

**MINISTRY OF HEALTH OF UKRAINE  
NATIONAL UNIVERSITY OF PHARMACY  
faculty for foreign citizens' education  
department of pharmaceutical management and marketing**

**QUALIFICATION WORK**

on the topic «**ANALYSIS OF TRENDS IN THE  
CONSUMPTION OF PHARMACY PRODUCTS**»

**Prepared by:** higher education graduate of group  
ΦМ18(5,0д) АНГЛ-07  
specialty 226 Pharmacy, industrial pharmacy  
educational program Pharmacy  
Salma BENKIRAN

**Supervisor:** professor of higher education institution of  
department pharmaceutical management and marketing,  
DSc, professor Iryna PESTUN

**Reviewer:** professor of higher education institution of  
department Organization and Economics of Pharmacy,  
DSc, professor Inna BARANOVA

**Kharkiv – 2023 year**

## Contents

	Page
Introduction .....	4
CHAPTER 1. SUBSTANTIATIONS OF MARKET ANALYSIS.	6
1.1. Characteristics of market analysis.....	6
1.2. Quantitative and qualitative characteristics of the market .....	11
1.3. Methodology of trends analysis.....	15
CHAPTER 2. ANALYSIS OF GLOBAL PHARMACEUTICAL INDUSTRY TRENDS.....	20
2.1. Analysis of pharmaceutical market environment.....	20
2.2. Characteristics of pharmaceutical industry prospects.....	27
2.3. Trends in Pharma marketing.....	36
Conclusions to Chapter 2.....	38
CHAPTER 3. EVALUATION OF MEDICINES CONSUMPTION.....	40
3.1. Global (general) trends in medicines consumption.....	40
3.2. Consumption of different groups of medicines.....	51
Conclusions to Chapter 3.....	54
Conclusions.....	56
References .....	59

## **ABSTRACT**

The work is devoted to the study of tendencies of pharmaceutical industry and pharmaceutical market, especially global consumption of medicines.

The work consists of an introduction, 3 chapters, conclusions, and a list of used sources. It is laid out on 58 pages, contains 2 tables, 12 figures. There are 36 sources of literature.

*Key words:* trend analysis, pharmaceutical market, medicines, pharmacies, consumption.

## **АНОТАЦІЯ**

Робота присвячена вивченню тенденцій розвитку фармацевтичної промисловості та фармацевтичного ринку, особливо світового споживання лікарських засобів.

Робота складається зі вступу, 3 розділів, висновків, списку використаних джерел. Розміщена на 58 сторінках, містить 2 таблиці, 12 рисунків. Є 36 джерел літератури.

*Ключові слова:* трендовий аналіз, фармацевтичний ринок, лікарські засоби, аптеки, споживання.

## INTRODUCTION

**Actuality of theme.** Trend research remains highly relevant and important in today's world. In fact, with the rapid pace of technological advancement and constantly evolving consumer behaviors, businesses and individuals alike need to stay on top of the latest trends and developments to remain competitive and relevant. By staying up-to-date on these trends, businesses can better anticipate the needs and desires of their customers and adjust their strategies accordingly. Overall, trend research remains a critical component of staying ahead of the curve in today's fast-paced and ever-changing world.

**The aim of the study.** Research and generalization of the main trends of pharmaceutical industry and medicines consumption.

**Objectives of the study.** To achieve the goal, the following tasks were performed:

- conduct a study of literary sources regarding theoretical approaches to conducting marketing analysis, researching quantitative and qualitative market characteristics, as well as the methodology of trend research;
- to analyze the influencing factors of the environment of pharmaceutical organizations, to conduct a PESTEL analysis of the global pharmaceutical market;
- to study the development trends of the pharmaceutical industry, the main factors affecting the formation of trends and modern directions of development;
- conduct an analysis of trends in pharmaceutical marketing;
- to assess the prospects for the consumption of medicinal products at the global and local levels;
- determine the factors that have the greatest influence on the level and structure of drug consumption.

**The object** of research is pharmaceutical market.

**The subject** of the research is the trends and consumptions of medicines.

**Research methods.** The following methods were used in the research to solve these tasks: content analysis, descriptive method, structural-logical, generalization, grouping.

**Approbation of research results.** The results of the research presented in the work have been made public on XXIX International Scientific and Practical Conference of Young Scientists and Students (2023) and VI All-Ukrainian Scientific and Educational Internet Conference «Формування Національної лікарської політики за умов впровадження медичного страхування: питання освіти, теорії та практики» and presented in Appendix A.

**Structure and scope of qualification work.** The work consists of an introduction, 3 chapters, conclusions, and a list of used sources. It is laid out on 58 pages, contains 2 tables, 12 figures. Source of literature 36.

## **CHAPTER 1. SUBSTANTIATIONS OF MARKET ANALYSIS**

### **1.1. Characteristics of market analysis.**

Market research is a marketing activity, and marketing is a philosophy concerning how to succeed in business. As a philosophy, marketing competes against other philosophies that make different prescriptions for business success. Notable among competitors to the marketing philosophy are the innovation philosophy (success comes from technology leadership), the quality philosophy (success comes from building the highest quality products), and the financial philosophy (success comes from making the most efficient use of resources). As a philosophy, marketing argues for the primary importance of focusing on markets and customers to guide business decisions. From this perspective, market research consists of anything and everything the firm does to learn about and understand markets and customers. Adherents to the marketing philosophy are distinguished by their willingness to grant prime authority to market facts and customer needs when choosing among courses of action. Practitioners of other philosophies do not so much ignore markets and customers as relegate them to a secondary role, as two among many checkpoints, to be consulted toward the end rather than the beginning of decision making [1].

Market research helps entrepreneurs make well-informed decisions. It can take the guesswork out of innovation, and funnel resources into ideas and projects that hold the most potential. Businesses at different stages of growth carry out market research for different reasons. There is a list of ways of how businesses can use market research:

Determine the feasibility of a new business. If market research indicates there's little or no demand for the product or service, the business is unlikely to succeed.

Identify and develop potential new markets.

Keep close tabs on marketing trends and develop strategies on how to stay ahead or adapt to changing market conditions.

Test the demand for new products or features.

Ensure optimal product placement – how, when and where should a product enter the market.

Improve and innovate their business. You can identify issues with certain business aspects such as customer service early. This can help companies overcome costly disruptions later.

Boost the success of their promotional campaigns. By gauging customer sentiment and understanding the perception of their brand, businesses can better shape their branding and marketing strategies [2].

Market analysis is a detailed assessment of business's target market and competitive landscape within a specific industry. Market analysis includes quantitative data such as the actual size of the market, prices consumers are willing to pay, and revenue projections, as well as qualitative data such as consumers' values, desires, and buying motives.

Conducting a market analysis can benefit in several ways by helping to:

- Spot trends and opportunities in industry
- Differentiate business from competitors
- Reduce the risks and costs of launching a new business (or pivoting an existing one)
- Tailor products and services to target customers' needs
- Analyze successes and failures
- Optimize marketing efforts
- Reach new market segments
- Monitor business's performance
- Pivot business in new directions

In researching this topic, you may come across terms with similar meanings, including market research and marketing analytics. Here are some distinctions:

- Market research is the process of gathering information about a target market, including its customers' needs and behaviors, in order to market products to it effectively.

- Marketing analytics is the process of studying the metrics of specific marketing efforts, such as landing page sign-ups and social media engagement, in order to increase return on investment.

Here, we focus on market analysis as one component of a thorough business development.

In theory, there are six main steps of a market analysis, including the purpose of each step and questions to guide research and reflections.

### 1. Research industry.

The purpose of this step is to gain an understanding of industry at large, so that you know how to enter it, can spot trends, and compete with other brands.

Here are questions to get started:

- What statistical information can be gathered about industry from different sources?
- How many businesses are in this industry?
- What's the size of the market in terms of the number of potential customers?
- How much revenue does the industry generate?
- What are the industry standards by which companies and consumers operate?
- What external factors have bearing on how businesses in this industry operate, including laws and regulations, new technologies, world events, and economic and social change?
- Where do you spot opportunities to innovate within the industry?

### 2. Investigate the competitive landscape.

This next step takes you from broad industry insights to looking specifically at brands. Here are questions to guide a process:

- What brands are the most well known in industry? Who sets the trends and captures the attention of customers?
- What are these brands' offers, price points, and value propositions?



- What sales tactics, technologies, and platforms do these brands use to create a customer journey?

- How do these brands use content to educate and engage an audience?

- What can you learn from customer reviews of these brands?

### 3. Identify market gaps.

With insights into how competing brands fare, position to find market gaps, differentiate products and services, and stand out within industry.

Market gaps are needs that are currently not being filled by existing brands.

Here are some questions to identify market gaps:

- Looking back at the industry research findings, what will external factors like social change and new laws mean for developing products and services?

- How specifically do competitors' products and services fall short?

- In what ways would be able to create better products and services, given company strengths and expertise?

### 4. Define target market.

Now that you know the industry, the competitive landscape, and market gaps you can fill, the next thing to do is get specific about the kinds of customers you want to serve. Define target market according to the characteristics that make individual consumers more likely to purchase products and services:

- Of the potential customers in industry, which specific market segment can target effectively?

- How can be described this segment according to their demographics (age, ethnicity, income, location, etc.) and psychographics (beliefs, values, aspirations, lifestyle, etc.)?

- What are their daily lives like?

- What problems and challenges do they experience?

- What words, phrases, ideas, and concepts do consumers in the target market use to describe these problems when posting on social media or engaging with competitors?

- What are the features and benefits of offers, and how will these provide solutions to target market's needs?

- What kind of marketing messaging can you use to appeal to this target market in order to exhibit empathy and understanding?

#### 5. Identify barriers to entry.

It's important to have a clear sense of factors that might prevent from entering market successfully. That way, can devise a strategy to address challenges.

Here are some questions to make barriers to entry more visible:

- What are the startup costs of building business, including product development, technology, suppliers, patents, and certifications?

- What legal requirements will need to fulfill before launching?

- What political, economic, and social factors might affect customers behavior and their likelihood of purchasing the offerings?

- How much do top competitors spend on their advertising to earn the loyalty of customers?

- What will need to do to present offerings as better alternatives in terms of value, price, and ease of purchase?

#### 6. Create a sales forecast.

Sales forecasting is the process of estimating future sales so that can make confident business decisions or secure funding from investors and lenders. You may find it useful to create forecasts for specific increments of time, such as the next three months, six months, or year.

To generate a sales forecast, answer these questions:

- What products and services do you intend to sell?

- How many units do you expect to sell during each increment of time, based on your market size and the behaviors of your target market?

- What prices will you assign to each product or service?

- What is the cost of producing and advertising each offering? [3,4,5]

## 1.2. Quantitative and qualitative characteristics of the market

While there are many important decisions to make when planning a market research effort, one of the most crucial is whether to conduct qualitative or quantitative market research.

In brief, quantitative market research refers to the process of collecting large amounts of data through surveys, questionnaires, and polling methods. Conversely, qualitative market research involves determining customer motivation through close observation — typically in a small group or face-to-face encounter.

What makes deciding between the two even trickier is that many of the people conducting market research — either for their employers or as consultants — do not have in-depth expertise in both methodologies. As such, they stick with the one that they are familiar with, regardless of whether it is the best option. Even if their practice integrates both quantitative and qualitative methods into their approach, there still may be a bias toward certain strategies and tactics -- which ultimately renders the outcomes anywhere from less-than-optimal, to outright misleading.

The only way to avoid heading down the wrong road — and undermining the market research effort and investment — is to objectively determine whether a quantitative approach, qualitative approach, or integrated approach (and if so, in what proportion and for what purpose) is required.

Below are some high-level guidelines to direct this critically important decision.

*Quantitative Research.* The purpose of quantitative research is to glean reliable, standardized facts and statistics to guide key business questions, such as “Is there a strong market for our product?” or “How many of our target customers care about this benefit?”

Often, primary research quantitative data is captured through surveys and questionnaires. Quantitative data collection methods typically rely on close-ended questions to generate insights. The pool of research respondents must be sufficiently large, with attention paid to ensure the necessary audience representation.

For example, exclusively using mobile surveys to capture quantitative data is likely to disproportionately filter out people not on mobile panels, while conducting surveys by calling landline phones is likely to disproportionately filter out the nearly two-thirds of households that entirely or mostly use cell phones.

But capturing data is just one piece of the quantitative research puzzle. To leverage it as actionable and reliable business intelligence, it must be organized, analyzed, and communicated to decision-makers (e.g., executives, board members, marketing directors, R&D leaders, business owners, etc.). Most organizations — and virtually all small businesses — do not have the resources, technology, or expertise to do this in-house.

*Qualitative Research.* The purpose of qualitative research is to go deeper into understanding insights into customer motivation and emotion. In this sense, if quantitative research is mainly about the “what” of customer behavior, qualitative research is about the “why.” This approach can be useful for revealing aspects such as why customers like or dislike a brand, why they like particular marketing messages and dislike others, and what motivates actual consumer behavior.

There are many ways to conduct qualitative market research, such as focus groups, online bulletin boards, and in-depth interviews. There are advantages and drawbacks to various strategies and tactics, but experienced moderators know how to handle each methodology for optimal outcomes. Because the pool of respondents is smaller, it is essential to make adjustments to avoid bias or end up with plenty of raw information but precious little actionable insight [6].

#### Reasons to conduct Quantitative Market Research

- Research is the first step for a successful marketing campaign, be it a new product launch, sales pitch positioning or conducting a data-oriented statistical analysis.
- By conducting an online quantitative market research, insights about marketing activities like updating the website, social media page management or newsletters can also be received.

- By implementing Quantitative Market Research, questions like “Who are currently buying my products/services?”, “Why are the others not buying my product?”, “How to reach out to my potential clientele?” are answered.

- Quantitative research starts with survey creation, designing, and distribution. After the survey is sent out to the right people, data collection and analysis has to be done to get desired insights.

Advantages of quantitative market research:

- Produces numerically rational theories: The result of the quantitative research is based on numbers because of which results are extremely instrumental for an organization to make well-thought decisions to market a product/service in a better manner. The numbers analyzed in this can be then put into charts and graphs for better representation and review.

- Easily calculable and analyzable data: Due to the exactness in the answers received for quantitative questions, it’s extremely favorable for research to evaluate the data.

- Enhanced willingness of respondents: Quantitative research mostly comprises of close-ended questions which are quick and less time-consuming for the respondents to answer. This is an essential reason for high response rates for this market research.

- Less investment to create brand awareness: These days, quantitative research is used for brand awareness which is generally conducted through online mediums. Cost invested in the research is thus reduced to create awareness about the brand.

Disadvantages of quantitative market research:

- Statistical data isn’t always complete: Data could be collected from a huge number of people but there is no way to dig deep down into the “why” of an answer. Data isn’t actionable with just numbers and no concrete explanations to back that data.

- Structured interviews and questionnaires: The biggest strength but also a weakness of quantitative market research questions is the limited scope to digress

from a structured answer. Whilst this provides actionable numbers, the questions do not allow to validate those numbers due to the nature of how the survey is set-up.

- Sample size isn't indicative of a larger population: If the respondents of the market research survey have attributes that do not match those of a larger demographic, the data collected cannot be equated to a larger sample as the data collected isn't necessarily a representation of the larger audience.
- Self-report isn't always trustworthy data: People when given the liberty to respond to a survey are skeptical to give out too much information and if any information provided is incorrect or haphazard, that discounts the complete validity of the survey [7].

