pharmacy

_____

Alla NEMCHENKO
"15th " of June 2022

ASSIGNMENT
FOR QUALIFICATION WORK
OF AN APPLICANT FOR HIGHER EDUCATION
Ramzi HAMZA

1. Topic of qualification work: «Analysis of the problems of pharmaceutical provision of gastric ulcer patients in the countries of the world», supervisor of qualification work: Hanna PANFILOVA, DPharmSc, prof.,

approved by order of NUPh from «06th» of February 2023 № 35

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

3. Outgoing data for qualification work: legislative and regulatory framework governing the issues of drug provision of the population in Morocco and Ukraine; data from special literature, which provides data that allow us to analyze the effectiveness of the introduction of the International Concept of Essential drugs in national health systems, namely in countries such as Morocco, Tunisia, Algeria, Egypt, Mauritania; data of special literature, which provides data that allow analyzing changes in the role of pharmacists in organizing the provision of medical and pharmaceutical care to the population in general and chronically ill patients in particular; epidemiology data on gastric ulcers; statistical data presented in open access for researchers and which reflect the dynamics of the development of the global pharmaceutical market, as well as its segment, which presents antiulcer drugs; statistical database that presents data on drugs that are used in the treatment of gastric ulcers in Ukraine for 2019-2022.

4. Contents of the settlement and explanatory note (list of questions that need to be developed): analyze the data of special literature, which provides data on the epidemiology of gastric ulcers in the world and other countries of the world, incl. Morocco; systematize the experience of implementing the international concept of essential medicines in the world, as well as in

countries such as Morocco, Egypt, Algeria, Tunisia and Mauritania; to study the dynamics of the development of the segment of the global pharmaceutical market, which presents anti-ulcer drugs; analyze the indicators of socio-economic availability of medicines that are used in the treatment of gastric ulcers; identify the main problems in the organization of effective pharmaceutical support for patients with gastric ulcer

5. List of graphic material (with exact indication of the required drawings):
Tables – 3, pictures – 9.
6. Consultants of chapters of qualification work

Chapters	**Name, SURNAME, position of consultant**	**Signature, date**	
		assignment was issued	**assignment was received**
1.	Hanna PANFILOVA, professor of higher education institution of department organization and economics of pharmacy	06th of September 2022	06th of September 2022
2.	Hanna PANFILOVA, professor of higher education institution of department organization and economics of pharmacy	20th of September 2022	20th of September 2022
3.	Hanna PANFILOVA, professor of higher education institution of department organization and economics of pharmacy	04th of October 2022	04th of October 2022

7. Date of issue of the assignment: «15th» of June 2022.

CALENDAR PLAN

№ з/п	**Name of stages of qualification work**	**Deadline for the stages of qualification work**	**Notes**
1.	Conducting an analysis of the data that are presented in the special literature on the selected topics and issues	30th of January 2023	**done**
2.	Analysis of features and modern approaches in the organization of pharmaceutical provision of the population in the healthcare system of various countries of the world	02th of February 2023	**done**
3.	The study of modern approaches in the organization of effective medical and pharmaceutical care for patients with gastric ulcer in the world.	13th of February 2023	**done**
4.	Analysis of the problems of providing affordable medical and pharmaceutical care to patients with peptic ulcer in conditions of limited health care financing	06th of March 2023	**done**
5.	Registration of work, preparation of documents and presentations for the protection of materials presented in the work. Submission of work and a set of documents to the Examination commission	03th of April 2023	**done**

An applicant of higher education _____ Ramzi HAMZA

Supervisor of qualification work _____ Hanna PANFILOVA

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
• **по кафедрі організації та економіки фармації**				
Рамзі Хамза	Аналіз проблем фармацевтичного забезпечення хворих на виразку шлунку у країнах світу	Analysis of the problems of pharmaceutical provision of gastric ulcer patients in the countries of the world	проф. Панфілова Г.Л.	доц. Корж Ю.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

№ 112660 від « 27 » квітня 2023 р.

