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**QUALIFICATION WORK**

on the topic: **“STUDY OF THE MODERN ROLE OF PHARMACISTS IN  
THE RATIONAL USE OF MEDICINES”**

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## ANNOTATION

The qualification work presents the results of the analysis of the problem of irrational consumption of medicines by the population in the world practice. The results of the analysis of data on the structure and dynamics of drug consumption and the factors influencing it are presented. Approaches and recommendations for strengthening the influence of pharmacists on the rational use of medicines are summarised.

The results of the study are presented on 59 pages, the number of figures - 12, tables -, list of references - 37 titles.

*Key words:* medicines, irrational consumption, self-medication, role of pharmacist.

## АНОТАЦІЯ

У кваліфікаційній роботі наведено результати аналізу проблеми нераціонального споживання лікарських засобів населенням у світовій практиці. Представлено результати аналізу даних щодо структури та динаміки споживання ліків та факторів впливу це. Узагальнено підходів та рекомендації щодо посилення впливу фармацевтів на раціональне використання лікарських засобів.

Результати дослідження представлено на 59 сторінках, кількість рисунків - 12, таблиць –, список літературних джерел – 37 найменувань.

*Ключові слова:* лікарські засоби, нераціональне споживання, самолікування, роль фармацевта.

## CONTENT

Introduction	4
CHAPTER 1. THE PROBLEM OF IRRATIONAL USE OF MEDICINES IN MODERN SOCIETY	
1.1. Introduction to the research on the problem of irrational use of medicines in modern society	6
1.2. Consequences of irrational medicine use	12
CONCLUSIONS TO CHAPTER 1	15
CHAPTER 2. RESEARCH OF THE PROBLEM OF IRRATIONAL USE OF MEDICINES BY THE POPULATION	
2.1. Study of socio-cultural and behavioural factors influencing irrational medicine use	17
2.1.1. Cultural Beliefs and Practices	18
2.1.2. Patient Knowledge and Attitudes	25
2.2. Study of self-medication practices and their implications	29
CONCLUSIONS TO CHAPTER 2	34
CHAPTER 3. STUDY OF THE MODERN ROLE OF PHARMACISTS IN THE RATIONAL USE OF MEDICINES	
3.1 The evolving role of pharmacists in healthcare systems	36
3.2. Study of international experience in regulating the consumption of medicines	40
3.3. Developing recommendations to strengthen the influence of pharmacists on the rational use of medicines	47
CONCLUSIONS TO CHAPTER 3	57
GENERAL CONCLUSIONS	59
LIST OF SOURCES USED	60

## INTRODUCTION

**Actuality of topic.** The escalating and irrational use of medicines has emerged as a substantial and intensifying quandary within the realms of contemporary society. With consequences that extend deeply into the fabric of public health, the intricacies of healthcare systems, and the broader economic landscape, the gravity of this issue cannot be overstated.

At the heart of this dilemma lies an array of questionable practices, which are becoming increasingly commonplace. These include, but are not limited to, the rampant overprescription of medications by healthcare professionals—often without sufficient consideration for the need or appropriateness of such interventions. Moreover, there is a growing trend towards self-medication amongst individuals, frequently undertaken without the requisite guidance or oversight from qualified practitioners. This not only jeopardizes individual health outcomes but also amplifies the risk of drug interactions and side effects.

In parallel, the misuse of antibiotics stands out as a particularly pernicious aspect of the problem. This misuse not only contributes to the alarming rise in antibiotic-resistant bacteria but also undermines our collective ability to manage infections effectively now and in the future. The situation is further exacerbated by the undeniable influence wielded by pharmaceutical marketing endeavours, which often sway prescribing habits in ways that may not align with the best interests of patients.

Fully grasping the foundational causes that underpin the phenomenon of irrational medicine use is a task of immense importance. Such understanding is essential not only for highlighting the sheer scope and depth of the issue but also for laying the groundwork upon which comprehensive and robust strategies can be built. Only through informed and concerted efforts will it be possible to diminish the adverse impacts that this issue presents to individuals and society at large, thereby fostering more rational, safe, and effective utilization of medicinal products. Addressing these challenges necessitates a multifaceted approach, one that involves

policymakers, healthcare professionals, and patients alike, all united in the pursuit of a healthcare system that prioritizes evidence-based medicine and judicious therapeutic decisions.

**The purpose of the study** was to study the modern role of pharmacists in the rational use of medicines.

Research objectives:

- to analyse the literature on the topic, in particular, to study the issue of irrational consumption of medicines in modern society;
- to identify the peculiarities of the influence of socio-cultural, behavioural factors, health knowledge of the population on the irrational use of medicines;
- to study the spread of self-medication and its consequences in countries around the world;
- to analyse the evolution of the role of pharmacists in the health care system;
- to study international experience in regulating the consumption of medicines;
- to develop recommendations for strengthening the influence of pharmacists on the rational use of medicines.

The object of study: publications and research results related to irrational consumption of medicines and role of pharmacists in the concept of rational use of medicines; research subject: consumption of medicines and factors influencing it, approaches to strengthening the influence of pharmacists on the rational use of medicines.

**Research methods.** In the analysis methods of the content analysis, comparative, generalization and graphic methods were used.

**Structure and scope of qualification work.** The qualification work consists of the introduction, three chapters, conclusions to each chapter, general conclusion, and list of used sources. The results of the study are presented on 59 pages of text, the number of figures - 12, tables -, and the list of references - 37 titles.

## **CHAPTER 1. PROBLEM OF IRRATIONAL USE OF MEDICINES IN MODERN SOCIETY**

### **1.1. Introduction to the research on the problem of irrational use of medicines in modern society**

The phenomenon of irrational medicine use is a multifaceted issue that permeates all strata of the healthcare infrastructure, exerting its impact on diverse demographic cohorts. It manifests as a formidable hazard to the well-being and safety of patients, catalyzes the emergence and proliferation of drug-resistant microorganisms, and precipitates a cascade of superfluous spending within the healthcare domain.

The significance of this challenge cannot be overstated, with the World Health Organization (WHO) providing a stark portrayal of the situation; the WHO's data suggests that an alarming majority — more than half — of all medications are not only prescribed and dispensed but also sold in manners that deviate from optimal practices. Furthermore, the same proportion of patients, about 50%, fail to adhere properly to their medicinal regimens, either unable or unwilling to follow the medical instructions provided to them. The implications of such behavior are dire, not just for individual health outcomes but also for the broader public health landscape [9, 12, 19, 28].

This prevalent problem casts a highlight on the pressing demand for extensive and robust research endeavors aimed at tackling the intricacies of the irrational use of medicines. Such research should endeavor to unravel the layers of this complex issue, exploring the underlying causes and contributing factors that lead to such widespread misuse. Only through a concerted effort to understand and confront these challenges can we hope to implement strategic interventions designed to mitigate the dangers associated and ultimately guide the healthcare system towards a more rational and effective use of medicines.

The irrational use of medicines has evolved hand-in-hand with the advancement and expansion of the pharmaceutical industry as well as modern medical practices. Historically, the landscape of medicine underwent a monumental transformation with the discovery of antibiotics and other life-saving drugs. These breakthroughs revolutionized the treatment of previously incurable diseases and thereby reshaped public health. However, this pivotal moment in history also brought with it numerous challenges, particularly related to the misuse and overprescription of these potent drugs [25, 27, 33].

As time progressed, the issues surrounding irrational drug use became more pronounced with the increasing availability of over-the-counter medications. Individuals began self-medicating without proper guidance, leading to widespread instances of misuse. Additionally, the aggressive marketing strategies employed by pharmaceutical companies have further contributed to this problematic scenario. These companies often promote their products directly to consumers and healthcare professionals, sometimes prioritizing profit over patient safety, which can encourage the overuse or inappropriate use of medications.

In order to fully grasp the extent of the problem at hand, it is imperative that we delve into this historical context. Understanding the cumulative factors, including cultural shifts, regulatory changes, and commercial pressures, that have contributed to the current state of irrational medicine use is fundamentally important. By doing so, we lay the groundwork for developing strategies aimed at mitigating the risks associated with medication misuse and ultimately improving patient care standards across the globe [15, 23, 33].

Based on the results of the analysis of publications in periodicals and data from numerous studies in many countries, it is possible to identify factors that influence irrational consumption of medicines [1, 3, 5, 7, 20, 22, 24, 31]. These drivers, rooted in various aspects of society and healthcare systems, can be analyzed to understand their pervasive influence on medication utilization patterns. These factors often interact in complex ways that exacerbate the problem, making it a multifaceted challenge to address (fig. 1.1).

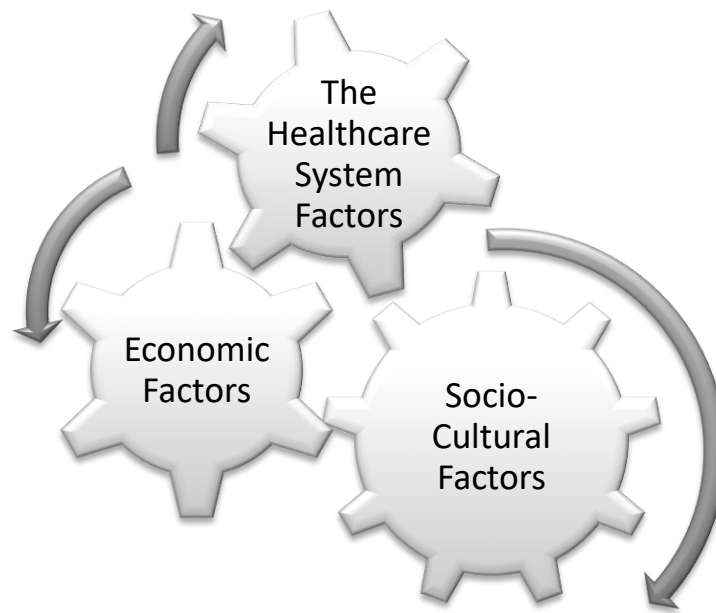


Fig. 1.1. Key factors of irrational medicine use

*Socio-cultural factors* wield a considerable and undeniable influence on how individuals perceive and utilize medicines within their respective communities. Indeed, across an array of diverse societies, there can be observed a deeply entrenched belief in the potency and efficacy of medical treatments, which often culminates in a strong predilection for pharmaceutical solutions as opposed to approaches that do not involve medication. This phenomenon is not just an incidental trend but rather a reflection of the societal trust in the power of medicine to cure ailments and restore health.

Moreover, cultural norms, traditions, and collective beliefs concerning illness, wellness, and the journey to recovery can have a tremendous effect on the ways in which communities engage with healthcare practices, particularly in terms of medicine consumption. These beliefs are ingrained in the social fabric and can vary widely from one culture to another, each with its own unique set of expectations and practices when dealing with sickness.

For instance, it is not uncommon in certain cultures to observe a pronounced tendency to administer antibiotics in response to viral illnesses — a practice which, from a medical standpoint, may be deemed unnecessary or even counterproductive,



given that antibiotics target bacterial infections and not viruses. Nonetheless, this behaviour persists, underpinned by a combination of habit, lack of knowledge, and societal pressure to take immediate and tangible action against illness.

Similarly, there is a prevailing expectation within some cultures to receive a prescription during a doctor's visit, irrespective of whether the health issue at hand actually necessitates pharmacological intervention. Patients might associate the act of receiving a prescription with a more legitimate or serious form of care, even when non-pharmacological treatments could suffice or even prove more beneficial. This illustrates how cultural conditioning can significantly steer the patterns of medicinal use, often independent of scientific evidence or professional guidelines [15, 23, 28].

In summary, socio-cultural influences are deeply woven into the fabric of medicine consumption. The community's collective experiences, historic practices, and ingrained expectations play a pivotal role in shaping how individuals approach treatment options, which can lead to a strong preference for medication-based interventions above other forms of therapeutic measures. Understanding these cultural dimensions is crucial for healthcare providers as they navigate the complexities of delivering patient-centred care that respects individual beliefs while adhering to evidence-based medicine.

The second group of factors is *economic*. Economic constraints and considerations are significant factors that invariably affect the rational use of medicine across various socio-economic strata worldwide. In low- and middle-income nations, where the availability and accessibility of healthcare services might be considerably lacking, individuals often find themselves compelled to resort to self-medication. This tendency is further exacerbated by the widespread availability of medicines from sources that lack proper regulation, which not only raises questions about their efficacy but also about the safety of such medications [8, 10, 17, 21].

In contrast, high-income countries are not exempt from the challenges associated with the economic aspects of healthcare. In these regions, even though healthcare infrastructure might be more developed, the exorbitant cost of medical

services and prescription drugs can become a prohibitive factor for many patients. Consequently, a considerable number of individuals may opt for over-the-counter remedies as a more affordable, albeit potentially less effective, alternative. Furthermore, there's an inclination for some individuals to explore the realm of alternative medicine, which often operates outside the conventional healthcare system, in search of more economical options [7, 31].

Moreover, it is crucial to acknowledge the influence exerted by the pharmaceutical industry in shaping consumer behavior. The drive for profit can lead pharmaceutical companies to engage in aggressive marketing tactics. Such strategies may involve promoting medications for off-label uses or creating demand for new drugs where none should exist, thereby fostering an environment where over-prescription and medication misuse become more prevalent. This commercial push often undermines the judicious use of medication, contributing to a culture where drugs are seen as a first recourse rather than a carefully considered option within a broader treatment plan.