#### Advantages and Disadvantages of Qualitative Marketing Research

There are many advantages of qualitative marketing research. When you are conducting your research for your DBA in Marketing degree program, using qualitative market research methods will allow you to interact with consumers in a way that is natural and informative. Some other major advantages of qualitative marketing research are that it:

- Leads to collecting detailed information
- Is adaptive and allows for flexibility in questioning
- Uses open-ended questions to allow transparency from respondents
- Helps consumers communicate with a brand and vice versa
- Allows products to remain relevant and meet customer needs

The disadvantages of qualitative marketing research mostly concern time, cost and outcome. Qualitative marketing research can take days or months to complete—and when it comes to research, time really is money. Furthermore, the outcomes of qualitative marketing research are subjective; what one consumer believes may be very different from another, which means there is no standardization, and it may be difficult to use the data to make accurate assumptions or predictions [8].

Quantitative and qualitative research use different research methods to collect and analyze data, and they allow you to answer different kinds of research questions (tab.1.1) [9].

Table 1.1

## The differences between quantitative and qualitative research

<b>Qualitative vs. quantitative research</b>	
Quantitative research	Qualitative Research
Focuses on testing hypotheses and theories	Focuses on exploring ideas and formulating a theory or hypothesis
Analyzed through math and statistical analysis	Analyzed by summarizing, categorizing and interpreting
Mainly expressed in numbers, graphs and tables	Mainly expressed in words
Requires many respondents	Requires few respondents
Closed (multiple choice) questions	Open-ended questions
Key terms: testing, measurement, objectivity, replicability	Key terms: understanding, context, complexity, subjectivity

### 1.3. Methodology of trends analysis

Trend analysis is a method to analyze the statistical data and recorded market behavior over a defined period of time and generate valuable insights using this data for strategizing and forecasting future business plans. It helps to identify the dominant traits of the market and the consumers associated with it.

One of the reasons why organizations or businesses want to conduct trend analysis is to understand and obtain greater insights on how the market is reacting, what are the primary preference of the consumers and what are the strategies an organization would need to induce.

There are several ways in which the market trend can be analyzed. Some of the most popular market research methods are Quantitative Market Research methods like Surveys and Qualitative Market Research methods online interviews, and observing consumer behavior with supporting data. Amongst the

above-mentioned methods, questionnaires or surveys help gather the best data insights.

This is a very common strategic tool for understanding market behavior. It also helps to make predictions for the future and helps an organization understand the relevance of creating a particular product and better strategic forecasting.

This involves collecting relevant data for respective pre-defined metrics and analyzing the same to get a clear picture of the performance behavior over a defined period. The authenticity of the data determines, the accuracy of the projection. More the accuracy, better the prediction.

Here are the factors to be considered for efficient trend analysis:

1. What does the consumer need: A business or an organization that understands the consumer needs are most likely to excel in providing the most suited product to its consumer. Consumer behavior shift can be identified by deploying surveys time to time. The data that is obtained needs to be analyzed to obtain accurate results.

2. Industry cost factors: One of the most important aspect that any organization should take into primary consideration is the cost fluctuation in the market. The cost factor comes into play if a similar product is available in the market at a lower cost. Analyzing consumer behavior with regards to changing prices plays a vital role in market research.

3. Changing dynamics of the market: Organizations need to analyze trends with respect to innovation in products, market competition, changes in operations and delivery methods. For example, if a particular product has dropped in sales despite all other factor being the same, it is time to do a situation analysis to evaluate the packaging, competitor's products and alternatives available as well as a quick innovation check.

These factors help businesses to understand the market curve and stay ahead of its competitors [10].



While determining future objectives for a product or service, trend analysis is used as a basis on which future market projections are made. Market trend analysis involves analyzing the following areas:

Trend analysis is a very common strategic tool for understanding the market maturity (i.e., whether the market is in a growth or decline stage) to gauge future market potential and the overall position of a business in the market.

Since market trend analysis involves understanding past market behavior and expected future market innovations, a major effort in conducting trend analysis is dedicated toward collecting relevant data. The authenticity of this data determines the accuracy of the projections, which subsequently impacts the objectives set for a particular product or service [11].

As your business becomes more established, you will be able to compare data and identify trends in:

- financial performance
- competitor movement and growth
- manufacturing efficiency
- new or emerging technologies
- customer complaints
- staff performance reviews and key performance indicators (KPIs).

Trend analysis helps to compare business against other businesses to establish a benchmark of how your business should be operating, at both the initial stage and ongoing, or developing.

Analyzing market trends is key to adapting and changing business, keeping current and ahead of the industry, and for continual growth.

The most important rule for gathering data for trend analysis is that it is up to date, reliable and consistent, because this is what you will base your business decisions on, and you need to have an accurate comparison of information over time.

The amount and quality of data will depend on the information captured over the months and years the business has been operating. But if the business has little or no data, you can use industry and market trends to gather the information.

If the data is only partially captured or inaccurate, the analysis can only be partially correct.

The following explains the type of trend data that may help your analysis, why it is useful to collect and where the data can be sourced.

Expand all: work health and safety (WHS) records; cost of goods, expenses, cash flow; manufacturing; sustainability; marketing analytics; customers and sales; human resources; project data; equipment failures and maintenance; delivery times, couriers, external suppliers; data analysis.

Data analysis can be completed using common business software that includes visualization of the data in charts and graphs and is often easier to interpret than raw data, as it shows the trends more clearly.

When interpreting your data, ask the following questions as part of the analysis.

- When would a trend become worrying and require your action? For example, decreasing purchases in a retail location over the past 1 to 2 quarters may be explained by increasing domestic costs, but over the past year the demographics in your location may have changed. You may need to review your products and services.
- What will be your critical decision points? Can you, for instance, apply a threshold that is an acceptable variation for your business (e.g. 10% over or under)?
- What opportunity might improve your business over another? For example, if your information technology (IT) system is experiencing interruptions and it is a continuing trend, would outsourcing your system be preferable to purchasing a new system? The cost of outsourcing may be better than purchasing a new system.
- What would constitute a crisis trend? In other words, what trend—if it were to continue—might cause permanent damage to the business?
- What patterns are you seeing between the data sets? For example, does the data from your project management system show causes from your customer management system?

- How does your business data compare to your industry benchmarks? How could you improve each function of your business slightly to improve your own benchmarks?

#### Limitations of trend analysis

There are some limitations to trend analysis, for example:

- external financial crises and recessions, and the effects of a pandemic
- factors that have changed results during the recorded period, such as purchasing new equipment or outsourcing
- adjustments for inflation.

Trend analysis is 'working on the business', rather than 'in the business'.

The Pareto Principle (80% consequences result from 20% causes) also shows the importance of working on the business. The amount of time you commit to trend analysis will give you more valuable improvements across your entire business [12].

Overall, theoretical aspects of carrying out market trend analyses and consumption analysis of enterprises were analyzed. Qualitative and quantitative parameters of market marketing indicators estimation are given.

## **CHAPTER 2. ANALISIS OF GLOBAL PHARMACEUTICAL INDUSTRY TRENDS**

### **2.1 Analysis of pharmaceutical market environment**

Analyzing the functioning of pharmaceutical companies, views the moving forces on the demand side and defines them through three key roles: physicians as prescribes, final consumers or patients, and organizations as payers that cover the complete or part of the costs of pharmaceutical products. The usual set of people in decision-making on the purchase of pharmaceutical products is divided into three key agents of demand on this market. Our target market is influenced by a set of external (macro-) environment factors, which are beyond the company's control, at least not in the short term and directly. These factors could be classified into several groups: social and cultural, legal and political, economic, technological, natural and demographic environment. Between the external environment (creating the dispositions of the target market) and the target market itself lies the mechanism of influence through variables that an organization can control, manifested as marketing mix instruments. With due appreciation of the key idea of marketing, the consumer/patient remains the central element, but their decisions to purchase and use pharmaceutical products (especially prescription drugs) are not independent; they are primarily determined by the influence of both prescribes and payers. All three actors on the demand side are influenced by a large number of (macro-) environmental factors, determining their process of information gathering, decision making and behavior on the pharmaceutical market. At the same time, designing marketing mix instruments, pharmaceutical companies strive to influence the agents on the demand side, in a complex competitive environment. Macro-environmental factors act as a specific "prism", affecting directly and simultaneously the design of marketing mix (supply) and constituents on the demand side: prescribes, patients and payers. Pharmaceutical industry marketers must understand the influence of macroenvironmental elements on the target market's decision-making process and, at the same time, incorporate the influence of these elements into the creation and delivery of value to consumers through an appropriate marketing mix [3,4].

The final consumer of pharmaceutical industry products is the patient. Pharmaceutical industry and its marketers have the task of understanding the consumers in their patient role, their motivation and decision-making process, as these parameters will reflect powerfully on generating the appropriate marketing mix. As ‘...health care does not work like a normal market’, generators on the demand side, and thereby the target market for pharmaceutical companies, also include the prescribers and health care payers. In its original meaning, the role of prescribers belongs to physicians, i.e. persons legally authorized to write a prescription, i.e. prescribe a drug. In a wider sense, we can also define the role of unofficial prescriber for over-the-counter product category, when the patients can be influenced to buy a drug by a pharmacist, or any other person from the patient’s/consumer’s environment whom (s)he trusts and believes that their advice may lead to the expected outcome. In a significant segment of pharmaceutical product range (especially by the criterion of sales value), the decision on which specific product a consumer/patient will use is made by the prescriber. Health care payers, basically, define the availability of individual drugs to consumers, as they refund the cost of the given pharmaceutical or a part thereof. Motives guiding prescribers and payers significantly impact on the formation of demand for particular pharmaceutical products.

Pharmaceutical market is a complex system in which a large number of stakeholders strive to achieve their interests. Market supply is created by a huge number of pharmaceutical companies, but the product scope and the geographic scope, impose the conclusion that the definition of the pharmaceutical market is set at an individual company’s strategic level. To paraphrase an analogy, if we speak of a very widespread, well-known and common product such as a pain killer, are we talking about the same market if we refer to the sale to a final consumer/patient, and the sale of this product to a hospital? Although it is the same product in terms of chemical composition, any similarity ends within the production cycle, and marketing this product towards target markets from that point on implies two separate strategies.

In respect of the macro-environment from the aspect of their influence on the market actors, both on the demand and the supply side of pharmaceutical products, a need is imposed for a detailed analysis of individual forces and influences on the pharmaceutical market. The macro-environment sets the overall framework of conditions and mutual influences determining all the aspects of behavior of market actors. Porter and Kramer illustrate the relationship between the individual elements of macro-environment and the company's competitive advantage, highlighting the importance of accomplishing the company's goals by accomplishing the goals of society [13]

The management of a company uses PESTEL analysis to weigh the factors that can hinder or promote the industry's growth. From this PESTEL analysis of the pharmaceutical industry, it can identify how political, economic, socio-cultural, technological, ecological, and legal issues can impact the conditions of the pharmaceutical industry.

The PESTEL analysis of pharmaceutical industry can give companies an idea about the external factors which can have a temporary or lasting impact on the pharmaceutical industry. The given list shows the effect of the external factors:

For any business to flourish, it is essential to have a stable political condition. Here are some political conditions which can impact the pharmaceutical industry:

- Most countries maintain frameworks that include guidelines about safety standards, certifications, etcetera. They also mark the banned drugs, which may cause health hazards. If a pharmaceutical company fails to follow those regulations, its business may suffer severely.
- Administrations of most countries try to gain control over the price of the drug to make it affordable for people. It may toll on the growth of pharmaceutical companies.
- Governments of some countries subsidize the pharmaceutical companies to keep the essential drugs within the commoners' reach. It helps the companies to survive in the competitive market.

### Economic Factors:

The economy of any direct impacts the businesses. The pharmaceutical industry is also affected when the economic conditions of a country get affected. The PESTEL analysis pharmaceutical industry can identify the economic conditions which can affect the pharmaceutical companies:

- As the economic conditions of the countries are developing with time, the household income of people is also increasing. It may allow them some essential drugs. They may have the urge to buy costlier drugs, which were previously out of reach for many people.
- The researchers are constantly working on drug modification, resulting in more beneficial and potential drug production. As people are buying those drugs, the pharmaceutical industry is also flourishing.
- The average healthcare spending of the families is increasing. If there are aged people in a family, there are more chances of high healthcare expenses. It also includes the cost of medicines. It is also giving the pharmaceutical companies to earn better profit even after following Government guidelines about pricing.

### Social Factors:

Socio-cultural factors of any country can impact the industries within the periphery of the country. The pharmaceutical industry is not an exception, and the sociological conditions dominate it gravely. Here are some sociological conditions which can impact the growth of the pharmaceutical industry:

- The lifestyle of people has people incredibly fast yet stagnant. As a result, more people are moving towards obesity. Thus, facing health conditions like diabetes, thyroid, hypertension. The patients need continuous medication to deal with this. Hence the sales of the pharmaceutical companies are also increasing.
- As the healthcare system has improved all over the country, the number of the aging population is also growing. Hence, there is a need for more medicines

for them than for the younger ones. It creates a greater demand in pharmaceutical companies resulting in their expansion.

- Many people are concentrating on having a healthy lifestyle while doing exercises, eating healthy. It may result in a decrease in the demand for drugs in the future.

#### Technological Factors:

The pharmaceutical industry is greatly dependent on technological innovations. The PESTEL analysis pharmaceutical industry can show how the technical conditions can affect the business:

- The pharmaceutical industry is greatly dependent on technology. The research and biotechnological innovations have resulted in the production of drugs that are good in quality and have low production costs. It will allow more people to get access to medicines that they previously could not afford.
- The drugs require proper storage conditions. Technology has made it easier to preserve medicines and transport them without getting harmed due to unpleasant conditions.
- Technology has provided pharmaceutical companies with the chance to reach more companies through campaigns. They can also deliver the medicine at the door, which has increased the reach of the companies. It can also increase the revenue of pharmaceutical companies.

#### Environmental Factors:

Environment is a significant concern, and the impact of waste materials on the environment has worried the environmentalists. Here are some ecological issues which may affect the pharmaceutical industry:

- As the production of drugs is related to a large carbon footprint, many countries are coming up with regulations to decrease the effect on the environment. As abiding by these regulations may be costly for the new companies, they may fail to establish their business.



- The production of drugs results in the creation of different biotechnological pollutants. They may be hazardous for people's health. The company needs to take care of this waste to maintain the safety of the people.
- Like other companies, pharmaceutical companies may take up some corporate responsibilities towards the environment. They can donate money or campaign for some environmental causes, which can help them create a better image.

#### Legal Factors:

A nation's legal conditions do not have much direct impact on the pharmaceutical industry. However, there can be some indirect issues that may affect the growth of the pharmaceutical business. The PESTEL analysis pharmaceutical industry can help to point out the legal aspects which can work on the growth of the pharmaceutical industry:

- As pharmaceutical products are one of the essential ones, the government always uses laws to control the fraud regarding the expiration dates and manufacturing of the batch of drugs. If a company fails to adhere to the set guidelines, it may have to face legal proceedings.
- Pharmaceutical companies are mainly dependent on their database. If they get affected by cyber threats, the customer may lose their confidence in them. It can affect their business as well.

Pharmaceutical companies should maintain strict legal guidelines while formulating the framework for their business and researches. They ensure the safety of the products. It helps them to avoid legal issues. Thus, allowing them to stay away from the high expenses of proceedings. Fig 2.1 [14,15,16,17,18].



Fig. 2.1 PEST analysis of Pharmaceutical Industry

## 2.2. Characteristics of pharmaceutical industry prospects

There has been a huge amount of growth within the pharmaceutical industry in recent years. This was spurred on even more so by the 2020 outbreak of Covid-19, which saw the whole world turn to the industry in the hopes of finding, producing and distributing a vaccine. And though the pandemic has increased the adoption of technologies and other innovations to support virtual work and other functions, pharmaceutical companies are up against a sea of challenges and change to which they must adapt.

The pharmaceutical industry has been traditionally slow to embrace new technology, but the latest pharma health trends are signs of a massive paradigm shift in the industry.