Проаналізувавши випускну кваліфікаційну роботу за магістерським рівнем здобувача вищої освіти денної форми навчання Рамзі Хамза, 5 курсу, _____ групи, спеціальності 226 Фармація, промислова фармація, на тему: «Аналіз проблем фармацевтичного забезпечення хворих на виразку шлунку у країнах світу / Analysis of the problems of pharmaceutical provision of gastric ulcer patients in the countries of the world», 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**

0%

23%

Ф А 2.2.1-32-353

REVIEW

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

Ramzi HAMZA

on the topic: «Analysis of the problems of pharmaceutical provision of gastric ulcer patients in the countries of the world»

Relevance of the topic. In conditions of a permanent shortage of funds that are allocated for healthcare needs, the problems of rational use of healthcare resources are of great medical, social and economic importance. Treatment of patients with gastric ulcer requires significant resources. Every year, thousands of people die from stomach ulcers and their consequences. Therefore, the issues of developing the main directions for improving the process of providing effective medical and pharmaceutical care to patients with gastric ulcer are very relevant. It should be noted that the problem of providing affordable medicines for patients with stomach ulcers is relevant for both the health care of Morocco and Ukraine.

Practical value of conclusions, recommendations and their validity The results of the presented studies can be used in the development of a set of measures to increase the availability of pharmaceutical care, which is provided to patients with gastric ulcer in Morocco and Ukraine.

Assessment of work. In the course of the work, the applicant demonstrated mastery of the material at a high professional level, and the work itself was performed using modern scientific methods and approaches that are used by pharmaceutical scientists in organizational-economic work. The text is written correctly, and the conclusions are fully consistent with the tasks. In the work, the author used a modern statistical base, and also analyzed a large amount of special literature sources

General conclusion and recommendations on admission to defend In terms of content and form of registration, the work of a higher education applicant meets all the necessary requirements. Therefore, this work can be considered according to the appropriate procedure and submitted for defense to the Examination commission.

Scientific supervisor _____ Hanna PANFILOVA

«13th» of April 2023

Ф А 2.2.1-32-356

REVIEW

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

Ramzi HAMZA

on the topic: «**Analysis of the problems of pharmaceutical provision of gastric ulcer patients in the countries of the world**»

Relevance of the topic. Providing chronic patients with effective and affordable drugs is one of the important tasks of public policy, which is implemented in health care. Despite the significant progress made by world medicine in the treatment of stomach ulcers at the end of the last century, in many countries of the world the effectiveness of treatment of such patients remains at a low level. An important place in the organization of effective medical care, which is provided to patients with stomach ulcers, is the availability of anti-ulcer drugs, which some patients are forced to take for a long period of time. Pharmacists play a dominant role in solving this problem. Therefore, the work that is considered is of great medical and social importance.

Theoretical level of work. The work was carried out using a modern information base, as well as tools that are used in organizational and economic research in pharmacy. All data obtained are reliable, as they are based on a modern research information base and processed mathematically using modern data processing programs

Author's suggestions on the research topic. In order to improve the availability of anti-ulcer drugs in Morocco, it is necessary to introduce rational models for their distribution, as well as control of their use. It is necessary to develop a segment of generic drugs that are used in the pathogenetic and symptomatic treatment of patients with gastric ulcer in Morocco and Ukraine. In addition, early prevention and timely treatment of gastric ulcers is of great importance, especially among the

working-age population of the country. It is also important to develop the production of domestically produced antiulcer drugs in Morocco and Ukraine. This paper demonstrates that the state plays an important role in providing the population with affordable medicines that are presented on the pharmaceutical market.

Practical value of conclusions, recommendations and their validity The paper studies the problems of pharmaceutical provision of patients with gastric ulcer in Morocco, as well as in Ukraine. The analysis of macroeconomic indicators that determine the state of health care financing in Morocco and other Arab countries of the world was carried out. In addition, an analysis of the dynamics of the development of the segment of the global pharmaceutical market, which presents antiulcer preparations, was carried out. An analysis was made of the composition of the lists of drugs that are of great medical and socio-economic importance for health care in such countries as Morocco, Tunisia, Algeria, Egypt and Mauritania. The results of the work can be used in the development of comprehensive programs to improve the efficiency of pharmaceutical provision of patients with gastric ulcer in Morocco and Ukraine.