All these economic-driven dynamics intertwine, resulting in a complex scenario where irrational medicine use becomes a widespread issue with profound implications for individual health outcomes and the overall effectiveness of healthcare systems. Addressing these concerns requires a multifaceted approach that involves policy reforms, patient education, and a reevaluation of the pharmaceutical industry's role in healthcare.

*The healthcare system* is a complex network that directly impacts the usage of medicine. Within this intricate system, multiple factors can significantly influence whether medications are used rationally or not. Addressing these issues is crucial in ensuring that patients receive effective and safe treatment while minimizing the risks associated with medication misuse:

- Inadequate regulation and oversight: One of the more pervasive problems is the presence of weak regulatory frameworks. Such inadequacy in regulation allows for the circulation of substandard or counterfeit medicines within the market. These inferior products often fail to meet the necessary

safety and efficacy requirements, thereby contributing to inappropriate use and posing a substantial health risk to patients. Strengthening regulatory bodies and enforcement mechanisms is essential for curbing the availability of these harmful products and fostering rational medicine use [3, 8, 18].

- **Prescribing practices:** Another issue at hand involves the prescribing habits of healthcare professionals. The lack of standardized prescribing guidelines across various healthcare settings can result in inconsistencies and deviations from best practices. Additionally, the considerable influence of pharmaceutical marketing presents another layer of complexity. Pharmaceutical companies may employ aggressive marketing tactics that can sway prescribing patterns, potentially leading to an overreliance on certain medications or the preference for newer, more expensive drugs instead of established, cost-effective alternatives. Promoting unbiased prescribing information and education about medication options could help mitigate this challenge [5, 8, 11, 25].
- **Healthcare professional training:** Adequate training in the health sector is indispensable for promoting the right use of medicine. However, there often exists a gap in training programs concerning rational medicine use and the importance of evidence-based practices. This insufficient training can result in healthcare providers lacking the necessary knowledge and skills to prescribe and manage medications effectively, which can exacerbate issues of irrational use. Reinforcing educational curricula for healthcare workers by incorporating comprehensive pharmacology and therapeutic modules may be a step towards improvement in this area [6, 25, 26].
- **Patient-Doctor-Pharmacist communication:** the communication between healthcare providers and their patients is a critical determinant of how well patients understand and adhere to their treatment regimens. Poor communication can lead to misunderstandings about the proper use of medications, underuse, overuse, or incorrect administration. Encouraging open dialogues, where patients feel comfortable discussing their concerns

and obtaining clear instructions, is vital for closing the gap in communication. Tailoring the approach to individual patient needs and ensuring comprehension can foster better outcomes and encourage the rational use of medicines [9, 13, 21].

### 1.2. Consequences of irrational medicine use

The irrational use of medicines has numerous adverse consequences, impacting individuals, healthcare systems, and society at large. These consequences can be grouped into three primary categories (fig. 1.2).

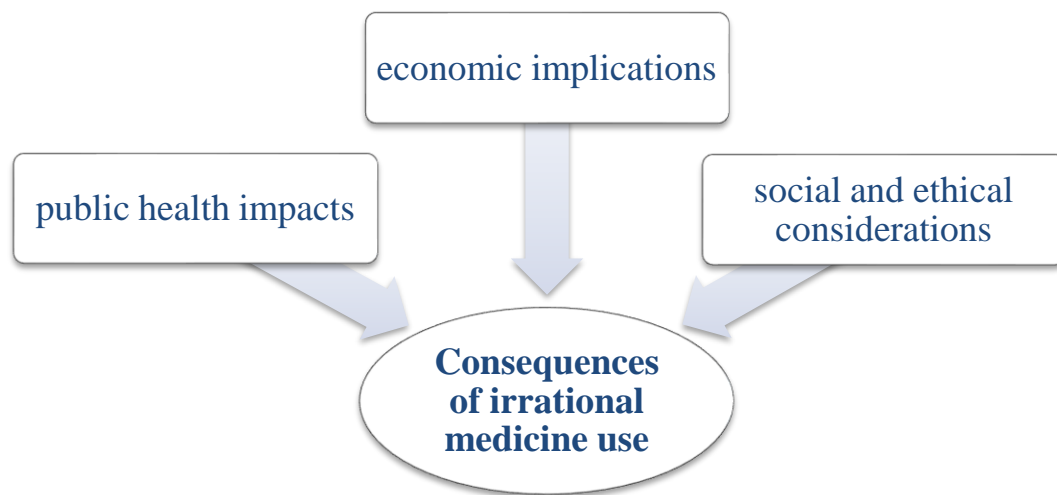


Fig. 1.2. Consequences of irrational medicine use

The issue of irrational medicine use carries with it profound consequences for public health, the most notable and concerning being the evolution and spread of antimicrobial resistance (AMR). This phenomenon arises when bacteria, viruses, fungi, and parasites change over time and no longer respond to medicines, rendering infections harder to treat and increasing the risk of disease spread, severe illness, and death [24, 28, 33].

When antibiotics are misused or overprescribed — such as when they're taken for viral infections against which they have no effect, or when they're not consumed for the prescribed duration—the selective pressure on harmful pathogens intensifies. Consequently, this forces the evolution of resistant strains of bacteria at an

accelerated rate, making previously effective treatments obsolete. In the clinical setting, this results in more complicated, prolonged illnesses that are much harder, if not impossible, to cure with standard antibiotic regimens.

Moreover, the irrational use of medications extends beyond antibiotics and encompasses a wide range of pharmaceuticals. This includes the improper dosing, self-medication with prescription drugs, and the use of medicines without professional oversight. Such practices can lead to a plethora of adverse drug reactions, some of which may be severe and life-threatening. Furthermore, these practices also contribute to the increased incidence of chronic diseases, as patients fail to receive the correct treatment in a timely manner, allowing their conditions to exacerbate [24].

Additionally, the financial implications should not be understated. The economic burden associated with managing drug-resistant infections is significant, due to longer durations of illness, more complex treatment regimens, and the need for more expensive drugs that are still effective against resistant pathogens.

The overall poorer health outcomes stemming from irrational medicine use not only affect individual patients but also have a ripple effect across communities and healthcare systems worldwide. It is a multifaceted issue that calls for a multifaceted response, including better education on the part of both healthcare providers and patients, more robust stewardship programs, and stronger policies to regulate antibiotic use. Only through concerted efforts can we hope to curb the tide of antimicrobial resistance and safeguard the efficacy of life-saving medicines for future generations.

Economically speaking, the irrational use of medications translates into significantly heightened healthcare expenses. This is primarily due to a surge in unnecessary prescriptions that are dispensed without proper indications. Moreover, there's an added financial burden resulting from treatments that are required for tackling drug-resistant infections – a phenomenon often caused by the misuse of antibiotics which leads bacteria to develop resistance to these drugs. Additionally, hospitalizations stemming from adverse drug reactions further inflate healthcare

costs. Adverse reactions can range from mild side effects to severe and life-threatening conditions, necessitating immediate medical attention and often prolonged hospital stays [27-30].

These superfluous expenditures exert an enormous pressure on healthcare systems globally. They can lead to a reallocation of resources that may otherwise be directed towards more crucial and essential health services. Preventive care, public health initiatives, and investments in healthcare infrastructure could suffer as a result of the misdirected funds.

In the context of developing countries, the economic ramifications of irrational medicine use become even more pronounced. With healthcare budgets that are already limited, these nations find themselves grappling with the challenge of allocating sufficient funds to cater to their diverse healthcare needs. The diversion of scarce resources to confront preventable drug-related complications exacerbates the strain on their healthcare systems. It impedes their ability to provide basic health services, invest in health education, and improve overall access to quality medical care for their populations.

Consequently, there's an urgent need for interventions aimed at promoting rational medicine use. Such measures would not only alleviate the financial burden on healthcare systems but also enhance the quality of healthcare delivery and patient safety. Rational prescribing practices, proper medication management, and patient education about the correct use of drugs are pivotal steps in mitigating the economic impacts of irrational drug usage. Addressing this issue is critical for the sustainability of healthcare systems and for ensuring equitable access to healthcare services worldwide.

The issue of irrational use of medicines extends beyond mere wastage of resources; it poses serious questions about the fairness and morality with which healthcare is dispensed. Thus, creating social and ethical problem. When access to medications and healthcare services is not distributed equitably, it perpetuates a deeply troubling disparity in health outcomes across various demographics. Such inequalities can result in some groups, often the less privileged or marginalized

sectors of society, suffering disproportionately from illnesses that could be treated or managed more successfully with proper access to medication.

Moreover, the question of unethical marketing strategies employed by some pharmaceutical companies aggravates these concerns. These practices can range from aggressive sales tactics targeting healthcare providers to misleading advertising that minimizes potential risks or overstates benefits. There are instances where vulnerable populations are targeted by these campaigns, leading them to consume medications unnecessarily or without proper guidance, purely for the sake of profit. This exploitation is not only morally reprehensible but also endangers the health and well-being of individuals who may be less informed or have fewer resources to advocate for themselves [19, 28].

In light of these alarming issues, there is an unequivocal need for stringent regulations that ensure ethical conduct within the pharmaceutical industry. The establishment and enforcement of robust ethical standards could serve as a bulwark against the manipulation and exploitation that currently besets the sector. Implementing comprehensive regulatory frameworks would help protect consumers, especially the most vulnerable, from the consequences of irresponsible marketing and ensure that the distribution of medicines is done fairly and justly.

Hence, it is imperative that we not only scrutinize our existing approaches to medicine distribution and consumption but also actively work towards creating a more just healthcare system — one in which every individual, irrespective of their background or economic status, has equal opportunity to access the treatments they need. Confronting the problem of inequity in healthcare and taking decisive action against unethical practices in the pharmaceutical industry are critical steps toward achieving a more ethical and equitable healthcare landscape for all.

## Conclusions to chapter 1

The irrational use of medicines represents an intricately complex and multifaceted problem that stands as one of the significant challenges confronting

modern society in this day and age. It's a global issue that affects both developed and developing countries, transcending national borders and impacting individuals at all levels of the socioeconomic spectrum. Addressing such an entrenched and pervasive issue undoubtedly requires a comprehensive, collaborative, and multi-pronged approach that seeks to involve every stakeholder within the healthcare ecosystem — a system that includes healthcare providers, patients, policymakers, the pharmaceutical industry, and others who have a vested interest in the welfare of public health.



## CHAPTER 2. RESEARCH OF THE PROBLEM OF IRRATIONAL USE OF MEDICINES BY THE POPULATION

### 2.1. Study of socio-cultural and behavioural factors influencing irrational medicine use

The irrational use of medicines represents a complex and pressing global health concern, characterized by its multifaceted nature and the broad spectrum of socio-cultural and behavioral factors that contribute to this phenomenon. Comprehending these diverse factors is not only crucial but indispensable for the creation and implementation of targeted and effective strategies aimed at fostering the rational use of medicines within different populations.

At this stage of the study, we analyzed three primary areas that are integral to understanding the wider context of medicine usage patterns.

Firstly, we examined cultural beliefs and practices, which encompass a vast array of traditional and contemporary perspectives towards health and illness, and how these perceptions shape the decisions individuals make regarding their treatment options. Cultural influences can significantly dictate preferences for certain types of medicines or therapies, potentially leading to an over-reliance on specific treatments that may not be medically advisable [2, 8, 15, 18].

Secondly, patient knowledge and attitudes are scrutinized as they represent pivotal elements in the decision-making process related to medication intake. The degree to which patients are informed about their conditions, the potential benefits and risks associated with their medication, and their overall trust in healthcare professionals, critically impacts their medication adherence and proper usage. Lack of adequate knowledge or misconceptions can result in either underuse or inappropriate use of prescribed drugs, exacerbating health issues rather than alleviating them [9, 13, 14].

Lastly, the exploration ventures into the realm of self-medication practices, wherein individuals choose to medicate independently, often without professional guidance. This behavior has been increasingly prevalent due to various factors

including ease of access to over-the-counter drugs and internet resources providing medical information. While self-medication can sometimes be harmless or even beneficial for minor ailments, it frequently leads to incorrect dosages, prolonged usage, and the selection of inappropriate medications, all of which pose significant risks to one's health [17, 18, 21].

By dissecting each of these areas, our research aims to form a comprehensive picture of how individual behaviors and societal norms come together to influence the way medicines are used, which too often results in misuse or overuse. It is only through this holistic understanding that effective interventions can be crafted to promote healthier and more scientifically grounded medicine consumption practices.

### 2.1.1. Cultural Beliefs and Practices

The results of the analysis of publications on the impact of socio-cultural and behavioural factors conducted by the group of authors [34] confirm the need to identify separate groups of medicine users when analysing the causes of irrational consumption (fig. 2.1).