The latest technologies, like AR/VR, artificial intelligence (AI), and additive manufacturing, help pharma companies accelerate the research and development process, create personalized products, and conduct testing in innovative ways. Ultimately, these technologies make healthcare more effective and efficient, transforming the experience for patients and providers.

While the rollout of vaccines is underway across the globe, pharmaceutical employers should think strategically about future investments in order to thrive in the coming years. Here are some trends to look out for in pharmaceuticals, and what might be in store for the industry moving forward (tab.2.1) [19,20,21,22,23].

Table 2.1

### Trends to look out for the industry moving forward

<b>Trends</b>	<b>Characteristic</b>	<b>Examples</b>
Market behaviour leading to consumer-centric approach	Consumers' attitudes and behaviours have changed dramatically over recent years when it comes to the purchase and consumption of medicine – from their increased use of technology and willingness to share data, to their interest in using tools to make decisions about prescriptions and care.	
Technological advancements	According to a survey conducted by Deloitte in 2020, pharmaceutical companies believe that transforming functions using digital technologies will be of high strategic	Quantum computing will come into the spotlight of drug discovery

	<p>priority over the next five years. Employers indicated that the focus of digital investments will be on gaining insights into the execution of business strategies— inclusive of understanding and adapting to changes in customer behaviour, improving the efficiency of the R&amp;D process, and fast-tracking products to market.</p>	<p>As one of the key trends in the pharmaceutical industry, quantum computing is rapidly emerging as a powerful tool for drug discovery, by offering the potential to revolutionize its processes and accelerate the development of new treatments. By harnessing the power of the quantum phenomena such as superposition and entanglement, quantum computers can solve complex problems that otherwise are intractable. Recently, QuEra Computing, a startup created by scientists from Harvard and MIT, has developed a quantum processor of 256 qubits, which surpasses its last 127 qubits version. And, there's much more to come. As ambitions for quantum computer development continue to rise, Google announced its intentions to create a machine with 1 million qubits by 2029. With the stakes being so high, no wonder global pharma spending on quantum computing in Research &amp; Development (R&amp;D) is predicted to reach billions of dollars by 2030, according to McKinsey.</p> <p>Quantum computers have the capacity to dramatically reduce the time and cost of drug discovery.</p>
<p>Artificial Intelligence and machine learning</p>	<p>Artificial intelligence (AI) is one technology becoming increasingly utilised across a wide range of industries. This includes the pharmaceutical industry, which saw a greater uptake of AI in order to speed up the testing, manufacture and distribution of the coronavirus vaccine.</p>	<p>AI is becoming increasingly pivotal in healthcare. According to a report by Grand View Research, the global AI healthcare market size will reach a staggering \$31.3</p>

	<p>AI, along with Machine Learning, can help to speed up the process of drug discovery through initial screening of drug compounds, be applied to monitoring and predictive forecasting, help to identify the best candidate for clinical trials, and even improve fraud detection.</p> <p>AI is already improving the industry with its immense predictive and data analytics capabilities. This use of AI technology enables healthcare professionals to analyze patterns in data sets to understand the implications, benefits, and success rates of new drugs before launching them into the market.</p>	<p>billion by 2025, growing at a Compound Annual Growth Rate (CAGR) of 41.5% in this time.</p> <p>Pangea Data, a British startup, uses AI alongside Machine Learning (ML) for real-world evidence (RWE) studies and clinical trials. Using ML-powered software, Pangea Data can scan electronic health records and illegible doctors' notes to identify patients. The company is also creating a library of AI models for various disease areas.</p> <p>Invivo AI, a Canadian startup, uses novel ML strategies such as representation and few-shot learning (deducing results from limited data) to test new drugs and select the best potential candidates for the medicine. These processes eliminate the need for large datasets, accelerating the drug discovery and development process.</p>
Customised treatments	<p>Personalisation in medicine, otherwise known as “precision medicine”, has the power to effectively match patients with customised medication, which has the potential to reduce instances of genetic disease, aid in cancer treatment and improve the gathering of health data.</p> <p>Utilising data-powered insights, doctors will be able to select medication and treatments based on a genetic understanding of a patient's disease along with variations in environment and lifestyle to treat them on an individualised basis. Interestingly, the production of precision medicine requires facilities that are typically specialised and smaller than most pharmaceutical manufacturing facilities.</p> <p>The successful implementation of precision medicine will require a new regulatory,</p>	<p>With a CAGR of 10.7%, the precision medicine market value will exceed \$96 billion by 2024.</p>

	<p>clinical, economic, and technical structure. That way, doctors can administer the right therapy to the right patient at the right time.</p>	
Transformation of health care delivery through digital technology	<p>Increased investment in and the deployment of home-based health technologies are creating new opportunities for biopharma companies to create value. Technologies such as sensors, monitors, at-home diagnostics, and digital therapeutics create massive amounts of data that can be used for improving the clinical trial process, as well as for labelling and targeting products to patient demographics that would benefit from them the most.</p> <p>Furthermore, devices, apps, and other digital services have the potential to engage consumers and support them in becoming more active in owning their own health care information and be a part of their care plan. Companies could be well served to take advantage of this momentum to incorporate digital technologies into the patient experience, either in clinical trials or via digital medicines and therapeutics.</p> <p>Wearable tech integration allows pharma companies to do more than just manufacture, market, and sell drugs. The technology gives patients greater power to manage their conditions and make critical decisions.</p> <p>We already have a range of remote patient monitoring devices that make it possible for doctors to track glucose and blood pressure metrics and keep tabs on chronic conditions like asthma and diabetes.</p>	<p>Daiichi-Sankyo, a Japanese drugmaker, and Partners HealthCare Center teamed up to implement the use of wearables. The two institutions created a device coined “the mobile wrap-around,” which monitors patients diagnosed with atrial fibrillation and sends feedback to doctors.</p> <p>Roche is another early adopter of wearable tech integration. The company paired its mySugr app with the Accu-Chek Guide glucose meter, enabling people with diabetes to experience a different, more responsive way to manage the condition.</p> <p>With the device, patients can log in and complete simple tasks, which allows them to keep track of their glucose levels. The approach is unique, practical, and effective—offering a better experience for patients than simply waiting around for answers.</p>
Data Management & Analytics	<p>The ripple effect is that there isn’t adequate development and dispatching of effective medicines. By leveraging big data, pharma researchers can shorten exploration cycles, leading to the quicker discovery and distribution of new drugs.</p> <p>Big data can also help determine a drug’s side effects beforehand, which reduces the time needed for clinical trials. The costs of research and development inflate the cost of medications, so shortening R&amp;D cycles can help lower the costs of medication for patients.</p>	<p>The cost of research and development is one of the biggest stumbling blocks in the launch of new drugs. For instance, the development of a new molecular compound or biological medicine can cost around \$2.6 billion.</p> <p>Carnegie Mellon University is improving R&amp;D by integrating big data with a machine learning algorithm that can test and analyze various drugs.</p>

<p>Single-Use Processes</p>	<p>More pharma companies are embracing single-use technology (SUT) in their manufacturing process. This shift is ongoing as there are more industry players becoming aware of the incredible advantages of this technology.</p> <p>SUT-powered bioreactors can facilitate high-tier processes at a larger scale. Also, the technology supports the manufacture of more reliable products, eliminating the need to sterilize containers.</p> <p>With reduced maintenance processes, pharmaceutical companies already using SUT report quick turnaround and development times and simplified operations.</p> <p>Equipment running on SUT is easy to set up, taking one or two hours compared to stainless setups that can take a couple of days. In addition, system maintenance is relatively straightforward, with no need for sterilization validations, annual cleaning, and minimum monitoring.</p> <p>Single-use processes reduce the risk of product cross-contamination, making it easy to maintain a sterilized production environment.</p>	<p>Single-use bioreactors are an increasingly popular option for simplifying processes</p>
<p>Bioprinting</p>	<p>Clinical testing is still a significant challenge in the pharma industry. Companies use live subjects to measure a drug's efficacy and safety during clinical trials due to the lack of a better medium. However, thanks to bioprinting, that's about to change.</p> <p>A significant stride in health tech that sounds like it was pulled from a dystopian movie script, bioprinting uses 3D printing-like techniques to create imitations of natural human tissue and organs. This technology combines cells, growth factors, and other biomaterials to form a mesh-like structure.</p> <p>These 3D-printed organs can replace live human subjects during clinical trials. Bio-ink — a liquid suspension of living cells and the primary component of 3D printed organs — can help researchers create human tissue in-lab. This incredible technology forms micro-organs and tissues that react the same way the human body does to new drugs and substances.</p>	<p>Customized bio-ink made using genes from a patient can enable researchers to recreate larger, more complex organs. It could even allow pharmaceutical companies to create customized drugs suitable for a specific patient.</p> <p>Other benefits of bioprinting to the pharma industry can include:</p> <ul style="list-style-type: none"> <li>Testing drug toxicity at a specific dosage</li> <li>Modeling diseases and testing various treatment procedures</li> <li>Measuring a drug's metabolic effects in living tissue</li> </ul> <p>The use of 3D-printed organs could help drive down costs associated with clinical trials while reducing</p>

		the time required to approve new medications.
Partnerships and collaborations across industries will intensify	companies are forming strategic alliances to access and share data, allowing them to better understand the customer's needs and develop personalized treatments. This approach allows them to pool their resources and knowledge in order to tackle complex problems and develop innovative solutions.	For instance, Pfizer and BioNTech have embarked on a journey of mRNA technology discovery, forming a strategic partnership that helps protect individuals against influenza and COVID-19. Similarly, AstraZeneca and Huma are collaborating to expand digital health innovation. Meanwhile, aside from traditional partnerships, a new breed of collaborations are appearing – academia and the industry are joining forces in fields such as quantum computing.
Agile transformation will boost companies	implementing Agile working principles, such as flexible and collaborative working practices, rapid prototyping, and regular customer feedback	Agile methodologies, which prioritize flexibility and rapid iteration, have already proven successful in software development and are now making inroads into the biotech sector. As Harvard Business Review highlights, the Agile principle of rapid iterations makes it possible for organizations to increase their R&D productivity by 20%. Agile transformation has the potential to disrupt traditional business models and drive significant changes in the way companies operate, becoming one of the major pharma trends of the future.

Global pharmaceuticals occupy an important place in the global economy, characterized not only by the complex structure and specificity of innovative processes, but also by high investment attractiveness and a fairly large number of



jobs employed both in the production and in the development of new molecules. It should be noted that the pharmaceutical industry remains a key factor in the development of the economy of many European countries and is one of the most knowledge-intensive sectors of the economy, which is associated with high-tech production processes. It is necessary to note the scale of investment in scientific research, where more than 30 new molecules enter the global market every year (Fig. 2.2).

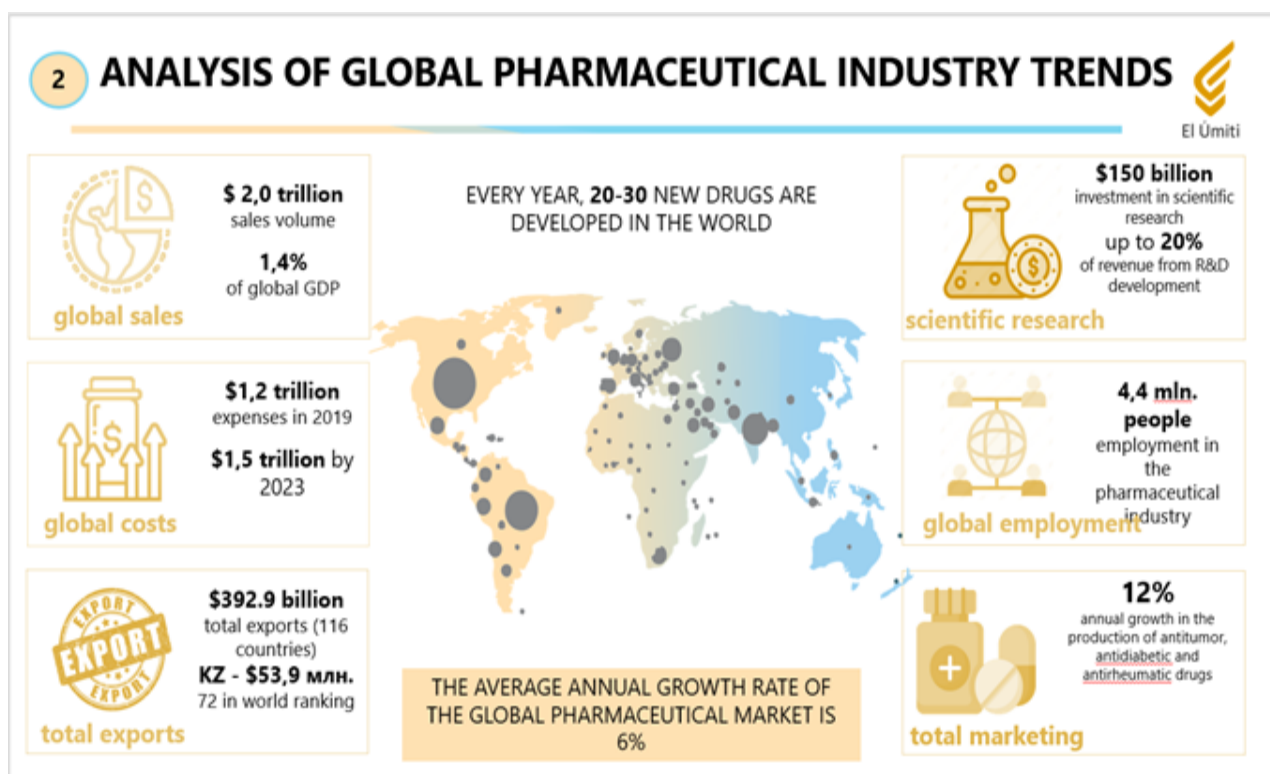


Fig. 2. 2. Analysis of global pharmaceutical industry trends

In the context of innovation opportunities and competitiveness, the export potential of countries is often considered, more specifically, their high-tech exports. The strategic development of the pharmaceutical industry is influenced by demographic and epidemiological trends: characteristic diseases determine the focus of research and development and the direction of global investment activity in the industry. In this process, the dominant role is played by BigPharma companies, which include the innovation processes and invest huge amounts of money in the development of innovative molecules.

At the same time, while remaining a socially significant sphere, the pharmaceutical industry is very dependent on regulatory decisions and the effectiveness of the management of research processes. Thus, the coronavirus pandemic exposed the extreme vulnerability of the world community to such challenges and pointed to the need for the development of the pharmaceutical industry as a guarantor of drug safety.

According to the leading experts of «Fortune Business Insights», the value of the global pharmaceutical industry in 2020 was 1.12 trillion US dollars, and by 2023 it will reach 1.57 trillion US dollars. There is a positive trend of an average annual growth rate of 6%, in particular, due to an increase in the production of antitumor, antidiabetic and anti-rheumatic drugs by 12% per year.

The impact of pharmaceutical sector revenues and profits on GDP is growing. Total sales at the end of 2019 amounted to more than 2 trillion US dollars – about 1.4% of global GDP. Global sales of exported medicines to 116 countries cost US \$ 392.9 billion. At the same time, the employment of the population in the pharmaceutical industry amounted to 4.4 million people – 0.1% of the working-age population of the planet.

It is necessary to note the scale of investment in scientific research, which exceeds 150 billion US dollars, with 20% of the market revenue coming from the development of R&D centers, as a result of which more than 30 new molecules enter the global market every year.

According to the international analytical company «IQVIA», the Top 10 countries account for 79.5% of the total value of the global pharmaceutical market, where by the end of 2019 the rating is headed by the United States with a market volume of 501.2 billion US dollars (Fig. 2.3).