Disadvantages of work There are unsuccessful stylistic expressions, grammatical errors, etc. in the work, but they do not affect the high assessment of the work performed. All the tasks that were set at the beginning of the research were successfully completed. All conclusions correspond to the results that were obtained in the course of the research.

General conclusion and assessment of the work Summing up, it can be argued that the work performed by the applicant for higher education meets all the necessary requirements. Therefore, this work can be accepted for consideration by the Examination committee.

Reviewer _____ ass. prof. Iuliia KORZH

«19th» of April 2023

МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ

ВИТЯГ З ПРОТОКОЛУ № 23

«26» квітня 2023 року

м. Харків

засідання кафедри

Організації та економіки фармації

Голова: завідувачка кафедри, доктор фарм. наук, професор Алла НЕМЧЕНКО.

Секретар: канд. фарм. наук, асистент Алла ЛЕБЕДИН.

ПРИСУТНІ:

зав. каф., проф. Алла НЕМЧЕНКО, проф. Ганна ПАНФІЛОВА, проф. Вікторія НАЗАРКІНА, проф. Інна БАРАНОВА, доц. Віталій ЧЕРНУХА, доц. Геннадій ЮРЧЕНКО, доц. Наталія ТЕТЕРИЧ, доц. Ірина ПОПОВА, доц. Наталія ДЕМЧЕНКО, доц. Вікторія МІЩЕНКО, доц. Алла ЛЕБЕДИН, доц. Тетяна ДЯДЮН.

ПОРЯДОК ДЕННИЙ:

Про представлення до захисту в Екзаменаційну комісію кваліфікаційних робіт здобувачів вищої освіти випускного курсу НФаУ 2023 року випуску.

СЛУХАЛИ: про представлення до захисту в Екзаменаційну комісію кваліфікаційної роботи на тему: «Аналіз проблем фармацевтичного забезпечення хворих на виразку шлунку в країнах світу», здобувача вищої освіти 226 Ф 19 (3,10д) анг. НФаУ 2023 року випуску Рамзі ХАМЗА

Науковий (-ві) керівник (-ки) проф. Ганна ПАНФІЛОВА

Рецензент доц. Юлія КОРЖ

УХВАЛИЛИ: Рекомендувати до захисту кваліфікаційну роботу здобувача вищої освіти Рамзі ХАМЗА групи 226 Ф 19 (3,10д) анг на тему: «Аналіз проблем фармацевтичного забезпечення хворих на виразку шлунку в країнах світу»

Зав. кафедри організації та
економіки фармації Алла НЕМЧЕНКО

Секретар кафедри Алла ЛЕБЕДИН

Ф А2.2.1-32-042

НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ

ПОДАННЯ
ГОЛОВІ ЕКЗАМЕНАЦІЙНОЇ КОМІСІЇ
ЩОДО ЗАХИСТУ КВАЛІФІКАЦІЙНОЇ РОБОТИ

Направляється здобувач вищої освіти Рамзі ХАМЗА до захисту кваліфікаційної роботи
за галуззю знань 22 Охорона здоров'я
спеціальністю 226 Фармація, промислова фармація
освітньою програмою Фармація
на тему: «Аналіз проблем фармацевтичного забезпечення хворих на виразку шлунку в країнах світу»

Кваліфікаційна робота і рецензія додаються.

Декан факультету _____ / Світлана КАЛАЙЧЕВА /

Висновок керівника кваліфікаційної роботи

Здобувач вищої освіти Рамзі ХАМЗА сумлінно та відповідальне ставився до роботи, вчасно та акуратно виконував усі завдання. Рамзі ХАМЗА на професійному рівні володіє необхідними інструментарієм, який дозволяє ефективно вирішувати різні питання, що стосуються проведення прикладних досліджень в фармації.

Керівник кваліфікаційної роботи

_____ Ганна ПАНФІЛОВА

«13» квітня 2023 р.

Висновок кафедри про кваліфікаційну роботу

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

Завідувачка кафедри
Організації та економіки фармації _____ Алла НЕМЧЕНКО

«26» квітня 2023 року

Qualification work was defended

of Examination commission on

« th» of June 2023

With the grade _____

Head of the State Examination commission,

DPharmSc, Professor

_____ / Oleh SHPYCHAK /