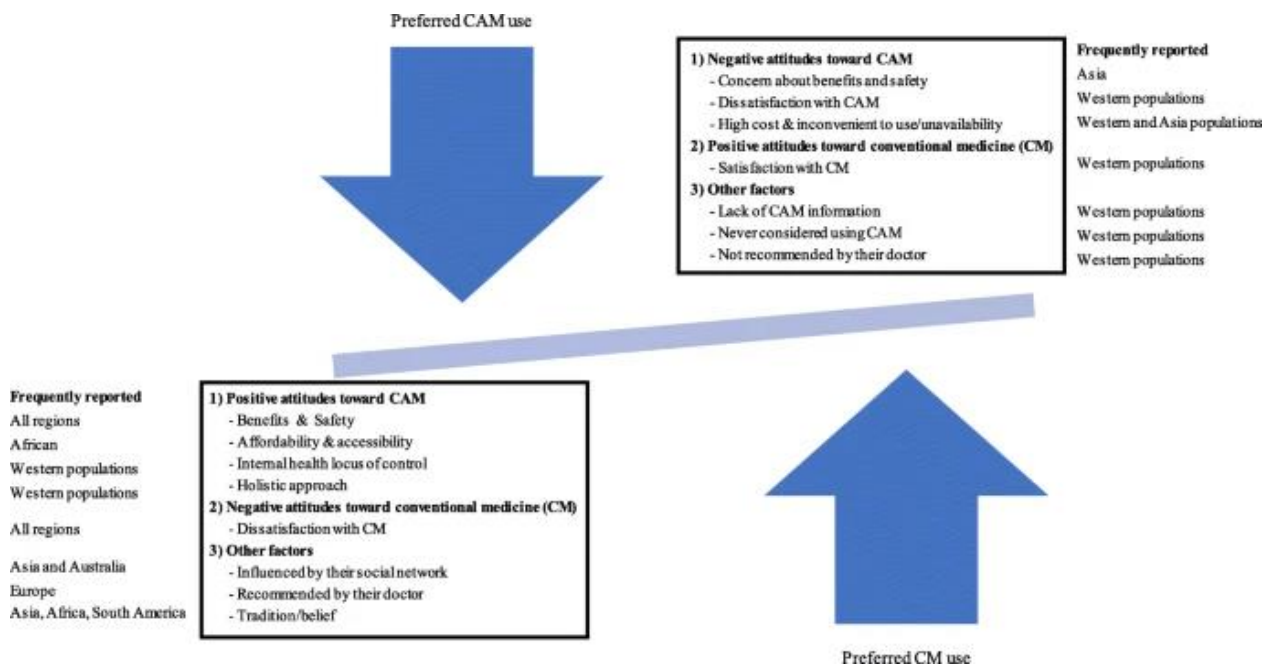


Fig. 2.1. Factors influencing the use and non-use of traditional and alternative medicine [34].

Cultural beliefs and practices are deeply ingrained in society and have a profound influence on the perception and utilization of medicines. These beliefs can originate from historical, spiritual, or societal roots and are often passed down through generations. Furthermore, they can be specific to different regions or groups within a society.

In various cultures, there are established norms and traditions that dictate health-related behaviors, which include how individuals approach illness and healing. This encompasses not only the use of contemporary pharmaceuticals but also traditional remedies and alternative medical practices. These cultural norms can dictate preferences for certain treatments and impact patient adherence to prescribed medical regimens.

The intersection of culture and medicine is particularly evident when considering how different societies view the cause of illnesses. For instance, some may attribute health issues to supernatural forces or imbalance in life forces, thus favoring holistic and natural approaches to treatment over conventional Western medicine.

Understanding and respecting these cultural nuances is crucial for healthcare providers. This includes recognizing the potential influences of family, community leaders, and traditional healers when it comes to health decisions. By acknowledging these factors, medical professionals can ensure a more culturally sensitive approach to healthcare, which can improve patient outcomes and foster trust within diverse populations.

It's important to note that as societies evolve, so do their cultural practices and beliefs concerning health and medicine. This evolution can lead to a fusion of traditional and modern medical practices, offering a broad spectrum of options to cater to individual beliefs and preferences. Thus, the dynamic nature of cultural practices further amplifies the need for ongoing research and understanding in the medical field to keep pace with changing societal norms [28].

Thus, according to global statistics, over the past 5 years, the consumption of OTC medicines has not changed significantly in the regions of the world as a whole,

but there are differences in their volumes in each region. This fact is usually explained by the size of the population, but one of the most important factors is the culture of treatment.

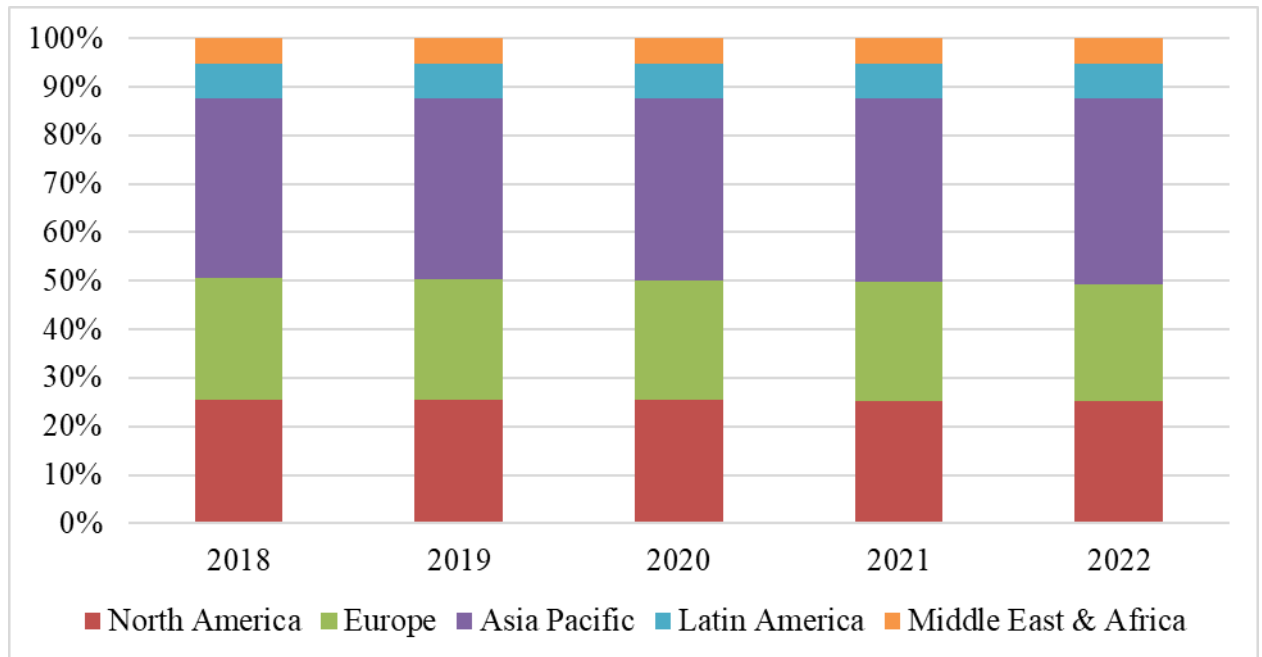


Fig. 2.2. OTC market size, share by region, 2018-2022

The impact of traditional medicine in different parts of the world is an intriguing topic, especially when considered alongside modern medical practices. Throughout history, various cultures have developed their unique forms of healing based on natural remedies and ancient wisdom. These traditional methods are not merely alternative options; for many individuals, they represent the primary mode of healthcare due to deeply ingrained cultural beliefs [1, 3, 5, 7, 21, 31, 32].

In several cultures, the confidence in traditional healers or the remedies they provide runs deep. Such healers are often regarded with great respect and authority within their communities. They may be seen as custodians of centuries-old knowledge, passed down through generations. This high level of trust can lead to a preference for traditional medicine over conventional treatments among many people, even where modern healthcare facilities are available.

Particularly in many African and Asian communities, herbal medicines, acupuncture, spiritual healing, and other forms of traditional practices hold

significant places in the daily lives of the people. These methodologies are so deeply rooted in the cultural fabric that they define the very essence of community health practices. The reliance on nature's bounty in the form of plants and herbs for making medicinal concoctions is a testament to the symbiotic relationship between humans and their natural environment, which has been nurtured over millennia [34].

However, this reliance on traditional medicine can sometimes pose risks due to the unregulated nature of these practices. Without proper oversight, some substances used in traditional remedies may be harmful if consumed inappropriately. Moreover, the lack of clinical trials to validate efficacy and safety can lead to what is known as irrational medicine use. This term refers to the misuse or overuse of medicinal substances, which can result in adverse health outcomes.

Yet, it is crucial to recognize that traditional medicine also plays a positive role by offering accessibility and affordability to those who might otherwise be excluded from the healthcare system. It provides a sense of continuity with the past and aligns with the spiritual and physical understanding of health that many individuals adhere to. As such, it remains a vital aspect of global health and warrants an informed approach to its integration with conventional medicine.

There is a widespread cultural inclination toward the desire for quick fixes and the urge for immediate relief from any discomfort or symptoms one might encounter. This is especially distinct in societies that are deeply entrenched in consumerism, where the general populace has grown to anticipate swift and instant solutions to a myriad of health-related issues. Within such cultures, there exists a strong propensity for individuals to turn towards medications as their first line of defence.

This tendency is often seen with the use of painkillers and antibiotics in particular, which can be acquired over the counter in many places. People tend to self-medicate, reaching for these drugs at the slightest onset of symptoms, without seeking proper medical advice or considering alternative treatments. This approach can result in the misuse of medicines, where the substances are either taken in

incorrect dosages, used for inappropriate indications, or consumed when not medically necessary.

This is confirmed by the data on the structure and dynamics of the OTC market in recent years, as shown in fig. 2.3, by 2022, all groups of medicines demonstrated positive dynamics of sales growth.

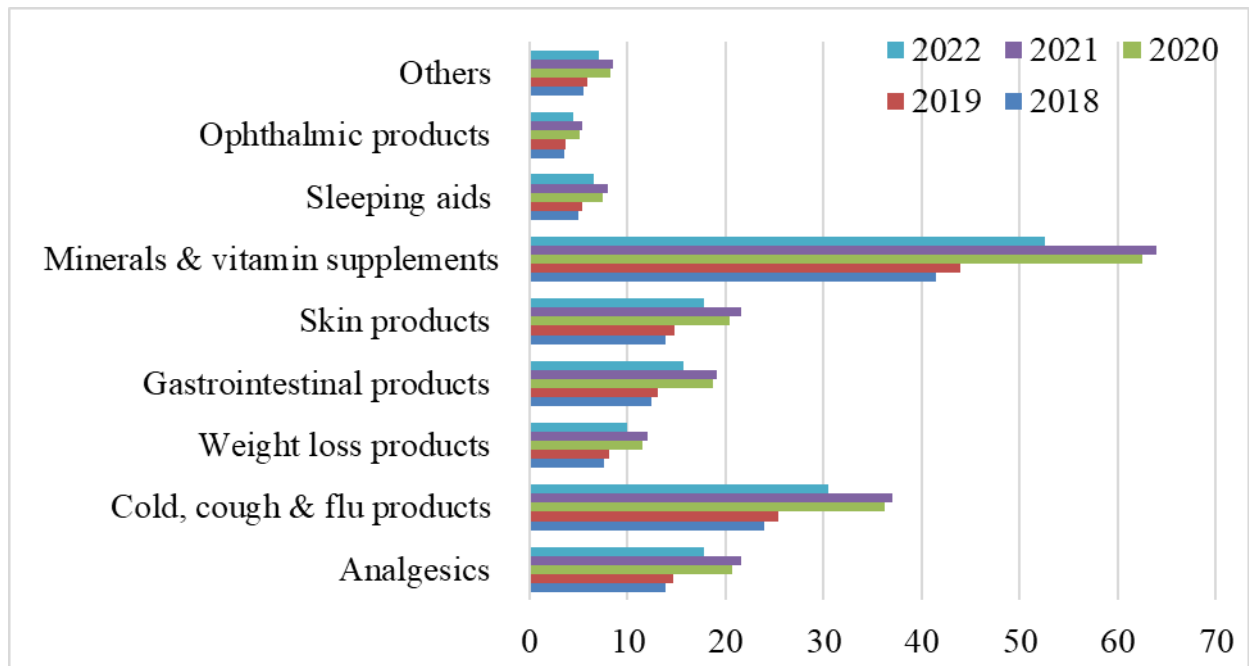


Fig. 2.3. OTC medicines market size by pharmacological groups, 2018 – 2022 (USD Million)

The prescription drug market is also characterised by annual growth, which indicates an increase in consumption in this category. Thus, in 2021, the global prescription drug market was valued at approximately \$1.4 trillion, and, for example, the US market was the largest, with sales reaching \$500 billion in 2021.

The treatment of chronic diseases remains an important driver of prescription drug use, with medicines for cardiovascular disease, diabetes and respiratory diseases being among the most popular categories. At the same time, according to the data on prescription drug consumption in 2021 and the number of prescriptions written for them, there was a significant increase in the consumption of antibiotics. In fig. 2.4 shows the structure of consumption and prescriptions by group in 2021.