Rank	Country	Sales 2019 (billions, US\$)	% Growth over 2018
1	United States	501.2	4.4
2	China*	94.9	9.1
3	Japan	79.0	2.3
4	Germany	51.9	6.7
5	France	35.2	2.9
6	Italy	32.9	3.0
7	United Kingdom	26.4	7.8
8	Spain	24.3	5.1
9	Brazil**	24.3	9.3
10	Canada	22.6	5.4
<b>Top 10 pharmaceutical markets</b>		<b>892.7</b>	<b>5.0</b>

Fig. 2.3 Top 10 Pharmaceutical markets, 2019

According to authoritative sources on the study of the pharmaceutical market, such as "PharmaBoardroom" and "Evaluate Ltd.", sales of the Top 10 companies "BigPharma" occupy 35% of the value of the global pharmaceutical market.

In fact, leading pharmaceutical companies re-invest up to 20.8% of their drug sales in the development of new drugs.

It should also be noted that active state support for the pharmaceutical industry has allowed a number of developing countries, especially India and China, not only to protect domestic markets, but also to successfully enter foreign ones. The share of own manufacturers in the pharmaceutical market of China is 70%, India - 80%. The state actively contributed to the growing role of these countries in the world market. Thus, the share of Indian and Chinese companies in the global pharmaceutical market increased from 6.5% to 9.4% from 2007 to 2019.

The most dynamically developing markets in recent years have been China and South Korea. The emphasis on the centralization of production and quality of medicines (GMP) in China made it possible to ensure the development of 800

innovative molecules, attract 20 global manufacturers and fully switch to international standards for the circulation of pharmaceutical products.

South Korea has followed the path of innovative development in the field of promising areas of science, localization of the production of biosimilars, attracting public and private capital, and has mobilized the best international specialists to the country [24].

### **2.3 Trends in Pharma marketing**

Let's have a look at the most popular trends in Pharma marketing to watch in 2022:

- Marketing Automation & AI
- Telehealth & Online Patient Care
- Online Video Engagement
- Google Featured Snippets
- Expanded use of RWE

Marketing Automation & AI. Pharma companies worldwide perform various tasks, including tracking and engaging with individual buyers, prioritizing customers based on their interests, filtering leads based on engagement, and measuring the revenue contribution of marketing campaigns.

On top of that, performing these tasks manually is time-consuming, tedious, and error-prone. However, utilizing marketing automation and AI in the pharmaceutical industry will provide a critical solution to several healthcare-related issues.

Marketing automation examines customer behavior and content consumption across multiple platforms, including social clicks and page views. As a result, the emphasis shifts to engagement and enables pharma companies to personalize and templize content to maintain customer interest. Furthermore, it enables the company to use automated chats and email campaigns to provide a value-driven customer experience that improves management effectiveness.

Telehealth & Online Patient Care. Telehealth is yet another marketing trend that has exploded in the Covid-19 era. Many organizations and businesses are using telemedicine and online patient care to expand their operations.

It allows you to reach more patients. Furthermore, the telehealth platform no longer necessitates large upfront costs, and it is inexpensive and simple to obtain. A customer only needs an internet connection and a mobile device. It also has other benefits, such as increased patient engagement through remote monitoring, improved clinical workflows, advanced business models, and increased patient satisfaction.

Telehealth and online patient care are more than just the delivery of a service, and it increases your customer base by convincing them that you genuinely care about them.

Online Video Engagement. Who doesn't enjoy visuals, whether it's the 1990s or 2022? And by 2022, online video engagement will be one of the marketing trends that are catching people's attention.

In today's technologically advanced world, every business and company has a social media profile and a website. And this is one of the most efficient ways for them to scale their business and inform their customers about it. Patients and customers must believe what you are offering before committing to your services. And video engagement can help you gain their trust.

Medical video content can assist you in naturally and efficiently demonstrating your service, capabilities, results, and practice method. It also allows you to optimize your content based on customer needs. Optimization assists you in expanding your customer reach and scaling your business. The more visible you are in the market, the more customers will invest in your company.

Google Featured Snippets. Google features snippets are one of the game-changing marketing trends that will help you rank higher in organic traffic. And you don't have to be the best in your field to do so. All you need to do is create high-quality content and format it in the way that search engines prefer.

Furthermore, while this is a significant challenge, it is achievable by making your content snappable so that Google recognizes your link and ranks you higher. You can improve the readability of your content by including feature snippets in the form of paragraphs, text, and lists. You can also improve your content's visibility by keeping an eye on your competitors' ranking snippets.

This gives you an advantage in learning what customer demands and how your business can benefit them the most.

Expanded use of RWE. The covid-19 pandemic has heightened the pharmaceutical industry's need for Real-World Evidence (RWE). Furthermore, more receptive and expanded use of RWE is required to accelerate health research and development. Pharma companies are struggling to prioritize the best action strategy due to a lack of data and analytics.

However, implementing RWE in the pharmaceutical industry would result in more cost-effective and faster drug development. RWE helps businesses understand biological pathways and unmet needs. As a result, the clinical development cycle costs and time are reduced. RWE also creates a guide map that indicates a patient's location, such as who is benefiting from a specific drug or who has a specific disease.

This allows clinicians to prioritize their medical research in terms of drug development [25-29].

### **Conclusions to Chapter 2.**

1. The environmental analysis of the global pharmaceutical market using the PESTEL analysis methodology is presented. Thus, characteristics of political factors tell us that most countries maintain frameworks that include guidelines about safety standards, certifications, etcetera. Administrations of most countries try to gain control over the price of the drug to make it affordable for people. Strong legal influence and proceeding, because pharmaceutical companies are mainly dependent on their database. Economic conditions consider increasing of people income and constantly working on drug modifications by researchers, resulting in more beneficial and potential drug production.

2. Social factors characterises growing of the aging population, healthcare systems have improved over the country. Pharmaceutical industry is greatly dependent on technology and drug require proper storage conditions. As the production of drug is related to a large carbon footprint, many countries are coming up with regulations to decrease the effect on the environment. The production of drugs in the creation of the different biotechnological pollutants.

3. An analysis of modern trends in the pharmaceutical industry was carried out. Trends to look out for pharmaceutical industry include: market behavior leading to consumer-centric approach; technological advancements; Artificial Intelligence and machine learning; customised treatments; transformation of health care delivery through digital technology; data Management & Analytics; single-Use Processes; bioprinting; partnerships and collaborations across industries will intensify; agile transformation will boost companies.

4. Trends in Pharma market were analyzed. Top of that: marketing automation & AI; telehealth & online patient care; online video Engagement; Google Featured Snippets and expanded use of RWE (Real-World Evidence).

## CHAPTER 3. EVALUATION OF MEDICINES CONSUMPTION

### 3.1. Global (general) trends in medicines consumption

The Global Population is Aging. Over the next three decades, the number of elderly people aged 65 or over worldwide is projected to double to more than 1.5 billion people in 2050 (Fig. 3.1). As a result, chronic conditions are on the rise and patients are often suffering from more than just one ailment.

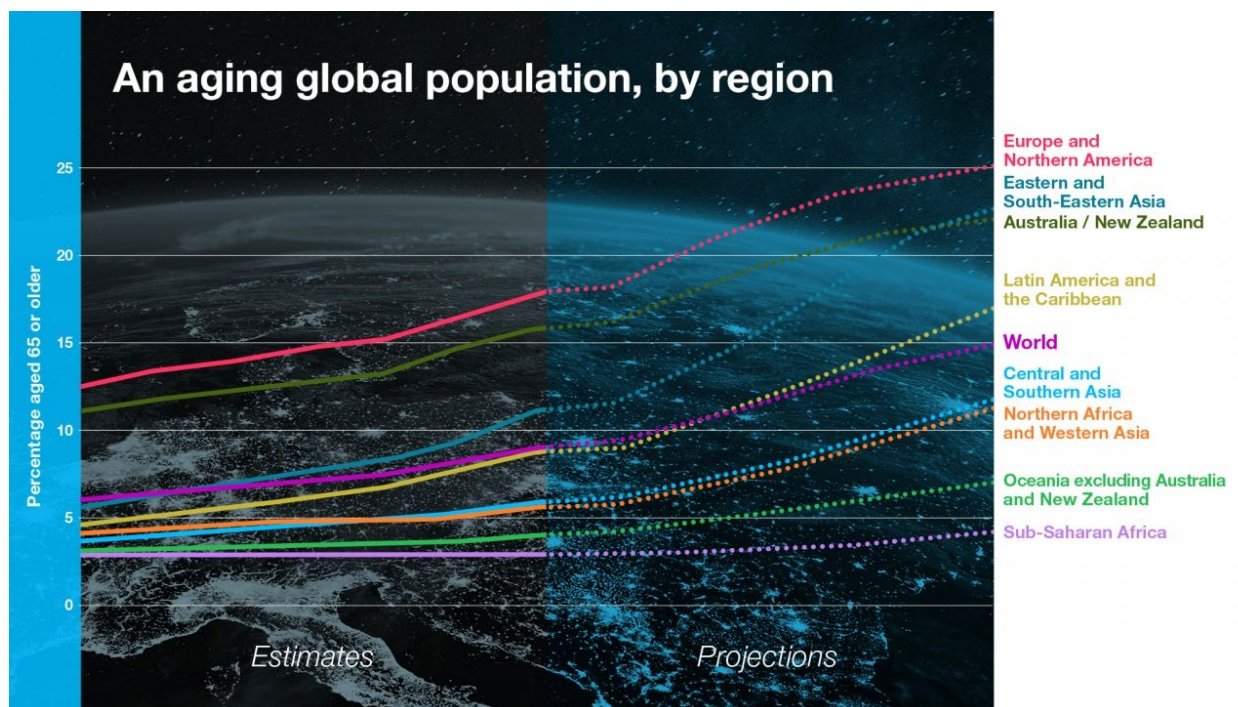


Fig. 3.1. Share of total population aged 65 years or over, by region, 1990-2050

This development is intensified due to the growing middle-class and increasing adoption of sedentary lifestyles in emerging markets, leading to obesity, diabetes, and other costly health conditions. In China – the second largest pharmaceutical market globally – the proportion of the population aged 60 years and over will increase to 28% in 2040 (from 12.4% in 2010). Chronic noncommunicable disease prevalence such as cardiovascular diseases or cancer are expected to increase by at least 40% by 2030 and to account for almost 80% of all deaths in people aged 60 years or over.<sup>3</sup>



The global pharma market remains attractive with an expected 3-6% CAGR through 2025. With chronic diseases on the rise, the demand for healthcare and innovative solutions is growing globally. At the same time, digitalization, big data and artificial intelligence accelerate the transformation of the pharmaceutical industry and enable companies to improve drug development and patient care beyond the treatment of diseases, offering new revenue streams. For patient care, digital solutions enable the shift from a disease focus to an integrated approach from prevention, screening, diagnostic, treatment and aftercare.

Further, technological progress and new therapeutic approaches have the potential to not only treat, but ultimately cure diseases – or identify and remove risk factors before a disease develops. Part of this development are personalized therapies, a promising approach tailoring medical treatment to the individual characteristics of each patient. Novel associations between the human microbiome, health and disease are constantly emerging, leading to new diagnostics and therapeutics and thus enhancing personalized medicine.

Other medical innovations such as precision medicine, cell and gene therapy and immuno-oncology are fueling new ways of prevention and detection with the potential to revolutionize the treatment of many diseases. Oncology, for instance, is still the world's largest pharmaceutical therapeutic area with broad unmet needs and will most likely benefit from these novel therapies and innovation. However, the opportunities extend way beyond oncology to other therapeutic areas such as cardiovascular, central nervous system, immunology, and rare diseases.

Major opportunities: Several tumor types with large patient population have persistently high unmet need.

The total spending and global demand for medicines will increase over the next few years to approximately \$1.9 trillion by 2027, according to a new report titled *Global Use of Medicines 2023 – Outlook through 2027* from the IQVIA Institute for Human Data Science.

The underlying growth rate of 3-6% in spend will be driven by new drug launches and wider use of recently launched brands despite efforts by payers to constrain their budgets, and the impact of lower cost options.

COVID-19 continues to have an impact on pharmaceutical markets globally, and is estimated to continue expanding the pharmaceutical market through 2027, largely due to vaccines.

Summary of expected impacts of the COVID-19 pandemic on patients and therapeutics shown in Fig.

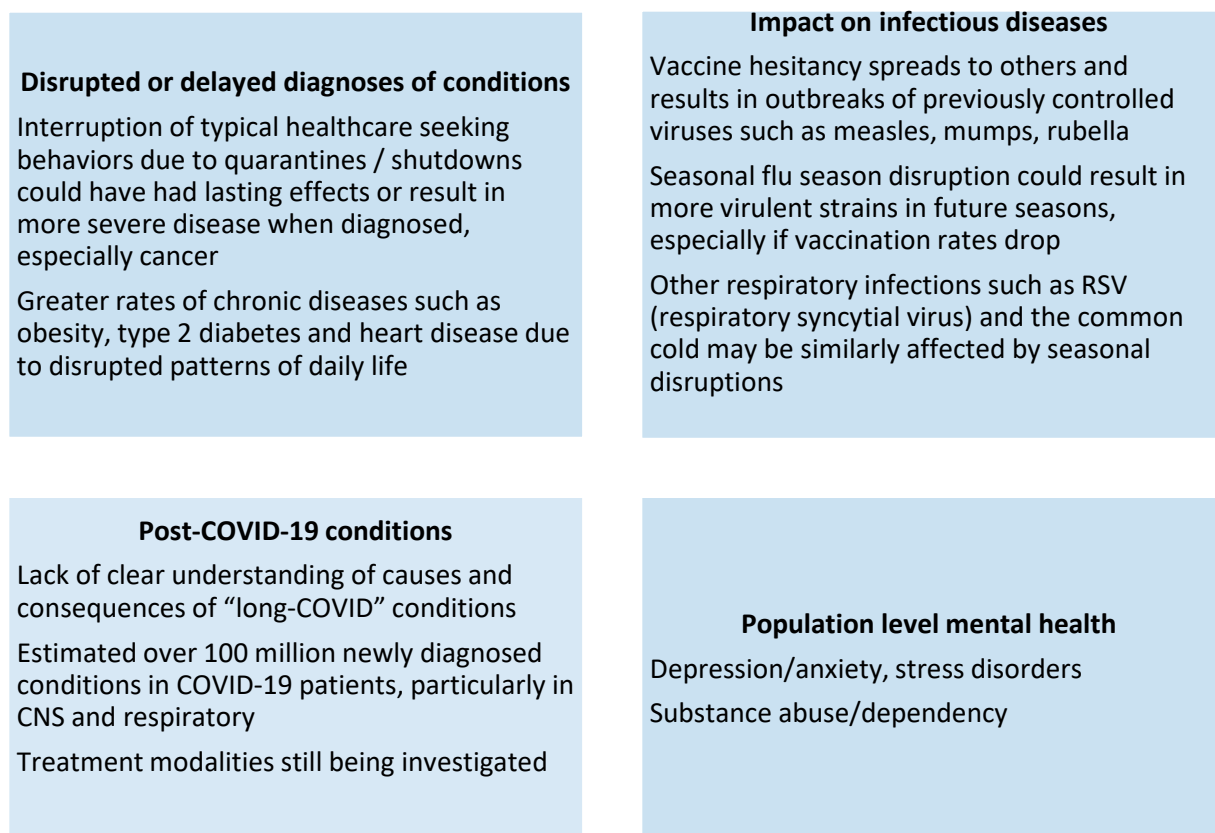


Fig. 3.2 Expected impacts of the COVID-19 pandemic on patients and therapeutics

COVID-19 infection results not only in debilitating symptoms and sometimes death, but for an important percentage of patients, long-term complications.

Post-COVID conditions are now understood as a multi-organ disorder or syndrome that consist of a constellation of different conditions, which are acute or chronic or both, and vary in terms of severity; estimates of how many people may

be affected have varied considerably as multiple organizations have developed widely varying criteria for assessing the presence of post-acute sequelae of COVID (PASC).