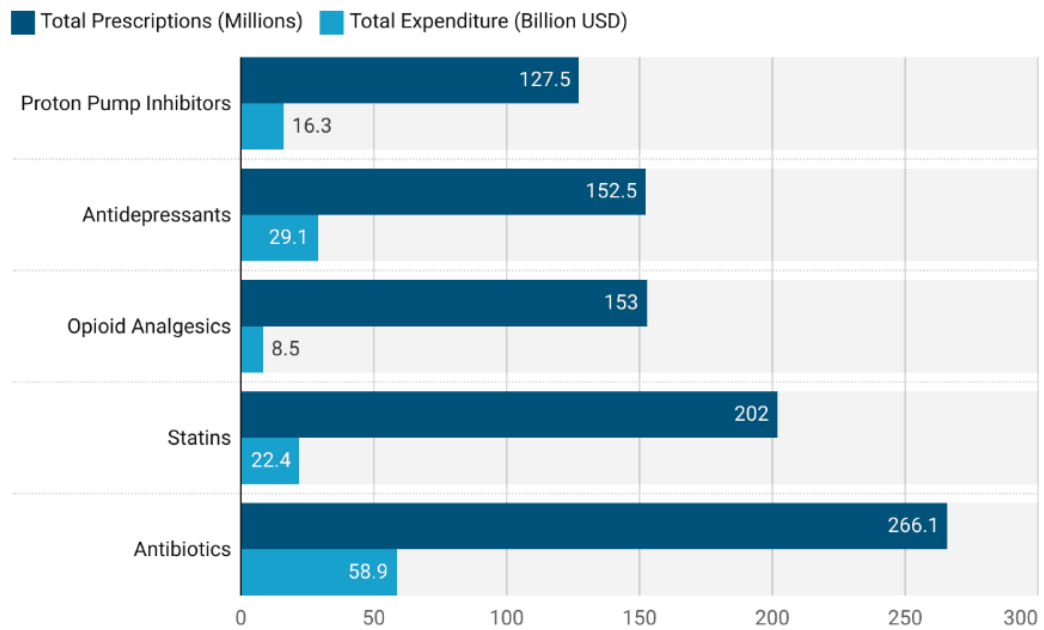


Fig. 2.4 Structure of consumption and prescriptions by group, 2021

The consequences of irresponsible behaviour in the use of medicines can be quite significant, leading to a variety of potential health risks. These include the development of resistance to antibiotics, a major global health concern, as well as potential side effects and long-term harm caused by improper use of painkillers. Moreover, this reliance on medications for immediate symptom relief overlooks the importance of addressing underlying causes of health problems and may prevent individuals from pursuing healthier lifestyles or preventive measures that could mitigate the need for such medicines in the first place.

By fostering an environment where instant gratification is given precedence over thoughtful, informed decision-making regarding one's health, societies may inadvertently pave the way for increased incidences of drug dependency and a rise in health complications associated with the inappropriate consumption of medication. It's crucial to raise awareness about the importance of judicious use of medicines and the value of professional medical guidance.

Cultural misconceptions about the nature of illnesses and their appropriate treatments can significantly impact how individuals approach healthcare and medication use. In many cases, these deeply entrenched beliefs are passed down through generations and are not easily swayed by modern medical advice. For

instance, in some cultural contexts, there is a pervasive belief that antibiotics are the go-to solution for any kind of infection, completely disregarding the fact that antibiotics are only effective against bacterial infections. This misunderstanding extends to common viral infections like the common cold or influenza, which cannot be treated with antibiotics.

The widespread belief in the curative power of antibiotics for all types of illnesses leads to their misuse and overprescription, which has serious global health implications. When antibiotics are used excessively or inappropriately, it accelerates the development of antibiotic-resistant strains of bacteria. As a result, certain bacterial infections become harder, and sometimes impossible, to treat with the standard courses of antibiotics that were once effective. This phenomenon contributes to a public health crisis where the arsenal of effective antibiotics is diminishing, leaving populations vulnerable to previously manageable bacterial diseases [14, 24].

Educating communities about the proper use of medications and dispelling myths about treatments is crucial in combating irrational medicine use. Healthcare providers, public health officials, and educators must work together to provide clear information about when antibiotics are necessary and when they are not. Understanding the specific nature of different pathogens and how they respond to various treatments is an essential piece of knowledge that should be communicated to patients in healthcare settings worldwide. It's equally important to promote preventive measures, such as vaccinations and good hygiene practices, to reduce the spread of infections in the first place.

By addressing these misconceptions head-on and promoting informed decision-making regarding illness and its treatment, we can contribute to the preservation of effective antibiotics and enhance overall public health outcomes. It is a shared responsibility that spans across cultures, healthcare systems, and educational institutions to ensure that society as a whole understands the implications of the irrational use of medicines like antibiotics.



### 2.1.2. Patient Knowledge and Attitudes

Understanding patient knowledge and attitudes towards medicines is absolutely essential in the healthcare field. Their perspectives and beliefs significantly influence how they interact with prescribed treatments and the overall healthcare system. A well-informed patient who comprehends the mechanisms by which medicines act, their potential side effects, as well as the critical nature of following medical advice strictly can manage their health more effectively.

However, a gap in patient education often exists. When individuals lack crucial information about their medications, it may result in hesitance to take the drugs, misuse, or even total non-compliance. This disconnect can further lead to irrational use, which encompasses scenarios such as under-use, over-use, or inappropriate timing of medication intake. Consequently, this not only jeopardizes the patients' health outcomes but also escalates healthcare costs due to non-optimized treatment strategies and potentially increased rates of hospitalization.

Moreover, a patient's attitude towards medication adherence could be influenced by cultural beliefs, previous experiences with medications, perceived severity of their condition, and trust in the healthcare providers. It's vital that healthcare professionals understand these factors and work diligently to educate their patients. This includes clear communication about how medicines work within the body, explaining why certain medications are prescribed over others, discussing the importance and implications of side effects, and elaborating on why adhering to prescribed regimens is pivotal for the success of their treatment plan [15, 29, 33].

In sum, healthcare providers must prioritize patient education and foster environments where open communication flourishes. By doing so, they empower patients to make informed decisions, leading to better health outcomes, improved quality of life, and an optimized healthcare system.

*Health literacy*, or the ability to understand health information and make informed decisions about healthcare, plays a critical role in how individuals manage their health and wellbeing. It involves not only the capacity to read and comprehend medical literature but also to apply that knowledge in making decisions that are

conducive to good health. A significant factor in medicine use, health literacy affects how patients interact with healthcare providers, navigate the healthcare system, and take control of their own health [20, 22, 34].

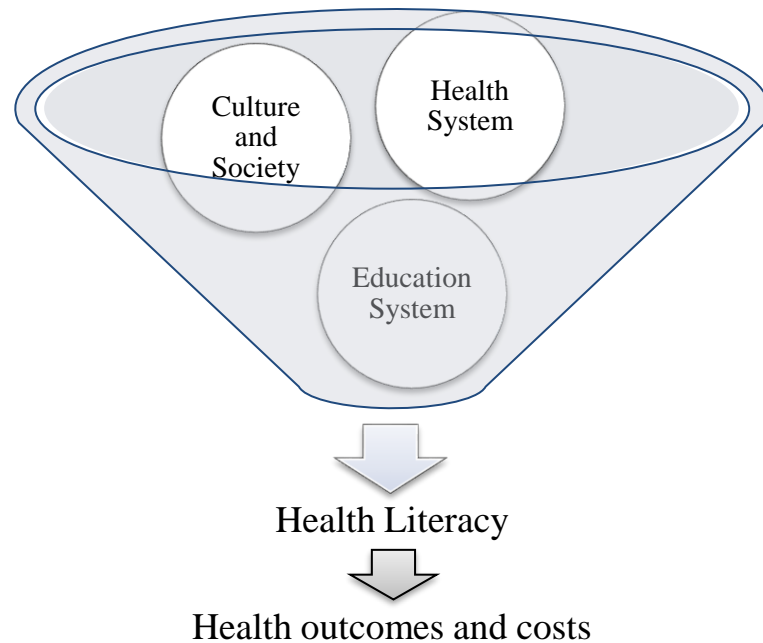


Fig. 2.5. Impact of health literacy on medication use

Low health literacy levels can have serious consequences. They can result in patients misinterpreting vital medical advice, which is crucial for their recovery and ongoing health management. For instance, misunderstanding dosage instructions can lead to taking too little or too much medication, which can be equally detrimental. Additionally, a lack of health literacy might prevent patients from recognizing the importance of completing a prescribed course of treatment, leading them to stop taking their medication as soon as they start feeling better, not realizing that this could cause a relapse or foster resistance to the medication.

This lack of understanding and awareness around health matters can lead to improper use of medications. Consequences include taking incorrect doses, which can either be ineffective or dangerously toxic. Patients may also misuse medication by stopping it prematurely without consulting a healthcare provider, perhaps due to side effects that could be managed with medical advice. Moreover, low health literacy can lead to decreased patient engagement, with individuals less likely to

participate in preventative care measures, screenings, or follow-up appointments, potentially exacerbating health issues that could have been addressed early on.

In essence, ensuring high levels of health literacy is fundamental for patient safety, effective disease management, and optimal use of medicines. It is incumbent upon healthcare systems and professionals to provide information in ways that are easily understood and accessible to all patients, thereby promoting better health outcomes across communities.

The level of trust patients have in healthcare providers significantly influences their relationship with the medical community and impacts their adherence to medical advice. When trust is present, patients are more likely to follow prescribed treatment plans, take medications as directed, and return for follow-up care. According to numerous surveys conducted by research companies in many countries around the world, the level of trust in pharmacists and doctors is almost the same - from 60 to 80% of respondents named these healthcare professionals as the first among those who are trusted to receive health information [18-19].

In some cases, however, a lack of trust in the healthcare system or in individual providers can lead patients to disregard medical advice, which could potentially compromise their health and well-being. This mistrust may not be baseless; it can stem from personal past negative experiences where the patient felt misunderstood, misdiagnosed, or not adequately cared for during critical moments.

Moreover, cultural beliefs play an influential role in how individuals perceive and interact with the healthcare system. For some communities, traditional medicine or home remedies form the foundation of healing practices, and modern medical interventions might be met with skepticism or resistance.

Perceived inefficiencies within the healthcare system can also erode trust. Long wait times, rushed appointments, or instances where there seems to be a one-size-fits-all approach to care, can leave patients feeling undervalued and inclined to question the reliability of the medical advice given.

Building trust requires time, clear communication, empathy, and a commitment to understanding the unique perspectives and experiences each patient brings to their healthcare encounters. Addressing these concerns is crucial for strengthening the patient-provider relationship and ensuring that patients feel confident in the healthcare they receive.

Patients' attitudes toward medicines play a crucial role in health outcomes as these viewpoints influence their behaviors regarding medication usage. These attitudes encompass various beliefs about the perceived efficacy and safety of pharmaceutical products, which can range from highly trusting to skeptical or fearful. When patients harbor positive attitudes towards OTC medicines, often rooted in the belief that they are inherently safe due to their wide availability, this can embolden individuals to self-medicate. Such a perspective might stem from past experiences with successful treatments or the notion that non-prescription drugs are less potent and therefore less risky.

However, this trust in OTC medications can sometimes lead to overuse or misuse. The assumption that it is acceptable to use these substances without professional guidance might cause some patients to bypass consultations with healthcare providers. As a result, they may not fully understand the appropriate dosages, potential interactions with other medications, or the risks of prolonged use.

Conversely, there are patients who approach medications, particularly those that are prescription-based, with trepidation. Fears concerning the potential for side effects or becoming dependent on certain medicines can drive such individuals to avoid taking necessary medications altogether. This avoidance can have significant ramifications, especially when dealing with chronic conditions that require consistent pharmacological management. Moreover, even when patients do initiate a prescribed regimen, lingering concerns may lead to poor adherence; for example, they might take lower doses than advised or skip doses in an attempt to mitigate perceived risks.

Ensuring proper medication adherence is a complex task that healthcare professionals face. Thorough patient education and open communication between

healthcare providers and patients are instrumental in aligning patient attitudes with best practices in medication use. By addressing misconceptions and fears, and reinforcing the importance of following prescribed regimens, it is possible to improve treatment outcomes and foster a more informed and health-conscious patient population.

## 2.2. Study of self-medication practices and their implications

Self-medication, which refers to the practice of individuals using medication without the guidance or supervision of healthcare professionals, has become increasingly common across various societies. This behavior is far from being a safe or recommended approach to health management; it represents a significant component of self-care that can lead to the irrational use of medicines.

Several factors play a crucial role in influencing this practice. Accessibility to medications is one such factor. In many regions, OTC medicines are readily available, and this ease of access can encourage individuals to bypass medical consultation. The individual might perceive it as a quick fix to minor health issues, overlooking the potential risks associated with improper use.

Another driving force behind self-medication is the aspect of cost. Professional healthcare services can be expensive, and not everyone has insurance coverage or the financial means to afford them. Consequently, some individuals may resort to self-medicating as an economical alternative to seeking professional help. However, the costs saved initially may pale in comparison to the expenses that could accrue from possible complications due to incorrect self-medication.

Additionally, cultural attitudes towards self-care significantly impact the propensity for self-medication. In some cultures, there is a strong tradition of home remedies and self-treatment, which can persist even when modern medical services are available. Sometimes, the cultural perception is that self-medication is a testament to one's independence and knowledge about one's own health. Yet, without the right information and awareness, this seemingly positive attribute can lead to dangerous health outcomes.

Overall, while self-medication might offer immediate relief or appear as a cost-effective solution, it is fraught with potential risks. These include incorrect self-diagnosis, drug interactions, prolonged suffering, resistance to antibiotics, and a host of other health issues. Education on responsible medication usage and improving access to affordable healthcare are essential steps towards addressing the challenges posed by the widespread practice of self-medication.

In today's society, the remarkably easy accessibility of OTC medicines stands out as a pivotal element in the growing trend of self-medication practices among individuals. Globally, numerous countries offer a wide spectrum of medicines that can be easily obtained without the need for a doctor's prescription. This includes, but is not limited to, an array of painkillers, various types of cough syrups, and even antibiotics, which are usually regulated substances.

The availability of such medicines at local pharmacies, supermarkets, online medstores and sometimes even convenience stores, allows people to quickly address their health issues without any medical consultation. However, this seemingly beneficial accessibility has its drawbacks; it can inadvertently encourage misuse and overuse. Individuals might resort to these OTC drugs to alleviate symptoms or treat conditions that they have self-diagnosed, which may not always align with medically recommended treatments. It has been determined that among the total global consumption of OTC medicines, the share of those purchased without consulting specialists (pharmacists) is almost 40%. Pharmacies account for 66% of OTC medicines purchased (fig. 2.6).

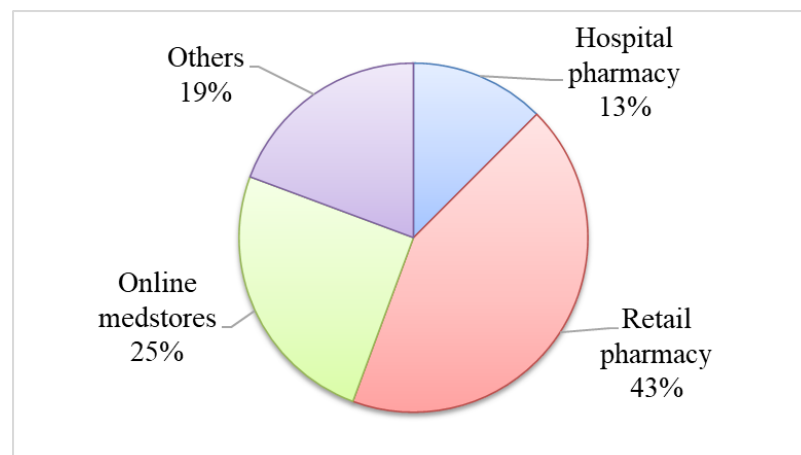


Fig. 2.6. Share of OTC sales by distribution channels in 2022

Such misuse often arises from a lack of awareness about the potential risks associated with improper medication use. For instance, using antibiotics without proper diagnosis can lead to antibiotic resistance, a serious global health challenge. Likewise, frequent consumption of painkillers without understanding their effects can result in long-term health consequences, including liver damage or dependency [9, 14, 21, 24].

This ease of access necessitates greater education on the appropriate use of OTC medications, emphasizing the importance of consulting healthcare professionals before resorting to self-treatment. While the convenience of obtaining medicine without a prescription is undeniable, it is vital to be aware of the implications and ensure that such practices do not compromise one's health through inadvertent misuse.

Several *economic factors* significantly influence the tendency towards self-medication across different societies. In nations where the average income levels are not particularly high, and economic struggles are customary, the exorbitant costs associated with healthcare services and medications can be prohibitive for many. This financial pressure compels individuals in low- and middle-income countries to resort to self-medication as a necessary measure to save on medical expenses.

It's not just in these nations that economic calculations play a role. Even in affluent, high-income countries where advanced healthcare systems exist, people may still choose to self-medicate. One of the primary reasons is the perceived convenience it offers — by self-medicating, individuals avoid the time commitment and financial outlay required for consultations with healthcare professionals. However, this practice of bypassing professional medical advice is fraught with risks.

One major risk that arises from such practices is the usage of medications that are not suited for the individual's specific health condition or are of inferior quality. Without the guidance of a healthcare provider, patients may not fully understand the implications of the drugs they are taking, which can lead to adverse reactions.

Moreover, the likelihood of dangerous drug interactions increases when medications are chosen without a comprehensive understanding of their effects and contraindications. These interactions can sometimes even lead to life-threatening situations. Thus, while the economic logic behind self-medication might appear sound at first glance, its potential consequences can be far more costly in terms of both health outcomes and subsequent medical expenses.

The realm of *pharmaceutical advertising* has emerged as a powerful force in shaping the decisions and behaviors of consumers regarding their health. The propensity for these advertisements to promote self-medication is particularly noteworthy. Direct-to-consumer advertising, which is especially prevalent in countries like the United States, plays a pivotal role in this dynamic. By reaching out directly to the public, these advertisements encourage individuals to actively seek out specific medications for their symptoms, often without the traditional step of consulting a healthcare provider first.

This direct form of advertising can be seen across various media platforms, including television commercials, internet ads, print media, and even billboards. It's not uncommon for these adverts to portray an idyllic picture of relief and wellness achievable through the use of the advertised medication. However, this emphasis on the benefits of the medication, with compelling personal testimonials and uplifting narratives, may lead to a skewed perception of the drug's efficacy. Moreover, potential risks and side effects are typically downplayed or presented in a less prominent manner during such advertising spots. This can contribute to a phenomenon known as "irrational use," where medications are utilized without proper understanding or respect for the possible consequences of unsupervised consumption.

This issue is compounded by the fact that the advertisements often use emotional appeal and persuasive language to establish a sense of urgency or immediate need for the medication in question. The implication that quick relief is readily accessible can overshadow the importance of seeking professional medical advice and adhering to guidelines for responsible medication use.



Based on the analysis of statistical data on promotion costs in the key pharmaceutical markets of the world (in terms of medicine consumption, production and export), it was determined that in recent years, OTC advertising costs have been growing by an average of 8% annually (fig. 2.7). Of course, this trend is also reflected in changes in the volume of consumption of these medicines by the population.

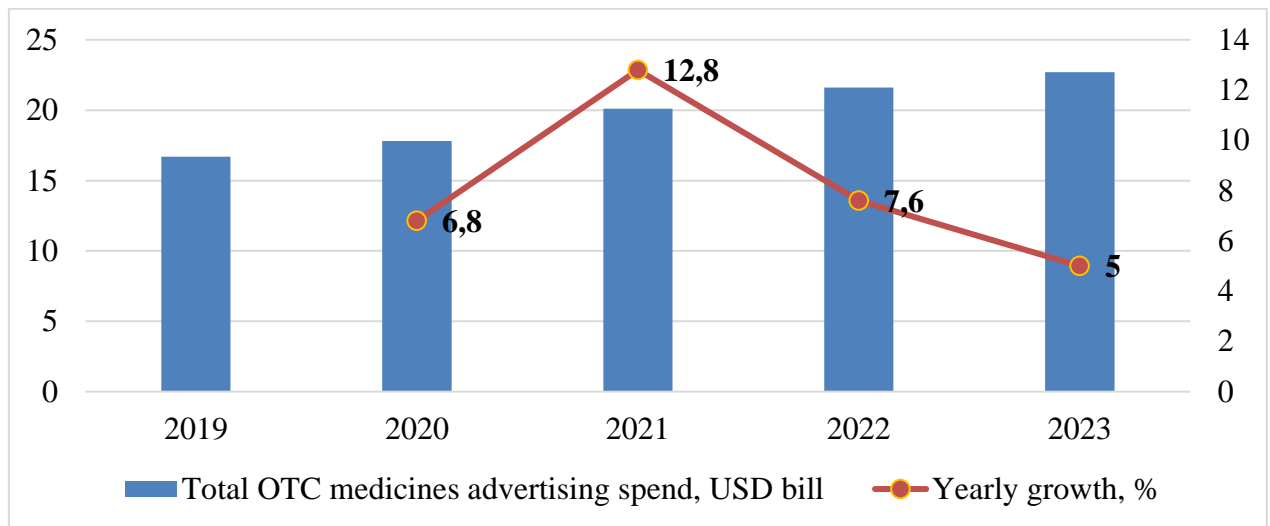


Fig. 2.7. Dynamics of OTC advertising expenditures

In summary, the influence of pharmaceutical advertising is far-reaching and multifaceted, promoting a culture of self-medication that prioritizes convenience and speed over informed decision-making and professional oversight. The implications for public health are significant, making it a topic of ongoing debate and concern among healthcare professionals, policy makers, and consumer advocacy groups.

*Cultural norms and practices* significantly shape how individuals approach self-medication. In societies where there is a strong emphasis on self-reliance and the ability to care for one's own needs, people are more inclined towards taking charge of their health concerns without the immediate intervention of healthcare professionals. Such cultural attitudes encourage the practice of handling minor ailments at home using various methods.

This independent approach often includes resorting to home remedies, which may have been passed down through generations. These remedies typically comprise natural ingredients and household items that are believed to possess healing

properties. In addition, traditional medicines, which form an integral part of many cultures' historical medicinal practices, are frequently utilized. These could include herbal preparations, acupuncture, and other regional healing practices that have been trusted for centuries.

Furthermore, the accessibility and availability of OTC medicines contribute to self-medication behaviors within these cultural contexts. Often, individuals feel confident in their ability to choose the right medication based on past experience or communal knowledge, thereby bypassing professional medical advice.

While this approach to self-care and medication can demonstrate autonomy and resourcefulness, it also carries the risk of misuse and potentially hazardous outcomes. Without professional guidance, determining the correct dosage and recognizing drug interactions becomes a matter of guesswork, which can lead to inappropriate use of medications. Moreover, the line between safe and effective dosages and dangerous levels of consumption can be dangerously thin. Therefore, while some cultural practices concerning self-medication can indeed be salutary and harmless, others necessitate a cautious and informed approach to ensure safety and well-being.

## Conclusions to chapter 2

The irrational use of medicines represents a multifaceted challenge intricately linked to a web of socio-cultural and behavioural elements. The cultural fabric of a society intimately weaves together beliefs and practices that dictate the perception and consumption of medicines, frequently resulting in their misuse. Patient knowledge and attitudes play pivotal roles in this complex scenario, as individuals' health literacy levels and their trust in healthcare professionals significantly influence their decisions regarding medicine usage.

Furthermore, self-medication practices emerge out of a blend of factors such as ease of access to drugs, economic considerations, the impact of pharmaceutical advertising, and deep-rooted cultural norms, all of which steer individuals towards

this potentially hazardous behaviour. It's evident that these practices exacerbate the issue at hand, necessitating an organized and strategic response.

To effectively tackle this problem, an inclusive strategy is paramount—one that not only aims at enhancing health literacy among populations but also champions the cause of rational medicine use. This strategy must entail rigorous regulation of pharmaceutical marketing and the availability of OTC medications. Efforts must be channeled towards enlightening individuals about the potential dangers of misusing medicines while reinforcing the importance of adhering to medical advice.

By delving into the socio-cultural and behavioral underpinnings that fuel the irrational use of medicines and devising targeted interventions, we can pave the way for significant improvements in public health. Optimistically, with persistent and collaborative efforts, we hope to mitigate the perils associated with inappropriate medicine consumption, ultimately fostering a healthier, more informed society where medicines are used judiciously and beneficially.

## CHAPTER 3. STUDY OF THE MODERN ROLE OF PHARMACISTS IN THE RATIONAL USE OF MEDICINES

The profession of pharmacy has experienced a profound transformation, evolving well beyond the boundaries of traditional dispensing activities. Today's pharmacists have emerged as key healthcare professionals who play a critical role in patient care and medication management. This evolution aligns with the growing intricacies of modern healthcare systems and the pressing necessity for specialized skills in managing increasingly complex medication regimens. Moreover, the global healthcare community has come to recognize the depth of knowledge and expertise that pharmacists bring to the table, particularly when it comes to ensuring the rational use of medicines — a concept that encompasses not only the appropriateness of prescription decisions but also the optimization of medicine therapy outcomes [1, 13, 29].

In light of these developments, it is important to study advanced functions of pharmacists in contemporary healthcare settings, focusing specifically on their contribution to promoting the rational use of medicines. To provide a thorough understanding of the current landscape, we will investigate various international experiences, scrutinizing how different regions and cultures regulate medicine consumption. Our analysis will shed light on best practices and identify potential areas where pharmacists' input has been most impactful.

Furthermore, by offering strategic recommendations grounded in empirical evidence and expert opinions, we aspire to bolster pharmacists' capabilities and influence in ensuring that medication use is as safe, effective, and economical as possible.

### 3.1. The evolving role of pharmacists in healthcare systems

Historically, the role of pharmacists has seen a significant transformation. Initially, pharmacists were predominantly recognized for their skills in the compounding and dispensing of medications as prescribed by licensed physicians.

Their duties focused mainly on the meticulous preparation and allocation of pharmaceuticals. Indeed, they served as the last checkpoint between the prescription by a healthcare provider and the patient's receipt of medication, ensuring accuracy and safety in dosages.

As time progressed and the healthcare landscape evolved, the pharmaceutical industry witnessed an exponential growth in both the range and complexity of medications. This development necessitated a corresponding expansion in the scope of knowledge and responsibilities shouldered by pharmacists. No longer were they solely the custodians of medicine distribution; they began to occupy a more integral position within the healthcare delivery system.