Early estimates ranged from 10-30% of COVID-19 patients having PASC, but incompatible definitions relating to the nature of symptoms and duration of persistence had made comparisons across studies unreliable.

For mild or asymptomatic COVID-19 cases, a complication could be thought to be the result of some other pre-existing condition, unless a COVID-19 antibody test were used to verify a previously unknown infection.

Research is ongoing to improve understanding of the prevalence of PASC, as well as to develop specific therapies to address these symptoms where existing medicines are ineffective or have suboptimal outcomes, and while the pandemic continues, the ultimate size of this population remains uncertain but growing. Longer-term complications of COVID-19 infection on patients shown in the Figure 3.3.

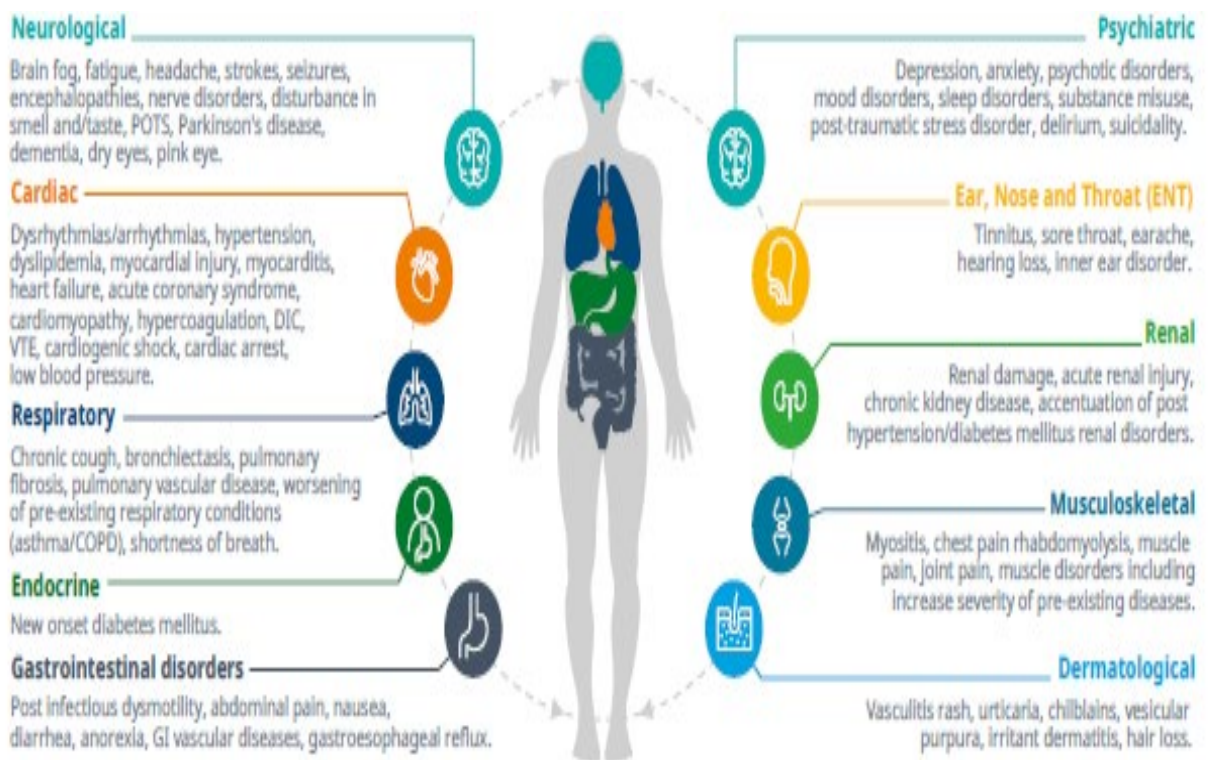


Fig. 3.3 Longer-term complications of COVID-19 infection on patients

Moreover, key highlights of the report include:

Increased use of medicine: Medicine use – measured in defined daily doses - grew by 36% over the past decade, driven by increased access to medicines. However, growth is projected to slow through 2027 and reach a total of more than 3.4 trillion doses, up about 8% from the 2022 level. Highest volume growth is expected in Latin America, Asia and Africa, driven by a mix of population growth and expanded access, while North America and Europe will see very low growth. Per capita medicine varies by region with Japan and Western Europe having more than double the use of most other regions (Fig. 3.4).

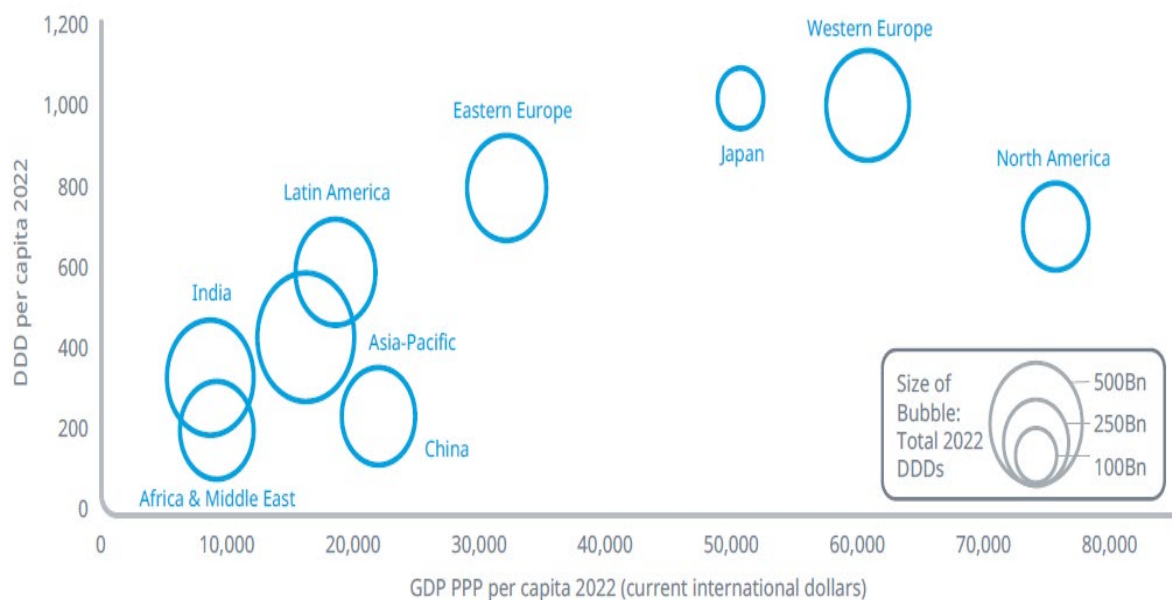


Fig. 3.4 Defined Daily Doses (DDD) per capita by region compared to per capita gross domestic product PPP, current international dollars

As health systems and disease burdens vary around the world, regions demonstrate important variations in the use of different therapies. Regions with higher average GDP such as North America, Western Europe and Japan have notably higher use of cardiovascular, diabetes, respiratory and neurology treatments than other regions. While most major therapy areas have seen growth in medicine use in the last decade, oncology usage has far exceeded the others with a 10-year CAGR through the last full year (2021) of 15.3% (Fig.3. 5).

The therapy areas with the highest forecast spending in 2027 are oncology, immunology, and anti-diabetics, followed by cardiovascular.

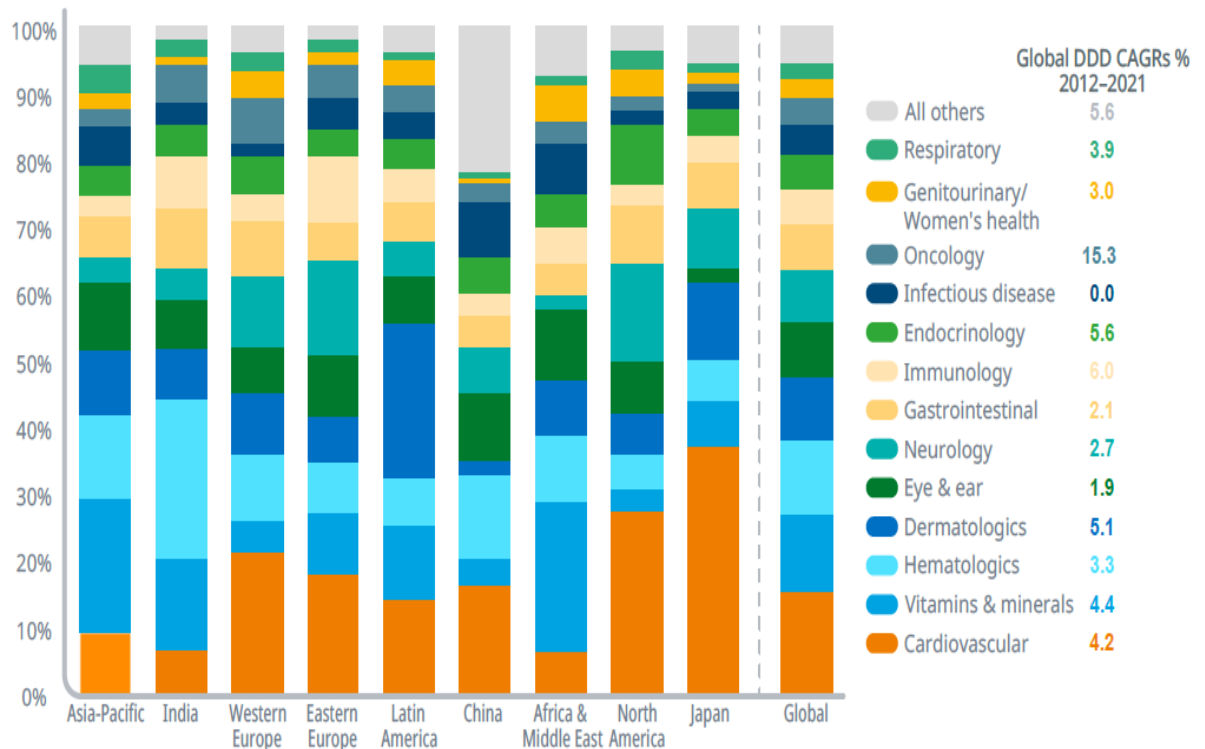


Fig. 3.5 Share of Defined Daily Doses (DDD) by therapy area in 9 regions and globally, 2021

Oncology is expected to grow 13–16% CAGR through to 2027 as novel treatments continue to be launched for the treatment of cancer.

Immunology is expected to grow slowly in the range of 3-6% due to the launch of biosimilars; while several biosimilars are already launched in Europe, leading to slow growth of the immunology segment, the launch of adalimumab biosimilar in 2023 in the U.S. is further expected to impact growth.

With nearly \$168Bn by 2027, diabetes is expected to be the third largest therapy area globally, with growth estimated to be 3–6% over the next five years.

Most other therapy areas are expected to grow in low- to mid-single digits through 2027 with the exception of obesity, which is projected to grow from 10 to

13% as highly effective treatments have become available and are expected to gain wider usage across many countries (Fig.3.6).

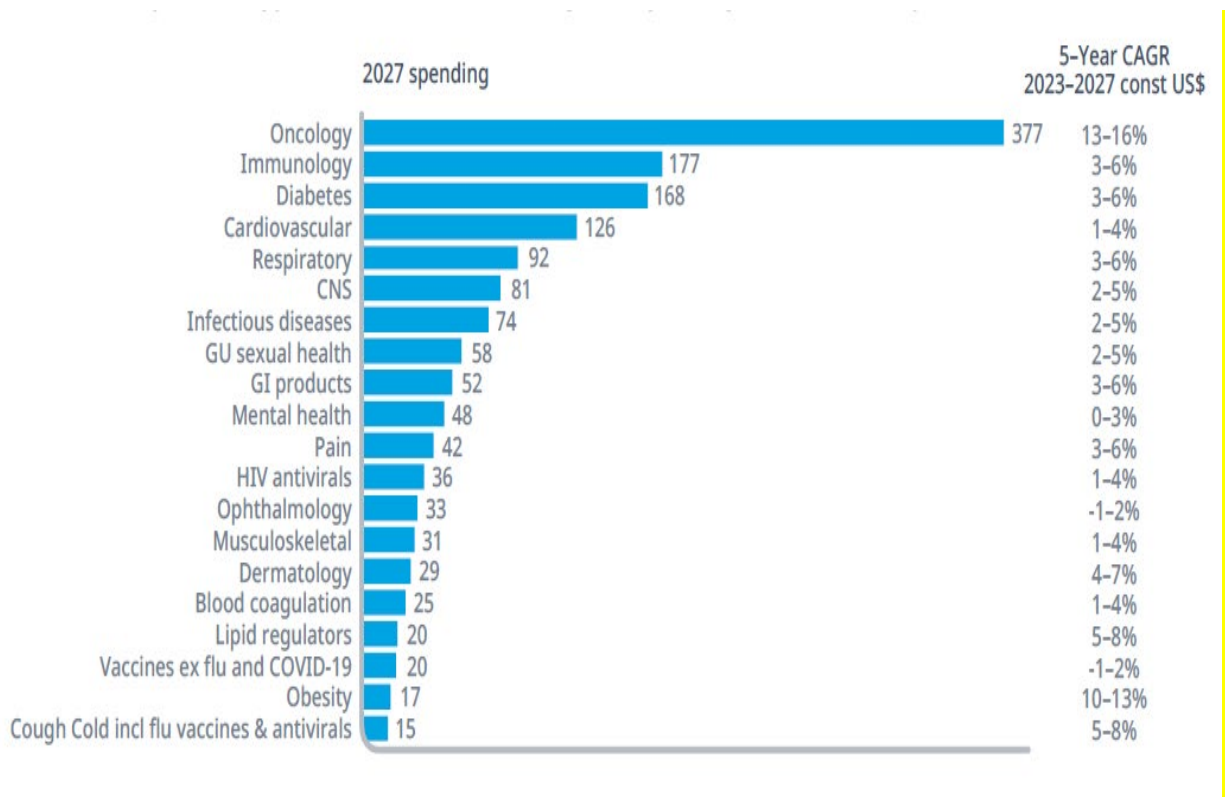


Fig 3.6 Top 20 therapy areas in 2027 in terms of global spending with forecast 5-year CAGRs, const US\$

The key growth area for medicines in the next five years is biotech, which will represent 35% of global spending and will include many of the areas of greatest activity for novel medicines. In addition, global savings from biosimilars will exceed \$290Bn in cumulative spending through 2027, which is below estimates without new biosimilars, representing a significant mechanism to generate wider usage of these medicines as well as ease payer budget pressures on overall spending. Specialty medicines will represent 43% of global spending in 2027 and more than 55% of total spending in developed markets, continuing the shift from more traditional medicines underway for over a decade [30,31,32].

While the pandemic continues to disrupt and transform industry's business strategies and practices, it also offers new solutions to perennial challenges such as

pricing, reimbursement and customer engagement caused by the tensions between innovation, market access and financially pressed health systems. In addition, the industry's efforts to combat the pandemic have created fresh platforms for innovation and growth. These include the messenger RNA (mRNA) technology used in Covid-19 vaccines and the monoclonal antibodies (mAbs) used in several treatments for the virus.

We have also seen that the industry's health is inextricably tied to that of the planet, as well as its patients and their communities and nations. Pharma wants its efforts recognised and rewarded by health systems in the context of a more holistic understanding of value and benefit. Similarly, the industry is recognising increasingly that the health issues it addresses are also about the broader context of living conditions, and that in taking on these responsibilities, pharma can move closer to being a comprehensive health provider and meeting growing demand for all-encompassing value from health systems.

The role of pharma in tackling the Covid-19 pandemic has raised its profile as an innovation-driver and provided a relief from years of negative press coverage. Focusing on innovation as a lifesaver rather than on its cost, risks or relationship to pharmaceutical company margins has been particularly clear in the largely unconditional excitement generated by mRNA technology.

Global spread of HTA as the EU moves towards unified clinical value assessment. The use of health technology assessment (HTA) to control drug access and costs is gathering pace globally, but HTA criteria and procedures can look very different from one market to another. Although harmonising the regulatory framework for evaluating and approving medicines in the European Union (EU) has helped facilitate and expedite access to the European market, reimbursement decisions on medicines, as well as any pharmacoeconomic assessments underpinning those decisions, have always been left to individual EU member states.

Specialty medicines targeting indications beyond rare diseases. The pharmaceutical sector has had cost concerns over specialty medicines for years, but these have been amplified by the rise of premium-priced targeted therapies for niche

indications. This might involve a succession of more narrow indications inside broader therapy areas such as oncology.

Omnichannel as the next step in digitally enabled customer engagement. Digital transformation, prompted and expedited by the pandemic, has galvanised the pharmaceutical industry at almost every level. The rapid uptake of digital solutions in marketing, advertising and customer engagement has radically altered the competitive landscape, resetting customer expectations and patterns of demand while allowing access to wide-ranging, independent sources of information on medicines and health.

A new lease of life for monoclonal antibodies. By today's standards, monoclonal antibodies (mAbs) are reliable warhorses that have revolutionised the treatment of a range of conditions, including cancer, cardiovascular, inflammatory and infectious diseases. Although they have been on the market for more than 30 years, mAbs continue to be a mainstay of the pharmaceutical market's dominant biologics segment, particularly in treating cancer and rheumatoid arthritis. They also remain a compelling presence in R&D pipelines, with 2,484 products in development as of last February.

According to one estimate, the global mAb market was worth \$39.1bn last year and could reach \$50.6bn by 2026, delivering a compound annual growth of 5.3%. Another source was significantly more bullish, valuing the market at around \$115.2bn in 2018, with the potential to hit \$300bn by 2025. And along with new possibilities in treating Covid-19, there is hope that mAbs will make headway against other infectious diseases over the coming years.

A remedy for climate change? How pharma might reduce its carbon footprint. Climate change and health are fundamentally interconnected, beyond the basic economics of managing disease in countries where global warming has diverted limited resources to tackle environmental disasters. Sanofi has noted that vector-borne diseases associated with mosquitos, fleas and ticks are influenced by factors such as varying temperature and humidity levels. Air pollution is also a major risk



factor for respiratory and other diseases. This, in turn, means that climate change poses commercial risks for companies and the wider pharmaceutical industry [32].

COVID-19 accelerated sales of consumer health products through e-commerce, as consumers, increasingly trusting online platforms for their health shopping, adjusted away from their long-standing preference for in-store purchasing. Rather than subsiding after the peak of the pandemic, the level of sales via of e-commerce has held strong since 2020, with e-commerce rising from 13% of all consumer health spending in 2019 to 19% in 2022 (Fig 3.7).

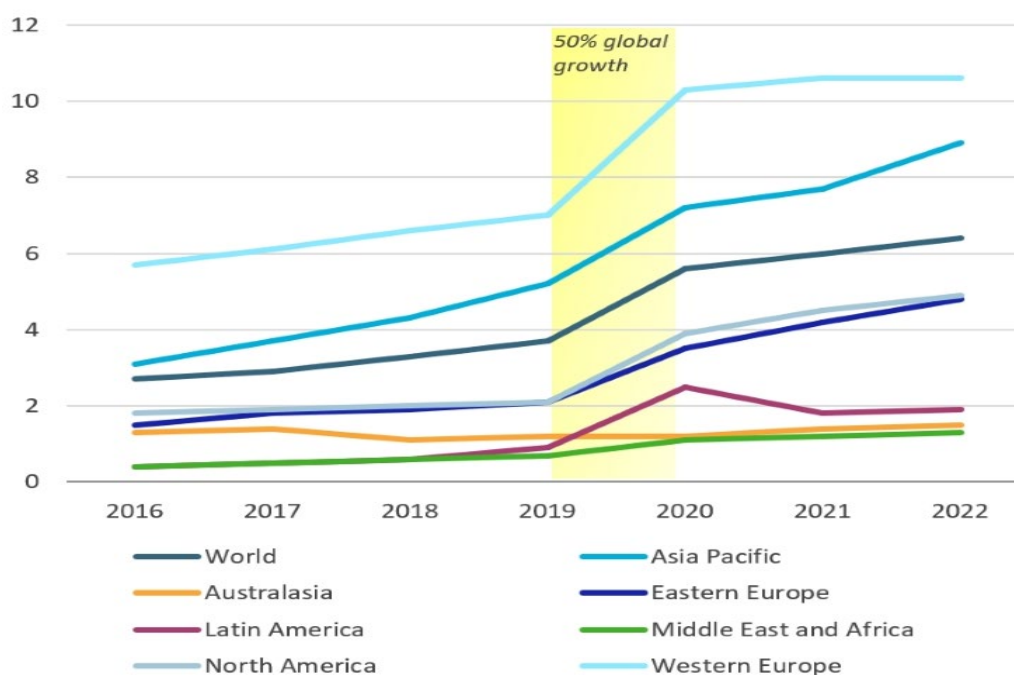


Fig. 3.7 Rise of E-commerce Sales as Percentage of Total OTC sales 2016-2022

E-commerce is likely to sustain strong interest moving forward, as the industry integrates novel online selling models (such as social commerce, livestreaming, integration with online filling of prescription products, and personalised recommendations) in the industry's strongest online markets, including Germany and China.

Global market growth rates will return to pre-pandemic projections by 2025 despite year-to-year fluctuations

- Global medicine spending — the amount spent purchasing medicines from manufacturers before off-invoice discounts and rebates — is expected to reach \$1.6 trillion by 2025, increasing at a rate of 3–6% per year.
- Developed countries — those with upper middle or high incomes — are expected to grow from 2–5% through 2025, similar by comparison to the past five years.
- Among these, the U.S. market, on a net price basis, is forecast to grow 0–3% CAGR over the next 5 years, down from 3% CAGR for the past 5 years, and off-invoice discounts and rebates result in spending that is estimated at 31% lower than invoice level in 2020 and projected to be 36% lower than invoice level in 2025.
- Immunology, oncology and neurology represent the largest aggregate contributors to growth in the next five years, predominantly from a continued flow of new medicines that will be offset by losses of exclusivity.
- The two leading global therapy areas — oncology and immunology — are forecast to grow 9–12% CAGR through 2025, lifted by significant increases in new treatments and medicine use.
- Oncology is projected to add 100 new treatments over five years, contributing to an increase in spending of more than \$100 billion to a total of more than \$260 billion in 2025.
- Neurology is expected to see many new therapies including novel migraine therapies, potential treatments for rare neurological diseases, and the potential for therapies for Alzheimer's and Parkinson's.
- Overall growth in neurology is not significantly lower than in diabetes but the former has much lower discounts and rebates and the forecast embeds significant upside uncertainty related to Alzheimer's therapies [33].

### 3.2. Consumption of different groups of medicines

Similar to the market, worldwide the consumption of pharmaceuticals continues increasing due to changes in clinical practices and the growing demand for drugs for treating ageing-related and chronic diseases. Four groups of pharmaceuticals are the most relevant: cholesterol-lowering, antidepressant, antihypertensive and antidiabetic drugs.

In OECD (Organisation for Economic Co-operation and Development) countries, the consumption of most consumed drugs shown in Figure 3.8.

The demand for mental health-orientated products is rising. One of the clearest impacts of the COVID-19 pandemic was consumers' greater concern about their own mental health and their demand for ways to cope with the stress of the last few years. As consumers search for answers to mental health considerations, demand has surged for solutions ranging from the digital (mental health apps such as Calm or Headspace) to the lifestyle-orientated (surging rates of adoption of fitness activities and yoga) to the structural (as with the so-called "Great Resignation" movement of leaving stressful jobs).

Consumer health fits easily in this moment, as many products in the industry are positioned around mental health, stress relief, anxiety reduction, or adjacent considerations. Sales of mental health-orientated dietary supplements have taken off since the onset of COVID-19, leading all other options in 2021 with 10% year-on-year growth, and then jumping further with 19% growth in 2022. [34]

Enterprising companies are taking cues from the nascent personalised nutrition marketplace to curate their off-the-shelf products to make them more comprehensible for the average supplements' user. These companies are formulating and promoting a wider variety of benefits, especially among their vitamins and dietary supplements lines, in response to consumer demand for solutions to a range of considerations and concerns (Fig. 3.9).

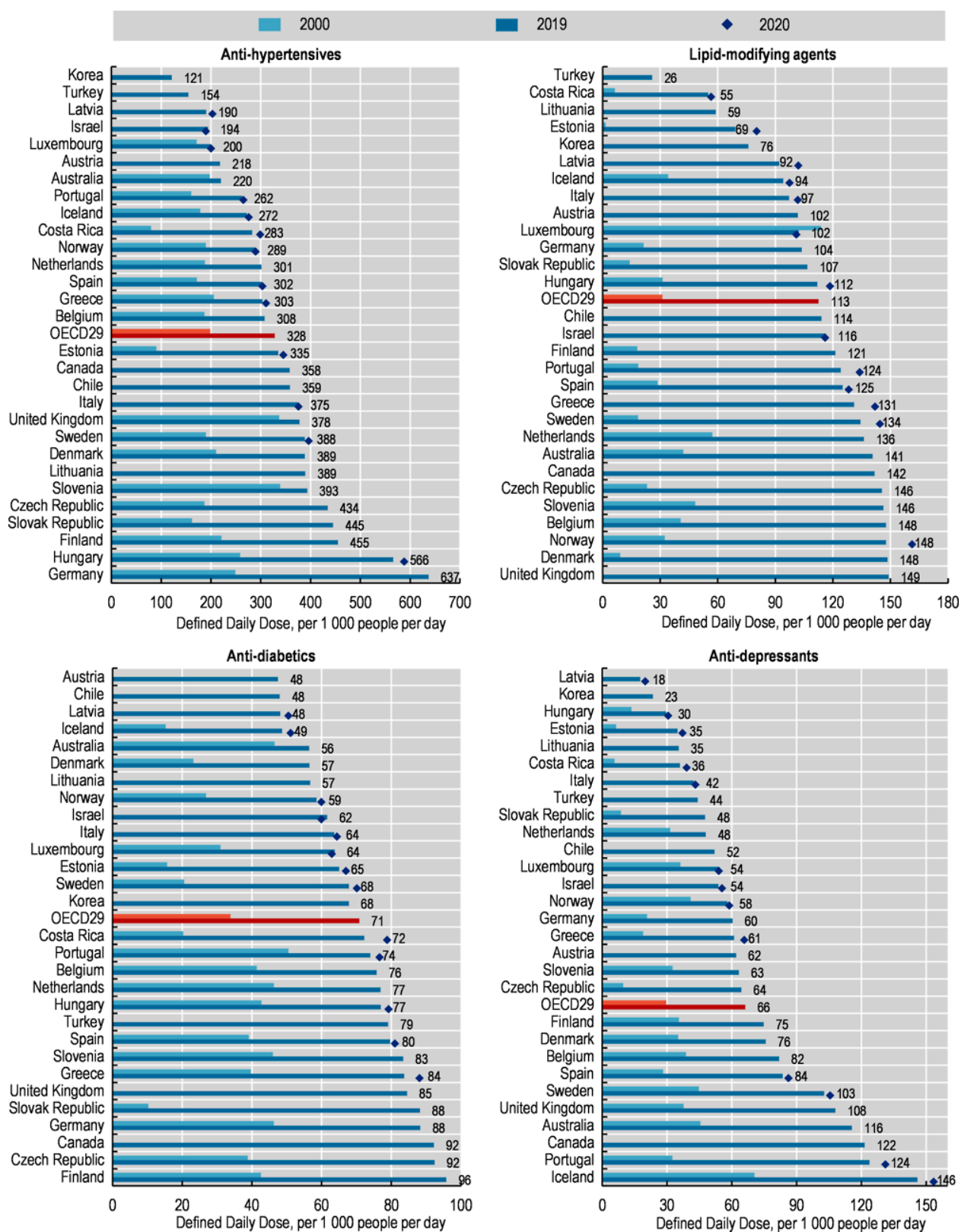


Figure 3.8. The most consumed drugs in OECD

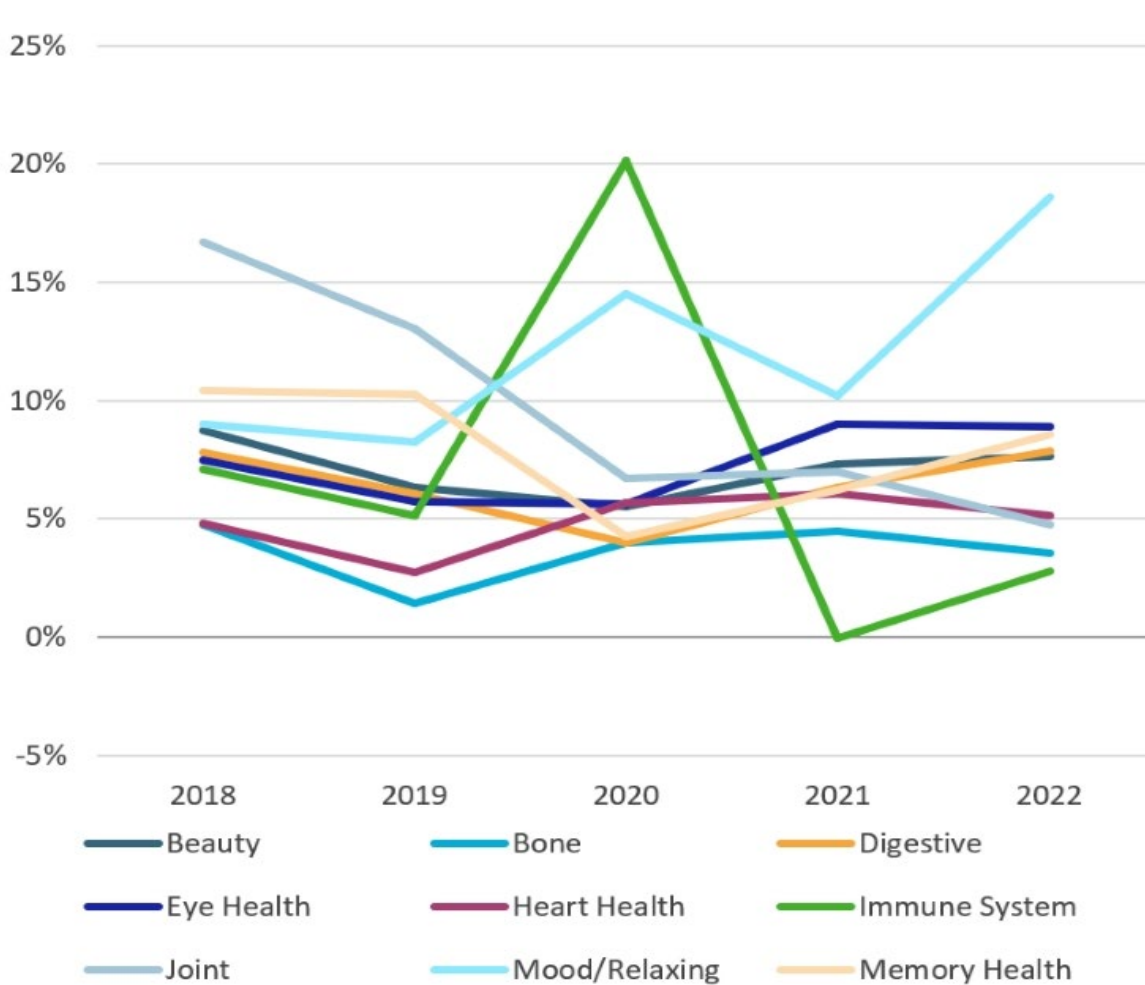


Fig 3.9 Dietary supplements by positioning, 2018-2022 (growth, %)

Product launches in 2022 demonstrate this approach. One of note is from Nature Made, the largest vitamins and dietary supplements brand in the US, which launched its Wellblends line in April 2022. This is orientated around an online quiz that curates products for particular needs within an immunity-stress-sleep orientation.