The latter half of the 20th century was particularly instrumental in redefining the pharmacist's role. The emergence of the "clinical pharmacy" movement significantly altered the profession's trajectory. Clinical pharmacy brought forth an ideology that placed greater emphasis on the pharmacist's involvement in direct patient care and medication therapy management. This paradigm shift was characterized by a heightened commitment to ensuring not only the safety but also the efficacy and suitability of medication usage.

Pharmacists embraced broader patient care responsibilities and started collaborating more closely with physicians, nurses, and other healthcare practitioners. Their expertise became pivotal in developing comprehensive treatment plans, monitoring patient responses to medications, and making recommendations for therapeutic adjustments when necessary. This collaborative approach aimed to optimize therapeutic outcomes and improve the overall quality of patient care [6].

Clinical pharmacy practice encompasses a vital role within the healthcare system, wherein pharmacists are intricately involved in direct patient care activities. These highly trained professionals utilize their extensive knowledge of medications and their effects to ensure that patients receive the most appropriate and effective drug therapies. Their expertise is crucial in optimizing medication use, which not only enhances therapeutic outcomes but also minimizes potential adverse reactions or drug interactions.

The work of clinical pharmacists is multifaceted. In hospital settings, they are often found collaborating closely with physicians, nurses, and other healthcare providers to formulate medication plans that support an individual patient's complex needs. They play an indispensable role in monitoring patients' responses to drugs and adjusting prescriptions as necessary to achieve desired outcomes.

In ambulatory care clinics, clinical pharmacists engage in the management of chronic diseases such as diabetes, hypertension, and hyperlipidemia. They provide education on medication adherence, conduct medication therapy management sessions, and participate in the development of treatment protocols. By doing so, they help patients manage their conditions more effectively, enhancing their quality of life and reducing the need for costly medical interventions.

Community pharmacists who embrace the clinical aspect of their profession transform the traditional pharmacy into a hub of health services. They provide immunizations, conduct health screenings, and offer counseling on over-the-counter medications and lifestyle modifications. Moreover, they serve as accessible healthcare providers, offering advice and assisting with medication-related inquiries.

Overall, clinical pharmacists are essential members of the healthcare team, dedicated to ensuring safe and effective medication use and significantly contributing to the betterment of patient outcomes across various healthcare settings (fig. 3.1).

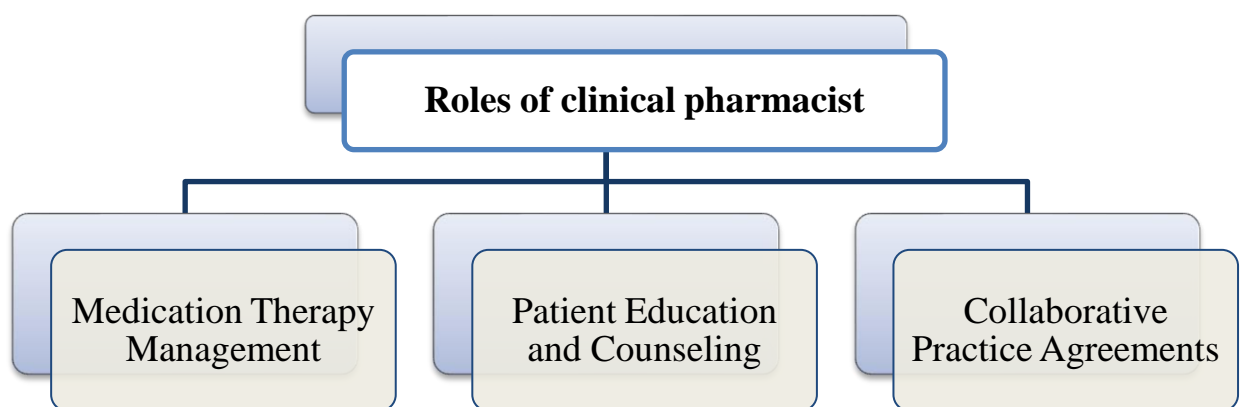


Fig. 3.1. The role of clinical pharmacists in the rational use of medicines

*Medication Therapy Management (MTM)*. The role of clinical pharmacists is pivotal in the realm of healthcare, especially when it comes to ensuring that patients receive the utmost benefit from their medication regimens. To this end, clinical pharmacists meticulously conduct comprehensive reviews of all the medications a patient may be taking. This process is essential in identifying and resolving a range of potential issues that can arise with medication therapies.

For instance, one common concern that clinical pharmacists address is the occurrence of drug interactions. When a patient is taking multiple medications, there's a risk that these substances can interact with one another in ways that diminish their effectiveness or even cause harmful side effects. These interactions can sometimes be complex and require an expert eye to detect and manage effectively.

Another aspect that clinical pharmacists look into is the identification of potential side effects. All drugs have the capacity to produce unintended consequences alongside their intended therapeutic effects. Clinical pharmacists assess these side effects carefully, balancing the benefits of the medication against any negative impacts on the patient's quality of life or health status.

Adherence problems also fall under the purview of MTM services. Patients sometimes face challenges in sticking to their prescribed medication regimens, whether due to the complexity of the dosing schedule, cost issues, or simply forgetting to take their pills. Clinical pharmacists work closely with patients to find practical solutions to these adherence problems, which is crucial since non-adherence can lead to treatment failure or other serious complications.

Through MTM services, clinical pharmacists collaborate not only with patients but also with other healthcare providers. They help to develop and fine-tune individualized treatment plans that are tailored to each patient's unique needs and circumstances. By doing so, they ensure that the medication therapy is optimized for efficacy and safety, leading to better health outcomes.

In summary, Medication Therapy Management is a critical service provided by clinical pharmacists that encompasses a multifaceted approach to patient care,

focusing on the personalized review and management of medications to enhance therapeutic success and patient well-being.

*Patient Education and Counseling.* The role of pharmacists has evolved significantly in recent years, transitioning from a focus on dispensing medications to also encompassing patient education and counseling. This transition recognizes the importance of ensuring that patients not only receive their prescriptions but also understand how to use them correctly to manage their health.

Pharmacists are uniquely positioned to provide individualized information to patients, fostering effective communication that is crucial for promoting the rational and safe use of medicine. By engaging in thoughtful dialogues with patients, pharmacists help to bridge the information gap that can often lead to medication errors or misuse. They play an instrumental role in:

- **Medication Instructions:** It's not enough to hand over a prescription; pharmacists must ensure that patients have a comprehensive understanding of how to take their medications properly. This includes detailed explanations on the correct dosage, the ideal timing for each dose, and any specific instructions that need to be followed—for instance, whether a medication should be taken with food to enhance absorption or on an empty stomach to prevent possible food-drug interactions.
- **Side Effects and Interactions:** Patients must be made aware of potential side effects associated with their medications, as well as any interactions that might occur when different drugs are taken concurrently or when mixed with certain foods. Pharmacists provide essential guidance on how to monitor for side effects and what precautions can be taken to minimize them. Equally important is the advice they offer on how to handle these situations should they arise, ensuring that patients feel prepared and confident in managing their health.
- **Adherence Importance:** One of the most crucial aspects of patient counseling is impressing upon individuals the importance of sticking to their prescribed treatment plans. Pharmacists are advocates for adherence,



explaining how consistency in taking medications as directed is vital for achieving desired therapeutic outcomes and preventing health complications. By reinforcing the significance of adherence and offering support systems such as medication reminders or organizing tools, pharmacists contribute significantly to improving patient health outcomes.

By prioritizing patient education and counseling, pharmacists enhance the overall healthcare experience and ensure that patients are equipped with the knowledge they need to make informed decisions about their treatment options. This level of engagement promotes the effective and rational use of medicines, which is paramount in the pursuit of optimal health and well-being.

*Collaborative Practice Agreements (CPAs).* In a multitude of geographic regions, the healthcare landscape acknowledges the pivotal role of pharmacists by allowing them to operate under Collaborative Practice Agreements. These CPAs serve as formal agreements that grant pharmacists the authority to comprehensively manage a patient's medication therapy. Under these agreements, pharmacists are equipped to perform critical functions such as initiating new medications tailored to the patient's unique health requirements, making adjustments to existing medication regimens to optimize therapeutic outcomes, and discontinuing medications when they are no longer necessary or could potentially cause harm. Such proactive measures taken by pharmacists are done so in close collaboration with physicians and other healthcare providers, ensuring a multidisciplinary approach to patient care. The presence and implementation of CPAs significantly enhance the integration of pharmacists into the broader healthcare team, positioning them as indispensable partners in the quest for delivering high-quality, patient-centric healthcare services.

### 3.2. Study of international experience in regulating the consumption of medicines

The regulation of medicine consumption, which is subject to considerable variation across different nations, is deeply influenced by a myriad of factors. These include the state of healthcare infrastructure, the availability of economic resources

to support health programs, and the prevailing cultural attitudes towards the use of medicines within a society. In places where effective regulatory frameworks are firmly established, they serve as the cornerstone for ensuring the rational use of medicines, which is critical not only for patient safety but also for public health at large [8, 12, 18, 19].

For instance, while developed countries may have robust mechanisms in place for monitoring and controlling medicine distribution and use, developing nations might struggle with enforcing such regulations due to limited financial capabilities or less advanced healthcare systems [18].

Moreover, it's important to note that cultural perceptions play a significant role in how medicines are used and can impact regulatory practices. In some cultures, traditional remedies are preferred over prescription drugs, which can lead to a lower demand for regulated pharmaceuticals. Conversely, in societies where there is a high level of trust in modern medicine, there might be a greater acceptance of, and compliance with, pharmaceutical regulations.

A comprehensive regulatory framework for medicine ensures that medications are safe, effective, and manufactured to the highest quality standards. Such a framework typically includes processes for the approval of new drugs, surveillance systems for tracking adverse drug reactions, and policies to prevent counterfeit or low-quality medicines from entering the market.

Understanding these different approaches is vital for global health initiatives aimed at harmonising standards and improving access to essential medicines worldwide. We consider these issues and the different strategies in the next stage of the study, using some country examples.

*United Kingdom.* In the UK, the National Health Service (NHS) provides a structured and comprehensive framework for medicine regulation. Key aspects include:

- NICE Guidelines: The National Institute for Health and Care Excellence (NICE) develops evidence-based guidelines for the use of medications and

treatments. These guidelines inform prescribing practices and ensure consistency in care.

- **Prescription Regulations:** The UK has strict regulations regarding the prescription of medicines. Pharmacists play a crucial role in reviewing prescriptions for appropriateness and providing consultations to ensure proper use.
- **Pharmaceutical Services Negotiating Committee (PSNC):** The PSNC represents community pharmacies and negotiates with the NHS on matters related to service provision, ensuring that pharmacists are integral to the healthcare system [37].

*Canada.* Canada's healthcare system emphasizes the role of pharmacists in medication management through various regulatory and policy measures:

- **Provincial Regulations:** Each province has its regulatory body for pharmacists, setting standards for practice and ensuring compliance with national guidelines.
- **Pharmacist Prescribing Rights:** In some provinces, pharmacists have the authority to prescribe certain medications, manage chronic diseases, and administer vaccines. This expanded role enhances their contribution to rational medicine use.
- **Pharmacy Practice Models:** Canada has implemented innovative pharmacy practice models, such as the "Pharmacy Care Program," which integrates pharmacists into primary care teams to manage medication therapy and improve patient outcomes [36].

*Australia.* Australia's healthcare system incorporates pharmacists into the regulation of medicine use through a collaborative and multidisciplinary approach:

- **Pharmaceutical Benefits Scheme (PBS):** The PBS subsidizes the cost of medicines, making them more accessible to the population. Pharmacists ensure that medications are used appropriately within this framework.

- **Quality Use of Medicines (QUM):** The QUM initiative promotes the safe and effective use of medicines through education, guidelines, and support for healthcare professionals and patients.
- **Pharmacist Involvement in Chronic Disease Management:** Pharmacists in Australia are actively involved in managing chronic diseases, conducting medication reviews, and providing patient education as part of multidisciplinary care teams [37].

An analysis of international experience in determining the participation of pharmacists in the implementation of responsible medicine policy has shown that pharmacists play a pivotal role in the execution and success of health policy, particularly those policies that are designed to encourage the responsible use of medications. Their involvement in these processes is indispensable for ensuring that the frameworks established by regulatory bodies are not only adhered to but also effective in achieving the intended outcomes. Below are some of the key contributions made by pharmacists (fig. 3.2).

In sum, the multifaceted contributions of pharmacists to policy implementation highlight the integral part they play in the healthcare ecosystem. Their actions are foundational to promoting safer, more effective, and more rational use of medicines across society.