The urgency of coherent women's health solutions. Many recent developments (not least the US Supreme Court's decision in June to overturn the federal right to abortions) have played a role in bringing women's health to the surface as a coherent category within consumer health that requires product development, education and, not least, regulatory protections to ensure that consumers have consistent access to these products.

As requests for more OTC solutions for women's common health needs rise, some governments are pursuing whether to switch classifications to meet this demand. The UK is staking a claim on this front, approving Novo Nordisk's July 2022 application to switch its Gina (estradiol hemihydrate) hormone replacement therapy in vaginal tablet format for post-menopausal women. The US is also considering switches after the Supreme Court announcement, with the Food and Drug Administration beginning its review to switch HRA Pharma's norgestrel contraceptive pill in autumn 2022 [35,36].

### **Conclusions to Chapter 3.**

1. It is shown characteristic of global trends in consumption of medicines. The Global Population is Aging. As a result, chronic conditions are on the rise and patients are often suffering from more than just one ailment. This development is intensified due to the growing middle-class and increasing adoption of sedentary lifestyles in emerging markets, leading to obesity, diabetes, and other costly health conditions. Chronic noncommunicable disease prevalence such as cardiovascular diseases or cancer are expected to increase by at least 40% by 2030 and to account for almost 80% of all deaths in people aged 60 years or over.<sup>3</sup>

2. The global pharma market remains attractive with an expected 3-6% CAGR through 2025. The total spending and global demand for medicines will increase over the next few years to approximately \$1.9 trillion by 2027. The underlying growth rate of 3-6% in spend will be driven by new drug launches and wider use of recently launched brands despite efforts by payers to constrain their budgets, and the impact of lower cost options.

3. COVID-19 continues to have an impact on pharmaceutical markets globally, and is estimated to continue expanding the pharmaceutical market through 2027, largely due to vaccines. Research is ongoing to improve understanding of the prevalence of PASC (post-acute sequelae of COVID), as well as to develop specific therapies to address these symptoms where existing medicines are ineffective or

have suboptimal outcomes, and while the pandemic continues, the ultimate size of this population remains uncertain but growing.

4. The therapy areas with the highest forecast spending in 2027 are oncology, immunology, and anti-diabetics, followed by cardiovascular. The key growth area for medicines in the next five years is biotech, which will represent 35% of global spending and will include many of the areas of greatest activity for novel medicines.

5. While the pandemic continues to disrupt and transform industry's business strategies and practices, it also offers new solutions to perennial challenges such as pricing, reimbursement and customer engagement caused by the tensions between innovation, market access and financially pressed health systems.

6. COVID-19 accelerated sales of consumer health products through e-commerce, as consumers, increasingly trusting online platforms for their health shopping, adjusted away from their long-standing preference for in-store purchasing.

7. Other forecast says about four groups of pharmaceuticals are the most relevant: cholesterol-lowering, antidepressant, antihypertensive and antidiabetic drugs.

8. Enterprising companies are taking cues from the nascent personalized nutrition marketplace to curate their off-the-shelf products to make them more comprehensible for the average supplements' user. These companies are formulating and promoting a wider variety of benefits, especially among their vitamins and dietary supplements lines, in response to consumer demand for solutions to a range of considerations and concerns

## Conclusions

1. The environmental analysis of the global pharmaceutical market using the PESTEL analysis methodology is presented. Thus, characteristics of political factors tell us that most countries maintain frameworks that include guidelines about safety standards, certifications, etcetera. Administrations of most countries try to gain control over the price of the drug to make it affordable for people. Strong legal influence and proceeding, because pharmaceutical companies are mainly dependent on their database. Economic conditions consider increasing of people income and constantly working on drug modifications by researchers, resulting in more beneficial and potential drug production.
2. Social factors characterises growing of the aging population, healthcare systems has improved over the country. Pharmaceutical industry is greatly dependent on technology and drug require proper storage conditions. As the production of drug is related to a large carbon footprint, many countries are coming up with regulations to decrease the effect on the environment. The production of drugs in the creation of the different biotechnological pollutants.
3. An analysis of modern trends in the pharmaceutical industry was carried out. Trends to look out for pharmaceutical industry include: market behaviour leading to consumer-centric approach; technological advancements; Artificial Intelligence and machine learning; customised treatments; transformation of health care delivery through digital technology; data Management & Analytics; single-Use Processes; bioprinting; partnerships and collaborations across industries will intensify; agile transformation will boost companies.
4. Trends in Pharma market were analyzed. Top of that: marketing automation & AI; telehealth & online patient care; online video Engagement; Google Featured Snippets and expanded use of RWE (Real-World Evidence).
5. It is shown characteristic of global trends in consumption of medicines. The Global Population is Aging. As a result, chronic conditions are on the rise and patients are often suffering from more than just one ailment. This development is intensified due to the growing middle-class and increasing adoption of



sedentary lifestyles in emerging markets, leading to obesity, diabetes, and other costly health conditions. Chronic noncommunicable disease prevalence such as cardiovascular diseases or cancer are expected to increase by at least 40% by 2030 and to account for almost 80% of all deaths in people aged 60 years or over.<sup>3</sup>

6. The global pharma market remains attractive with an expected 3-6% CAGR through 2025. The total spending and global demand for medicines will increase over the next few years to approximately \$1.9 trillion by 2027. The underlying growth rate of 3-6% in spend will be driven by new drug launches and wider use of recently launched brands despite efforts by payers to constrain their budgets, and the impact of lower cost options.
7. COVID-19 continues to have an impact on pharmaceutical markets globally, and is estimated to continue expanding the pharmaceutical market through 2027, largely due to vaccines. Research is ongoing to improve understanding of the prevalence of PASC (post-acute sequelae of COVID), as well as to develop specific therapies to address these symptoms where existing medicines are ineffective or have suboptimal outcomes, and while the pandemic continues, the ultimate size of this population remains uncertain but growing.
8. The therapy areas with the highest forecast spending in 2027 are oncology, immunology, and anti-diabetics, followed by cardiovascular. The key growth area for medicines in the next five years is biotech, which will represent 35% of global spending and will include many of the areas of greatest activity for novel medicines.
9. While the pandemic continues to disrupt and transform industry's business strategies and practices, it also offers new solutions to perennial challenges such as pricing, reimbursement and customer engagement caused by the tensions between innovation, market access and financially pressed health systems.
10. COVID-19 accelerated sales of consumer health products through e-commerce, as consumers, increasingly trusting online platforms for their health shopping, adjusted away from their long-standing preference for in-store purchasing.

11. Other forecast says about four groups of pharmaceuticals are the most relevant: cholesterol-lowering, antidepressant, antihypertensive and antidiabetic drugs.
12. Enterprising companies are taking cues from the nascent personalised nutrition marketplace to curate their off-the-shelf products to make them more comprehensible for the average supplements' user. These companies are formulating and promoting a wider variety of benefits, especially among their vitamins and dietary supplements lines, in response to consumer demand for solutions to a range of considerations and concerns.

## References

1. Nature and Characteristics of Market Research. URL: [chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.sagepub.com/sites/default/files/upm-binaries/5410\\_McQuarrie\\_I\\_Proof\\_Chapter\\_1.pdf](chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.sagepub.com/sites/default/files/upm-binaries/5410_McQuarrie_I_Proof_Chapter_1.pdf).
2. Market research. URL: <https://www.oberlo.com/ecommerce-wiki/market-research>
3. Market Analysis: What It Is and How to Conduct One. URL: <https://www.coursera.org/articles/market-analysis>
4. Market Analysis Guidance. URL: <chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.icrc.org/en/doc/assets/files/publications/icrc-002-4200.pdf>
5. Market Research. URL: <https://www.studysmarter.co.uk/explanations/marketing/marketing-information-management/market-research/>
6. Quantitative vs Qualitative Market Research: Which Method Is Best for You? URL: <https://www.cfrinc.net/cfrblog/quantitative-vs-qualitative-market-research>
7. Quantitative Market Research: The Complete Guide. URL: <https://www.questionpro.com/blog/quantitative-market-research/>
8. What Is Qualitative vs. Quantitative Marketing Research? URL: <https://www.gcu.edu/blog/doctoral-journey/what-qualitative-vs-quantitative-marketing-research>
9. Streefkerk, R. (2023, January 03). *Qualitative vs. Quantitative Research | Differences, Examples & Methods*. Scribbr. URL: <https://www.scribbr.com/methodology/qualitative-quantitative-research/>
10. How Trend Analysis is Vital for Efficient Market Research URL: <https://www.questionpro.com/blog/trend-analysis-vital-efficient-market-research/>
11. How to Perform Market Trend Analysis? URL: <https://www.smstudy.com/article/how-to-perform-market-trend-analysis>

12. <https://www.business.qld.gov.au/running-business/growing-business/trend-analysis>
13. Dickov V, et al.: Analyzing pharmaceutical industry. *National Journal of Physiology, Pharmacy and Pharmacology* 2011;1:1-8.
14. Pharmaceutical Industry PESTEL Analysis. URL: <https://www.edrawmax.com/article/pharmaceutical-industry-pestel-analysis.html>
15. ABDUL MOMIN. Pharmaceutical Industry Analysis: How Important is it for Healthcare? 2022. URL: <HTTPS://PESTLEANALYSIS.COM/PHARMACEUTICAL-INDUSTRY-ANALYSIS/>
16. PESTLE Analysis of The Pharmaceutical Industry. <https://www.marketingtutor.net/pestle-analysis-of-the-pharmaceutical-industry/>
17. Dickov V. Management -marketing environment in pharmaceutical industry in transition countries. *Pharm Pharmacol Int J.* 2016;4(6):444-448. DOI: 10.15406/ppij.2016.04.00094
18. Monisha V.V., Thigazhini R., Vikram V., Gokul R.M., Lokesh G., Kavya Shree K.S., Madhan M., Chellappa M., “Impact of Macro-environmental factors on the Pharmaceutical Industries,” *International Journal of Scientific Research in Multidisciplinary Studies* , Vol.8, Issue.2, pp.70-75, 2022
19. 5 pharmaceutical trends expected to drive industry change Jul 19, 2021. URL: <https://www.baysidegroup.com.au/employers/5-pharmaceutical-trends-expected-to-drive-industry-change>
20. 8 Pharma Healthtech Trends to Watch in 2022 Published on: May 31, 2022. URL: <https://masschallenge.org/articles/pharma-healthtech-trends/>
21. García-Goñi, Manuel, 2022, “Rationalizing Pharmaceutical Spending,” IMF Working Papers 2022/190 (Washington: International Monetary Fund).
22. Roman Bevz, Oleksandr Kryvenets. Future of pharma & life sciences: What to expect in 2023. January 23, 2023. URL: <https://www.avenga.com/magazine/pharmaceutical-industry-trends/?region=ua>

23. Top 5 Pharmaceutical Industry Trends and Predictions for 2022. URL: <https://thekeenfolks.com/5-pharmaceutical-industry-trends-to-shape-your-2022-marketing-strategy/>
24. GLOBAL PHARMACEUTICAL INDUSTRY TRENDS. URL: <https://sk-pharmacy.kz/eng/#>
25. A Guide: Biopharma Marketing Trends In 2022. URL: <https://imapac.com/biopharma-marketing-trends/>
26. Nikki Gilliland. Four big digital trends set to impact pharma marketers in 2023. URL: <https://econsultancy.com/digital-trends-pharma-marketing-2023/>
27. Top 5 Pharma Marketing Trends of 2023. URL: <https://www.lbbonline.com/news/top-5-pharma-marketing-trends-of-2023>
28. Six Trends in Pharma Marketing. URL: <https://www.worldpharmatoday.com/white-papers/six-trends-in-pharma-marketing/>
29. WHAT MATTERS THE MOST: THE TRENDS THAT WILL SHAPE PHARMA MARKETING IN 2023. URL: <https://www.pharmalive.com/what-matters-the-most-the-trends-that-will-shape-pharma-marketing-in-2023/>
30. Medication Management System Market Size, Share & Trends Analysis Report By Software, By Service, By Mode Of Delivery (On-premise, Web-based, Cloud-based), By End-use, By Region, And Segment Forecasts, 2022 – 2030. URL: <https://www.grandviewresearch.com/industry-analysis/medication-management-system-market>
31. Global Market for Medicines to Rise to \$1.9 Trillion by 2027, says Report from IQVIA Institute. URL: <https://www.iqvia.com/newsroom/2023/01/global-market-for-medicines-to-rise-to-19-trillion-by-2027-says-report-from-iqvia-institute>
32. Eight pharma trends for 2022: towards a more holistic understanding of value. URL: <https://www.pharmaceutical-technology.com/sponsored/eight-pharma-trends-2022/>

33. Global Medicine Spending and Usage Trends Outlook to 2025. URL: <https://www.iqvia.com/insights/the-iqvia-institute/reports/global-medicine-spending-and-usage-trends-outlook-to-2025>

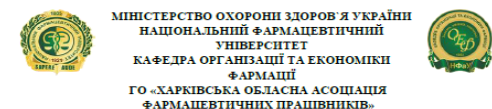
34. González Peña OI, López Zavala MÁ, Cabral Ruelas H. Pharmaceuticals Market, Consumption Trends and Disease Incidence Are Not Driving the Pharmaceutical Research on Water and Wastewater. *International Journal of Environmental Research and Public Health*. 2021; 18(5):2532. <https://doi.org/10.3390/ijerph18052532>

35. Pharmaceutical consumption. URL: <https://www.oecd-ilibrary.org/sites/5689c05c-en/index.html?itemId=/content/component/5689c05c-en>

36. 2022 Global Health Care Outlook. URL: <https://www.deloitte.com/global/en/Industries/life-sciences-health-care/perspectives/global-health-care-sector-outlook.html>

## **APPENDICES**

## Appendix A



МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ  
НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ  
КАФЕДРА ОРГАНІЗАЦІЇ ТА ЕКОНОМІКИ ФАРМАЦІЇ  
ГО «ХАРКІВСЬКА ОБЛАСНА АСОЦІАЦІЯ ФАРМАЦЕВТИЧНИХ ПРАЦІВНИКІВ»



## TENDENCIES IN CONSUMPTION OF PHARMACY PRODUCTS

Benkirane Salma, Pestun I.V.

National university of Pharmacy, Kharkive, Ukraine

[salma.benkirane77@gmail.com](mailto:salma.benkirane77@gmail.com)

Research of tendency in consumption is necessary for businesses to make informed decisions, understand customers and competition, assess market potential, reduce risk, and test marketing strategies. Without market research, businesses risk making uninformed decisions that can lead to wasted resources and missed opportunities. The aim of this work to analyses modern tendencies in consumption of pharmacy products on the bases of literature resources. There are several trends in the consumption of pharmacy products that are worth noting. Increasing demand for personalized medicine: advances in genetics and molecular biology are leading to the development of personalized medicine, which involves tailoring treatment to a patient's individual characteristics. This trend is expected to continue as more patients seek treatments that are customized to their unique needs. Growing interest in natural and alternative remedies, such as herbal supplements and acupuncture. This trend is driven in part by concerns about the safety and side effects of prescription drugs. Expanding use of technology in healthcare is growing, and this includes the use of technology in the pharmacy industry. For example, there has been a rise in telemedicine and online pharmacy services that offer remote consultations and prescription delivery. There is a growing emphasis on preventive medicine, which involves taking steps to maintain health and prevent illness before it occurs. This includes the use of vaccines and screenings to detect and treat diseases early. The cost of healthcare, including prescription drugs, continues to rise, leading to increased scrutiny of drug pricing and affordability.