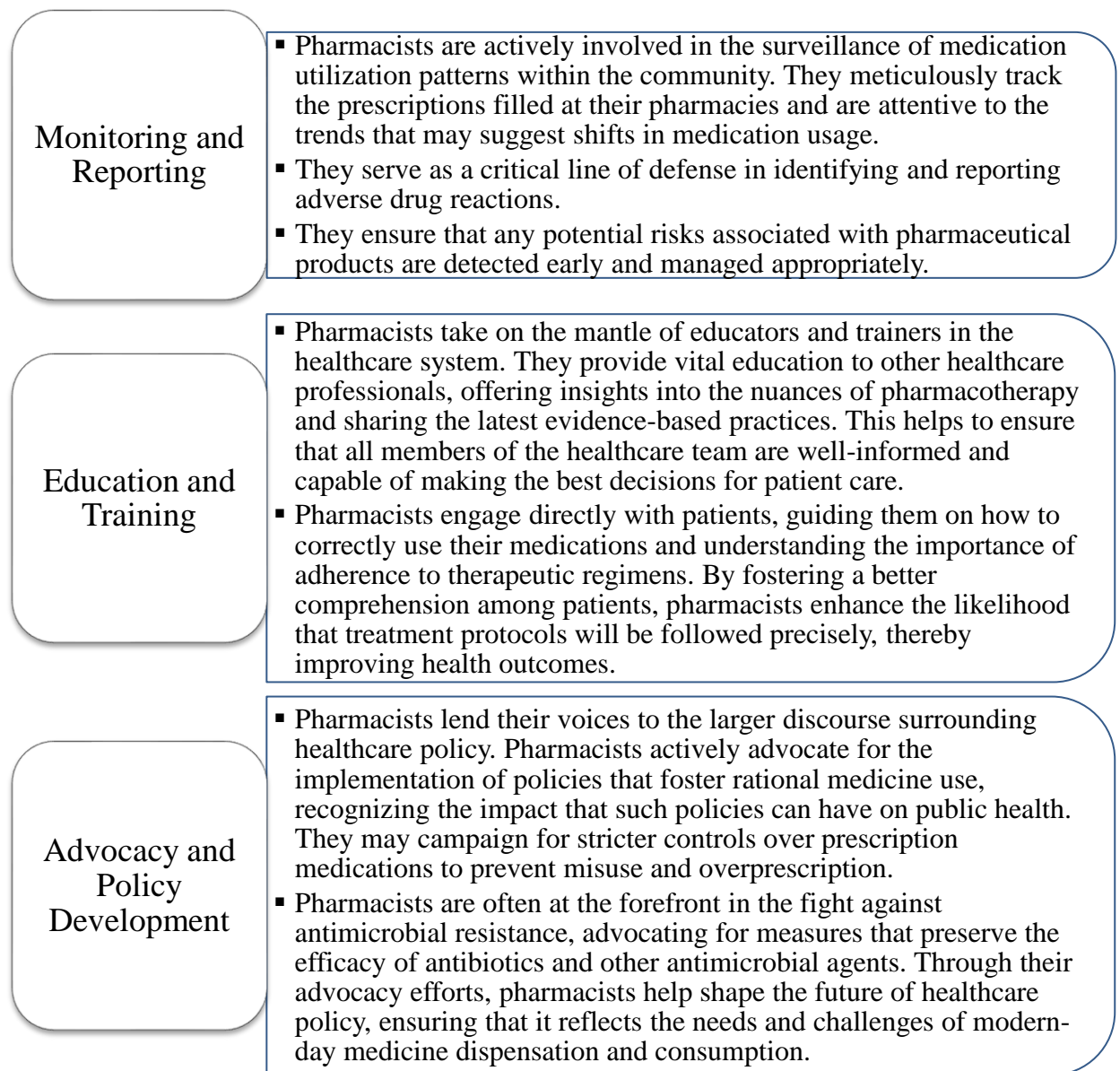


Fig. 3.2. Directions of pharmacists' influence on the rational consumption of medicines by the population

Around the world, various countries have shown exceptional performance in steering the consumption of medicines toward a more controlled and effective practice, with pharmacists rising to play pivotal roles in this movement. Through an examination of case studies, we can glean insight into the effective practices these nations have adopted, the outcomes they've achieved, and the valuable lessons they offer.

*In Sweden*, pharmacists are not merely ancillary to the healthcare system; they form a backbone to its operations, placing a formidable focus on ensuring patient

safety and the rational usage of medicine. Here are some key practices that set Sweden apart:

- **Medication Reviews:** Pharmacists in Sweden take an active approach by conducting thorough medication reviews for patients frequently. This is particularly crucial for elderly individuals and those living with chronic illnesses, aiming to fine-tune their therapeutic regimen and diminish the risks associated with polypharmacy.
- **E-Prescribing:** The nation's state-of-the-art e-prescribing infrastructure stands as a testament to Sweden's commitment to precision and efficacy in medication management. This digital solution significantly cuts down on prescription mistakes and bolster adherence by streamlining the entire process.
- **Collaborative Care:** The paradigm of care in Sweden is inherently collaborative. Pharmacists routinely engage in teamwork with doctors, nurses, and other healthcare professionals. Their collective efforts are directed at adeptly managing intricate medication schedules and guaranteeing a seamlessness in patient care that is both commendable and worthy of emulation [28].

*Japan.* With a distinct approach to healthcare, Japan has rolled out several pioneering initiatives designed to foster the judicious use of medicines, positioning pharmacists at the heart of these transformative measures:

- **Integrated Community Care:** Taking a holistic viewpoint, Japanese pharmacists function as integral elements of comprehensive community care teams. They deliver expert medication management services and patient education, thus ensuring that continuity of care persists beyond the confines of medical facilities.
- **Drug Utilization Reviews:** This is another sphere where Japanese pharmacists excel. By executing meticulous drug utilization reviews, they keep a watchful eye on prescribing trends, effectively pinpointing opportunities for enhancing practices and optimizing patient outcomes.

- **Public Awareness Campaigns:** Recognizing the power of public knowledge, Japan conducts extensive national campaigns that help enlighten the populace about the critical importance of correct medication usage and illuminate the dangers inherent in self-medication. Pharmacists are not just contributors but are often at the forefront of these community-oriented health education drives [32].

### 3.3. Developing recommendations to strengthen the influence of pharmacists on the rational use of medicines.

To significantly bolster the impact that pharmacists have on the rational use of medicines, it becomes imperative to concentrate efforts on enhancing their *education and training*. This focused approach is pivotal in ensuring that pharmacists are well-equipped with the latest knowledge, skills, and ethical grounding necessary to guide patients in their journey towards optimal health outcomes [6].

Education in the field of pharmacy should not only be comprehensive but also continuously updated to reflect the evolving landscape of healthcare and pharmaceutical sciences. Such education must encompass a broad spectrum of subjects ranging from the foundational understanding of drug chemistry and pharmacology to the practical nuances of patient care and counseling.

Training, on the other hand, should provide immersive experiences that allow future pharmacists to hone their abilities in real-world scenarios. This includes internships, residencies, and hands-on practice under the supervision of experienced professionals who can instill best practices and demonstrate the importance of a patient-centric approach in every aspect of pharmaceutical care [6, 9, 13].

By prioritizing education and training, we lay down a robust foundation for pharmacists to not only dispense medications but also become integral members of the healthcare team dedicated to promoting the rational use of medicines. This will undoubtedly lead to better healthcare services, improved patient safety, and overall, a more efficient health system. Key recommendations include:

- **Advanced Education Programs:** The development and integration of advanced education programs in areas such as clinical pharmacy, pharmacotherapy, and public health represent a core strategy aimed at preparing pharmacists for the complexities of contemporary healthcare. By equipping pharmacists with an advanced skill set, we are not only enhancing their individual competencies but also addressing the evolving demands of patient care. These programs are meticulously designed to provide in-depth knowledge and practical experiences that will enable pharmacists to assume expanded roles in the healthcare system, such as participating in collaborative care teams, managing chronic diseases, optimizing medication therapy outcomes, and contributing to public health initiatives. Overall, these advanced education endeavors demonstrate a commitment to elevating the profession and ensuring that pharmacists are well-prepared to navigate and contribute to the multifaceted landscape of modern healthcare delivery.
- **Continuing Professional Development (CPD):** The introduction of mandatory CPD programs can play a pivotal role in assuring that pharmacists remain at the forefront of their profession. By actively engaging in CPD, they can stay abreast with the latest advancements in medicine, including emerging pharmaceutical treatments and cutting-edge research. Additionally, such programs can facilitate a thorough understanding of updated guidelines and best practices, enabling pharmacists to deliver healthcare services of the highest quality to patients. Consistently participating in CPD activities not only enhances professional knowledge and skills but also contributes significantly to career progression and satisfaction. Therefore, the systematic implementation of these initiatives is instrumental in fostering a culture of lifelong learning within the pharmacy profession that can ultimately lead to improved patient outcomes.



- **Specialization and Certification:** By actively encouraging pharmacists to pursue further specialization and certification in targeted areas of healthcare, such as geriatrics, oncology, and infectious diseases, we can significantly enhance the level of care provided to patients with specific health concerns. This not only ensures that pharmacists are well-equipped with the necessary knowledge and skills tailored to these areas but also helps in elevating the quality of healthcare services overall. Specializations create professionals who are adept at addressing the intricacies and unique challenges associated with different patient demographics and disease states, thus contributing to a more efficient and effective healthcare system.

*The integration of pharmacists into healthcare teams* plays a pivotal role in promoting the rational use of medicine. It is essential to recognize that pharmacists bring a wealth of knowledge regarding drug interactions, side effects, and medication management which is critical for ensuring patient safety and efficacy of treatment regimens. By enhancing their presence and active participation within healthcare teams, pharmacists can provide valuable insights into pharmaceutical care, leading to optimized therapeutic outcomes.

Their expertise becomes particularly important in the context of complex cases where multiple medications may be involved, necessitating careful coordination and monitoring to prevent adverse drug reactions and to ensure optimal dosing schedules. Moreover, pharmacists are well-positioned to educate patients about their medications, empowering them to make informed decisions and adhere to their prescribed treatment plans.

In addition to direct patient care, pharmacists contribute to public health initiatives by participating in drug utilization reviews and formulary management, thus supporting evidence-based practice and cost-effective healthcare provision. They also serve as an important resource for other healthcare professionals, offering guidance on the selection and administration of medicines.

As our healthcare systems continue to evolve, there is a growing need for collaborative multidisciplinary approaches to patient care. Pharmacists, with their

specialized knowledge and skills, should be integral members of these teams. Enhancing the integration of pharmacists into healthcare teams is not only crucial for promoting the rational use of medicine but is also fundamental to improving overall healthcare quality and patient outcomes. Strategies include:

- **Collaborative Practice Agreements (CPAs):** Currently underutilized yet highly beneficial in the healthcare industry, Collaborative Practice Agreements stand as a substantial step forward in expanding the scope of pharmacy practice. By significantly extending the use of CPAs, it's possible to empower pharmacists with greater authority and autonomy within their profession. This enables them to manage medication therapy more effectively, which encompasses prescribing medications for patients, fine-tuning dosage requirements, and even discontinuing medications when necessary. Such tasks are tailored to be carried out in close collaboration with physicians, ensuring a multidisciplinary approach towards patient care that leverages the specialized skills of both pharmacists and doctors. This collaborative model not only optimizes therapeutic outcomes for patients but also enhances the efficiency of the healthcare system by reducing the burden on physicians and facilitating timely access to care.
- **Interdisciplinary Team Meetings:** The inclusion of pharmacists in regular interdisciplinary team meetings is a key strategy for enhancing patient care. These meetings serve as a platform where healthcare professionals from different specialties come together to discuss and align on various aspects of patient care plans, including the critical role of medication management and the setting of therapeutic goals. By involving pharmacists, the team benefits from their specialized knowledge on drug therapy, potential interactions, and the best use of medications to optimize patient outcomes. This collaborative approach not only fosters a comprehensive understanding of the patient's needs but also supports the identification of any issues that could impact the efficacy of the treatment regimen, facilitating timely interventions and adjustments.

- **Shared Decision-Making:** This approach emphasizes the importance of promoting shared decision-making models in which pharmacists are not merely onlookers but actively participate in patient consultations. They join healthcare teams, bringing their specialized knowledge and expertise to the forefront, ensuring that medication therapy is optimized for each unique patient situation. By doing so, pharmacists become integral contributors to the development of tailored treatment plans that are aligned closely with patient preferences, needs, and values. This collaborative framework champions a more holistic and patient-centered healthcare experience, which can lead to improved outcomes and greater patient satisfaction.

*Policy and Advocacy.* Strengthening the influence of pharmacists on rational medicine use is a multifaceted goal that necessitates the implementation of supportive policies and robust advocacy efforts. Pharmacists, who serve as crucial healthcare providers, have a significant responsibility to ensure that patients receive medications that are appropriate for their medical conditions and that these medicines are used correctly. Achieving this requires a broad approach that encompasses education, collaboration, and legislative support.

To foster an environment where pharmacists can effectively contribute to the promotion of rational medicine use, there must be well-defined policies in place. These policies should encourage interdisciplinary collaboration allowing pharmacists to work closely with doctors, nurses, and other healthcare professionals to optimize patient care. By setting standards and guidelines for prescribing practices and medication management, pharmacists can be empowered to perform comprehensive medication reviews and provide essential counseling to patients.

Moreover, continuous professional development is key for pharmacists to stay current with emerging drug therapies and best practices in medication management. Policies that mandate ongoing education and provide resources for such learning will bolster pharmacists' competence and confidence in influencing rational medicine use.