Overall, these trends are likely to continue to shape the consumption of pharmacy products in the coming years, as consumers seek more personalized and affordable healthcare options.

206





МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ  
НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ

УДК 615.1

Редакційна колегія: проф. Котвицька А. А., проф. Владимірова І. М.  
Укладачі: Сурікова І. О., Боднар Л. А., Григорів Г. В., Литкін Д. В.

## АКТУАЛЬНІ ПИТАННЯ СТВОРЕННЯ НОВИХ ЛІКАРСЬКИХ ЗАСОБІВ

МАТЕРІАЛИ  
XXIX МІЖНАРОДНОЇ НАУКОВО-ПРАКТИЧНОЇ  
КОНФЕРЕНЦІЇ МОЛОДИХ ВЧЕНИХ ТА СТУДЕНТІВ

19-21 квітня 2023 року  
м. Харків

Харків  
НФаУ  
2023

УДК 615.1

© НФаУ, 2023

Актуальні питання створення нових лікарських засобів: матеріали  
XXIX міжнародної науково-практичної конференції молодих вчених та  
студентів (19-21 квітня 2023 р., м. Харків). – Харків: НФаУ, 2023. – 606 с.

Збірка містить матеріали Всеукраїнської науково-практичної конференції «Youth Pharmacy Science», які представлені за пріоритетними напрямками науково-дослідної роботи Національного фармацевтичного університету. Розглянуто теоретичні та практичні аспекти синтезу біологічно активних сполук і створення на їх основі лікарських субстанцій; стандартизації ліків, фармацевтичного та хіміко-технологічного аналізу; вивчення рослинної сировини та створення фітопрепаратів; сучасної технології ліків та екстемпоральної рецептури; біотехнології у фармації; досягнень сучасної фармацевтичної мікробіології та імунології; доклінічних досліджень нових лікарських засобів; фармацевтичної опіки рецептурних та безрецептурних лікарських препаратів; доказової медицини; сучасної фармакоterapiї, соціально-економічних досліджень у фармації, маркетингового менеджменту та фармакоeкономіки на етапах створення, реалізації та використання лікарських засобів; управління якістю у галузі створення, виробництва й обігу лікарських засобів; суспільствознавства, фундаментальних та мовних наук.

### PHARMA MARKET TRENDS RESEARCH

Benkirane Salma

Scientific supervisor: Pestun I.V.

National university of Pharmacy, Kharkiv, Ukraine  
salma.benkirane77@gmail.com

**Introduction.** The pharmaceutical industry has been traditionally slow to embrace new technology, but the latest pharma health trends are signs of a massive paradigm shift in the industry.

**Aim.** To analyse modern tendencies in pharmacy industry on the bases of literature resources.

**Materials and methods.** Methods of comparison, logical analysis, formalization of reasoning, content analysis.

**Results and discussion.** There are several ongoing trends that are likely to continue shaping the industry in the near future. There is a growing interest in personalized medicine, which tailors treatment to an individual patient's genetic makeup, medical history, and lifestyle factors. As technology advances, we can expect to see more targeted therapies that are better suited to each patient's unique needs.

With the rise of mobile technology and wearables, there is a growing interest in digital health solutions that allow patients to monitor their own health and communicate with healthcare providers remotely. We can expect to see more innovative digital health tools in the coming years.

There is a growing focus on rare diseases, which affect a relatively small number of people but can be devastating for those who have them. Pharmaceutical companies are increasingly investing in research and development for rare disease treatments.

As more biologic drugs come off patent, we can expect to see increased competition from biosimilars, which are similar but not identical to the original biologic drugs. This is likely to lead to lower prices for these drugs and increased access for patients.

The pharmaceutical industry is heavily regulated, and changes to regulations can have a significant impact on the industry. We can expect to see ongoing discussions around drug pricing, intellectual property, and other regulatory issues that will shape the industry in the years to come.

**Conclusions.** Overall, it is clear that the pharmaceutical industry will continue to evolve in response to changing patient needs, advances in technology, and regulatory changes.



**National University of Pharmacy**

Faculty for foreign citizens' education  
Department of pharmaceutical management and marketing

Level of higher education master

Specialty 226 Pharmacy, industrial pharmacy  
Educational program Pharmacy

**APPROVED**  
**The Head of Department**  
**pharmaceutical management and**  
**marketing**

---

**Volodymyr MALYI**  
"01" September 2023

**ASSIGNMENT**  
**FOR QUALIFICATION WORK**  
**OF AN APPLICANT FOR HIGHER EDUCATION**

**Salma BENKIRAN**

1. Topic of qualification work: «Analysis of trends in the consumption of pharmacy products », supervisor of qualification work: Iryna PESTUN, DSc, professor

approved by order of NUPh from "6<sup>th</sup>" of February 2023 № 35

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

3. Outgoing data for qualification work: scientific and professional literature, statistical data, websites of pharmaceutical organizations

4. Contents of the settlement and explanatory note (list of questions that need to be developed): conduct analysis of pharmaceutical market environment, characterize pharmaceutical industry prospects, give trends in Pharma marketing, evaluate global (general) trends in medicines consumption and consumption of different groups of medicines.

5. List of graphic material (with exact indication of the required drawings):  
Tables – 2, pictures – 12

---

## 6. Consultants of chapters of qualification work

Chapters	Name, SURNAME, position of consultant	Signature, date	
		assignment was issued	assignment was received
1	Iryna PESTUN, professor of higher education institution of department pharmaceutical management and marketing	10 September 2023	10 September 2023
2	Iryna PESTUN, professor of higher education institution of department pharmaceutical management and marketing	21 November 2023	21 November 2023
3	Iryna PESTUN, professor of higher education institution of department pharmaceutical management and marketing	23 March 2023	23 March 2023

7. Date of issue of the assignment: «01» September 2023**CALENDAR PLAN**

№ з/п	Name of stages of qualification work	Deadline for the stages of qualification work	Notes
1	Review of literary sources on the topic of the work	September-November 2023	<b>done</b>
2	Substantiations of market analysis	November-February 2023	<b>done</b>
3	Analysis of global pharmaceutical industry trends	March 2023	<b>done</b>
4	Evaluation of medicines consumption	April 2023	<b>done</b>
5	Completion of the work and submission to the EC	April 2023	<b>done</b>

An applicant of higher education

\_\_\_\_\_ Salma BENKIRAN

Supervisor of qualification work

\_\_\_\_\_ Iryna PESTUN

**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
<b>• по кафедрі фармацевтичного менеджменту та маркетингу</b>				
Бенкіран Сальма	Аналіз трендів споживання товарів аптечного асортименту	Analysis of trends in the consumption of pharmacy products	професор Пестун І.В.	проф. Баранова І.І.

Підстава: подання декана, згода ректора

Ректор

Вірно. Секретар



## **ВИСНОВОК**

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

№ 112810 від « 1 » травня 2023 р.

Проаналізувавши випускну кваліфікаційну роботу за магістерським рівнем здобувача вищої освіти денної форми навчання Бенкіран Сальма, 5 курсу, Фм18(5,0д) англ-07 групи, спеціальності 226 Фармація, промислова фармація, на тему: «Аналіз трендів споживання товарів аптечного асортименту / Analysis of trends in the consumption of pharmacy products», 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%**

**28%**

## REVIEW

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

**Salma BENKIRAN**

**on the topic: «Analysis of trends in the consumption of pharmacy products»**

**Relevance of the topic.** The analysis of trends in the consumption of pharmacy products remains highly relevant in the current context, as the healthcare industry continues to undergo rapid changes and advancements. The COVID-19 pandemic has further highlighted the importance of monitoring and understanding trends in the consumption of pharmacy products, as it has led to shifts in consumer behavior and healthcare practices.

**Practical value of conclusions, recommendations and their validity.**

The analysis of trends in the consumption of pharmacy products is highly relevant in understanding the healthcare landscape and the changing needs of consumers. Such an analysis can provide insights into the factors that drive changes in the demand for different types of pharmacy products, and can help businesses and policymakers to make informed decisions about their product offerings and policies.

**Assessment of work.** The qualification work of Salma BENKIRAN is a complex scientific study, which was performed at the appropriate scientific level and deserves a positive evaluation based on the topicality of the topic, practical significance, obtained results and conclusions.

**General conclusion and recommendations on admission to defend.** The qualifying work of the second (master's) degree of higher education, specialty 226 Pharmacy, industrial pharmacy of Salma BENKIRAN on the topic: «Analysis of trends in the consumption of pharmacy products» is a completed scientific study, which in terms of relevance, scientific novelty, theoretical and practical significance meets the requirements for qualifying works of the second (master's) degree of higher education, and can be presented to the EC of the NUPh.

Scientific supervisor

\_\_\_\_\_

Iryna PESTUN

**REVIEW**

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

**Salma BENKIRAN**

**on the topic: «Analysis of trends in the consumption of pharmacy products»**

**Relevance of the topic.** The analysis of trends in the consumption of pharmacy products is highly relevant in order to the healthcare industry continues to evolve and adapt to changing consumer needs and healthcare practices. Importance of monitoring and understanding trends, as it has led to shifts in consumer behavior and healthcare practices that are likely to have lasting effects on the healthcare landscape.

**Theoretical level of work.** The higher education applicant conducted a comprehensive analysis of scientific literature regarding theoretical bases of trend research, current situation in Pharma, environmental influence and consequences of Covid-19 pandemic, future

**Author's suggestions on the research topic.** Based on the conducted research, recommendations were formulated regarding main trends in industry, pharmaceutical market and marketing, consumption as well.

**Practical value of conclusions, recommendations and their validity.** Trend analysis is a valuable tool for businesses, policymakers, and researchers alike, as it provides a practical way to identify and understand patterns and shifts in consumer behavior, market dynamics, and societal trends.

**Disadvantages of work.** As a remark, it can be noted that the work contains stylistic flaws in the expression, which, however, do not reduce the scientific and practical value of the master's work.

**General conclusion and assessment of the work.** The qualification work of Salma BENKIRAN on the topic: «Analysis of trends in the consumption of pharmacy products» is a scientifically based analytical study that has theoretical and practical significance. The qualifying work meets the requirements for the qualifying work of the second (master's) degree of higher education, and can be submitted to the EC of the National University of Pharmacy.

Reviewer \_\_\_\_\_

prof. Inna BARANOVA

« 18 » of April 2023

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ**  
**НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ**  
**ВИТЯГ З ПРОТОКОЛУ № 11**

21 квітня 2023 року

м. Харків

**засідання кафедри фармацевтичного  
менеджменту та маркетингу**

**Голова:** завідувач кафедри ФММ, доктор фарм. наук, професор Малий В.В.

**Секретар:** доцент ЗВО, канд. фарм. наук, доц. Жадько С.В.

**ПРИСУТНІ:** зав. кафедри ФММ, доктор фарм. наук, проф. Малий В.В., професор ЗВО, докт. фарм. наук, проф. Слободянюк М.М., професор ЗВО, докт. фарм. наук, проф. Пестун І.В., професор ЗВО, докт. фарм. наук, проф. Ткачова О.В., доцент ЗВО, канд. фарм. наук, доц. Рогуля О.Ю., доцент ЗВО, канд. фарм. наук, доц. Софронова І.В., доцент ЗВО, канд. фарм. наук, доц. Жадько С.В., доцент ЗВО, канд. фарм. наук, доц. Бондарєва І.В., доцент ЗВО, канд. фарм. наук, доц. Малініна Н.Г., доцент ЗВО, канд. фарм. наук, доц. Бабічева Г.С., асистент, канд. фарм. наук Шуванова О.В., асистент, канд. фарм. наук Чегринець А.А., асистент, канд. фарм. наук Ткаченко І.В., здобувачі вищої освіти випускного курсу спеціальності 226 Фармація, освітньої програми Фармація.

**ПОРЯДОК ДЕННИЙ:** Про допуск здобувачів вищої освіти випускного курсу факультету з підготовки іноземних громадян спеціальності 226 Фармація, промислова фармація, освітньої програми Фармація до захисту кваліфікаційних робіт в Екзаменаційній комісії НФаУ.

**СЛУХАЛИ:** Про допуск здобувачки вищої освіти випускного курсу факультету з підготовки іноземних громадян спеціальності 226 Фармація, промислова фармація, освітньої програми Фармація групи Фм18(5,0д)-07 англ Бенкіран Сальма до захисту кваліфікаційної роботи в Екзаменаційній комісії НФаУ. Кваліфікаційна робота на тему «Аналіз тенденцій фармацевтичної опіки і аптечних послуг в Європі».

**ВИСТУПИЛИ:** В обговоренні кваліфікаційної роботи взяли участь канд. фарм. наук, доц. Бондарєва І.В., канд фарм. наук, доц. Софронова І.В., канд фарм. наук, доц. Жадько С.В. Керівник кваліфікаційної роботи: проф. ЗВО, докт. фарм. наук, проф. Пестун І.В.

**УХВАЛИЛИ:** Допустити здобувачку вищої освіти Бенкіран Сальма до захисту кваліфікаційної роботи на тему «Analysis of trends in the consumption of pharmacy products» в Екзаменаційній комісії НФаУ.

Зав. каф. ФММ, доктор фарм. наук,  
професор

Володимир МАЛИЙ

Секретар, доцент ЗВО,  
канд. фарм. наук, доцент

Світлана ЖАДЬКО



## НАЦІОНАЛЬНИЙ ФАРМАЦЕВТИЧНИЙ УНІВЕРСИТЕТ

### ПОДАННЯ ГОЛОВІ ЕКЗАМЕНАЦІЙНОЇ КОМІСІЇ ЩОДО ЗАХИСТУ КВАЛІФІКАЦІЙНОЇ РОБОТИ

Направляється здобувач вищої освіти Сальма БЕНКІРАН до захисту кваліфікаційної роботи за галуззю знань 22 Охорона здоров'я спеціальністю 226 Фармація, промислова фармація освітньою програмою Фармація на тему: «Analysis of trends in the consumption of pharmacy products».

Кваліфікаційна робота і рецензія додаються.

Декан факультету \_\_\_\_\_ / Світлана КАЛАЙЧЕВА /

#### Висновок керівника кваліфікаційної роботи

Здобувачка вищої освіти Сальма БЕНКІРАН виконала на кафедрі фармацевтичного менеджменту та маркетингу НФаУ кваліфікаційну роботу, яка присвячена дослідженню трендів у споживанні товарів аптечного асортименту. У першому розділі роботи розглянуті загальні теоретичні підходи до проведення маркетингового аналізу, якісних і кількісних характеристик ринку. Другий розділ роботи присвячений характеристиці глобальних трендів фармацевтичного ринку. Третій розділ містить аналіз трендів споживання лікарських засобів. Отже, подана до захисту кваліфікаційна робота Сальми БЕНКІРАН на тему «Analysis of trends in the consumption of pharmacy products» відповідає вимогам, що висуваються до кваліфікаційних робіт, оцінюється позитивно та може бути рекомендована для захисту в Екзаменаційну комісію НФаУ.

Керівник кваліфікаційної роботи

Ірина ПЕСТУН

«14» квітня 2023 р.

#### Висновок кафедри про кваліфікаційну роботу

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

Завідувач кафедри  
фармацевтичного менеджменту та маркетингу НФаУ

Володимир МАЛИЙ

“21 ” квітня 2023 року

Qualification work was defended  
of Examination commission on

« \_\_\_\_ » \_\_\_\_\_ 2023

With the grade \_\_\_\_\_

Head of the State Examination commission,

DPharmSc, Professor

\_\_\_\_\_ /Oleh SHPYCHAK/