On another front, advocacy efforts are fundamental to bring about necessary changes. Professional organizations and stakeholders within the pharmacy community must lobby for greater recognition of the pharmacist's role in promoting safe and effective medication use. Advocacy campaigns can also raise public awareness about the importance of following pharmacists' guidance and can cultivate trust in their expertise.

In sum, by enacting supportive policies that underscore the integral role of pharmacists and by engaging in persistent advocacy to highlight the importance of their contributions to healthcare, we can greatly enhance the positive impact pharmacists have on ensuring rational medicine use. Through these concerted efforts, pharmacists can be better positioned to help manage medication therapies effectively, ultimately leading to improved patient outcomes and optimized healthcare delivery systems. Recommendations include:

- **Expanding Scope of Practice:** Taking a proactive stance in championing the broadening of pharmacists' roles within the healthcare system. The advocacy focuses on empowering pharmacists by granting them greater prescribing rights, which would enable them to directly prescribe certain medications under specified circumstances. This expanded role is aimed at optimizing medication management, whereby pharmacists could oversee and adjust medication regimens for better patient outcomes. Furthermore, the push includes incorporating preventive care services as a standard part of the pharmacist's responsibilities, ranging from administering vaccines to conducting wellness screenings. Such enhancements not only leverage the extensive drug knowledge pharmacists possess but also increase accessibility to healthcare services for patients, potentially unburdening other areas of the healthcare system.
- **Policy Support for Pharmacist-Led Programs:** The active development and meticulous funding of pharmacist-led programs can significantly enhance the healthcare landscape. Such initiatives as medication therapy management (MTM), which involves pharmacists conducting

comprehensive reviews of patients' medications to ensure optimal therapeutic outcomes, demand strong policy support. Additionally, chronic disease management programs are vital as they empower pharmacists to play a crucial role in monitoring and managing long-term health conditions, ultimately improving patient quality of life. Moreover, expanding vaccination services under the purview of pharmacists not only increases vaccination rates but also improves access to preventive care, especially in underserved communities. Each of these programs requires robust funding and policy backing to ensure that pharmacists are fully equipped to deliver these valuable services and that patients receive the best possible care.

- **Advocacy for Rational Medicine Use:** Actively involving pharmacists in comprehensive advocacy campaigns and efforts aimed at promoting the adoption and development of well-informed policies that underscore the importance of rational medicine use. This includes important healthcare interventions like robust antimicrobial stewardship programs, which are critical for battling the increasing threat of antibiotic resistance, and meticulously designed prescription monitoring initiatives, which help to prevent the misuse and overuse of prescription medications. By fostering a strong advocacy role, pharmacists can become pivotal agents of change, influencing policy-making processes and contributing to the creation of a healthcare environment that prioritizes safe, effective, and responsible medication management.

Embracing and utilizing the advancements in *technology and innovation* undoubtedly holds the key to significantly bolstering the role of pharmacists in advocating for and promoting the use of medicine in a rational and judicious manner. When pharmacists are equipped with cutting-edge tools and systems, they gain the ability to provide more accurate and efficient services, which is essential in guiding patients towards making well-informed decisions about their medication.

In this rapidly evolving digital age, pharmacists can leverage electronic health records (EHRs) to keep a detailed and up-to-date history of patients' medication

regimens, including any changes and reactions to prescribed drugs. Such comprehensive records facilitate a holistic overview of a patient's medication journey, enabling pharmacists to detect potentially harmful interactions or contraindications that could compromise patient safety.

Moreover, advanced software programs can assist pharmacists in conducting thorough medication reviews and assessments. These sophisticated tools can analyze data to identify patterns, predict outcomes, and generate alerts for potential issues before they arise. This proactive approach is instrumental in ensuring that medications are used appropriately, efficiently, and only when truly necessary.

The integration of artificial intelligence (AI) into the pharma realm is another groundbreaking development that has the potential to redefine the scope of pharmacy practice. AI-driven technologies can help pharmacists personalize medicine recommendations, taking into account individual patient factors such as genetics, lifestyle, and comorbid conditions. By doing so, pharmacists are better positioned to tailor therapy plans that maximize therapeutic efficacy while minimizing the risk of adverse drug events.

In addition, mobile health applications and online portals offer patients convenient access to information about their medications and enable direct interaction with pharmacists. These digital resources serve as empowering tools for individuals to actively participate in their own health management and remain informed about the correct usage of their prescriptions.

It is clear that by harnessing the power of technology and innovation, pharmacists can transcend traditional boundaries and play an even more crucial role in promoting the rational use of medicine. As stewards of medication therapy management, pharmacists are perfectly poised to lead the charge in optimizing therapeutic outcomes through the judicious and evidence-based use of pharmaceutical interventions. Recommendations include:

- **Electronic Health Records (EHRs):** By seamlessly integrating pharmacists into the Electronic Health Records systems, we enable these healthcare professionals to have real-time access to vital patient information which is

an essential element in their daily work. This integration plays a crucial role, particularly when it comes to conducting thorough and comprehensive medication reviews. Having up-to-the-minute data at their fingertips not only empowers pharmacists to make well-informed decisions regarding medication therapies but also significantly enhances the quality of care provided to patients. Furthermore, such an approach promotes improved coordination of care across various healthcare disciplines and settings, ensuring that all members of a patient's healthcare team are on the same page when it comes to treatment plans and medication management. This collaborative environment fostered by EHRs contributes to better health outcomes and streamlines the healthcare delivery process as a whole.

- **Telepharmacy Services:** The integration of tele pharmacy services is becoming an increasingly important aspect of modern healthcare. By expanding these services, we are able to provide a more comprehensive range of remote consultations, medication management solutions, and patient education opportunities. This is particularly crucial in underserved areas where access to healthcare professionals and facilities may be limited or non-existent. Through the implementation of telepharmacy initiatives, patients who would otherwise have difficulty reaching a physical pharmacy now have the convenience of consulting with pharmacists from the comfort of their own homes. This not only enhances medication adherence but also ensures that individuals receive timely advice on medication usage and potential side effects, thereby reducing the likelihood of adverse drug events. Moreover, remote medication management has proven to be a game-changer for many individuals. It allows for the careful monitoring and adjustment of prescriptions by qualified pharmacists, ensuring that each patient's medication regimen is optimized according to their unique health needs and circumstances. Furthermore, patient education is a vital component of telepharmacy services. Empowering patients with knowledge about their health conditions and the medications they take is

integral to fostering a proactive approach to health and wellbeing. Through virtual platforms, pharmacists can conduct educational sessions, offer resources, and answer questions, which ultimately leads to better health outcomes. The expansion of telepharmacy services underscores the commitment to making healthcare accessible, convenient, and tailored to meet the needs of all patients, regardless of their geographic location. As we continue to adopt and refine these services, we move closer to bridging the healthcare gap in underserved communities and ensuring that everyone has the opportunity to receive quality pharmaceutical care.

- **Decision-Support Systems:** The implementation of advanced decision-support systems offers a significant enhancement to the capabilities of pharmacists, arming them with a robust suite of evidence-based guidelines. These systems are carefully designed to deliver timely and reliable drug interaction alerts, which play a critical role in ensuring patient safety by preventing adverse drug events. Moreover, clinical decision-making tools that are integrated within these systems empower pharmacists to fine-tune medication therapy management, leading to optimized patient outcomes. The utility of such systems goes beyond simple alert generation, as they encompass comprehensive databases that house a wealth of medical knowledge and therapeutic recommendations. Utilizing cutting-edge algorithms, these decision-support platforms can analyse patient-specific data and offer personalized suggestions that align with the latest medical research and clinical practice standards. By doing so, they serve as an indispensable resource for pharmacists, facilitating a higher level of care through informed decision-making processes. In the dynamic landscape of healthcare, where pharmacists are called upon to manage increasingly complex medication regimens, the support provided by these systems is not merely beneficial; it is crucial. They assist in managing the intricate interplay of multiple medications, reducing the risk of harmful interactions, and ensuring the efficacy of each prescribed treatment. As a result,



decision-support systems represent a cornerstone in the modern pharmacy practice, influencing positive clinical outcomes and ushering in a new era of technology-driven healthcare solutions.

Thus, the results of the analysis of data on the consumption of medicines in the world and the approaches used in different countries to strengthen the role of pharmacists in promoting the rational use of medicines allowed us to develop appropriate recommendations (fig. 3.3).

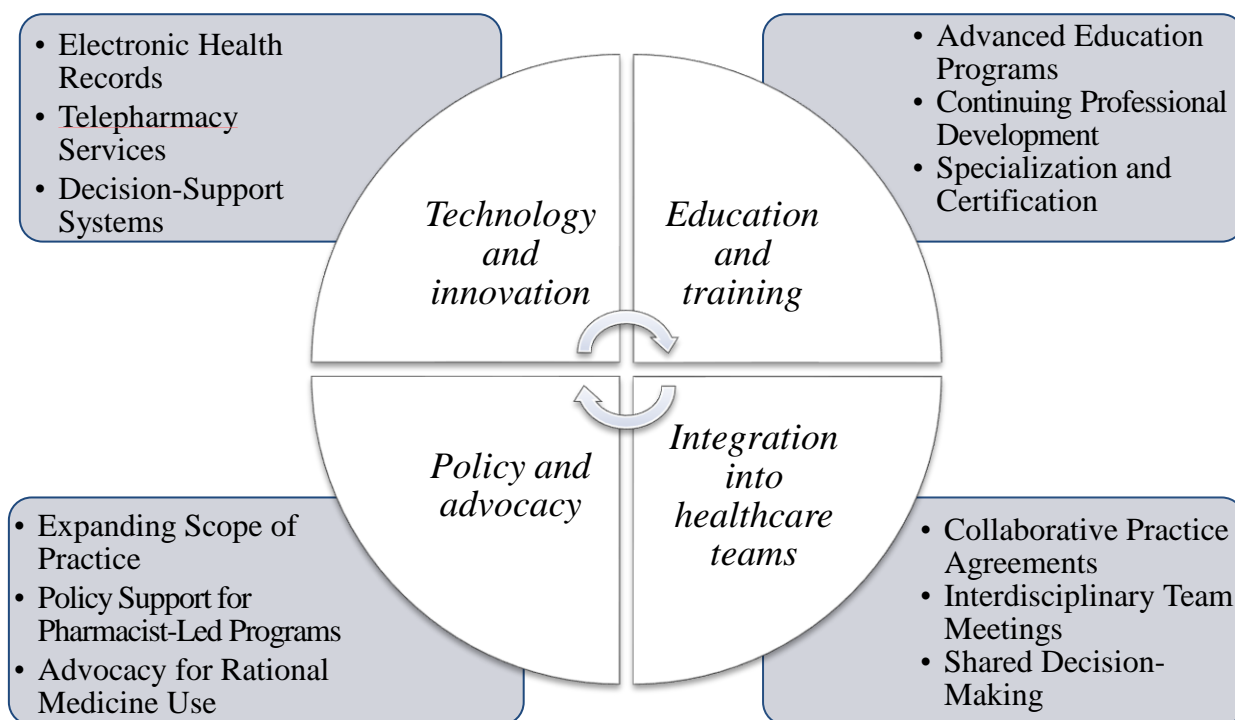


Fig. 3.3. Directions for strengthening the influence of pharmacists on the rational use of medicines.

### Conclusions to chapter 3

In the landscape of modern healthcare, the evolving role of pharmacists is undeniably important and increasingly complex. As we have observed, their transition from focusing predominantly on dispensing medications to becoming indispensable members of the healthcare team underscores their crucial involvement in ensuring patients receive optimal care through proper medication management. Reconnaissance of international experiences along with scrutiny of various

regulatory frameworks substantiates that pharmacists are indeed pivotal in fostering the safe and efficacious application of pharmaceuticals.

To amplify the impact of pharmacists on promoting rational medicine usage, it is imperative that concerted efforts are directed toward providing advanced education and comprehensive training programs. Integration into multidisciplinary healthcare teams needs to be more seamless, and policies that support this integration must be established and strengthened. Furthermore, embracing technological advancements can significantly enhance a pharmacist's capability to engage actively in patient care. Such proactive engagement is expected to lead to better health outcomes and encourage the responsible use of medicinal products.

This study emphasizes the necessity for healthcare systems around the globe to recognize and elevate the status of pharmacists. By doing so, we can confront and overcome the prevalent challenges posed by irrational medicine consumption, thereby guaranteeing that medications are utilized with the utmost propriety, safety, and efficiency. The ultimate goal is to secure the wellbeing of patients everywhere, which remains the hallmark of any robust healthcare system.

## GENERAL CONCLUSIONS

1. The analysis of scientific articles and statistical reports on the issues of irrational consumption of medicines in modern society and its main consequences is carried out. These consequences include the impact on public health, economic, social and ethical.

2. The influence of socio-cultural, behavioural factors, medical knowledge of the population on the irrational use of medicines is analysed. It was found that the national culture of treatment, health knowledge of the population, attitudes and trust in medical and pharmaceutical professionals significantly affect the spread of irrational use of medicines and irresponsible self-medication.

3. It has been determined that, according to the sales of OTC and prescription drugs, the global market is showing annual growth, and forecasts of its development also provide for further growth each year. This leads to the strengthening of measures for the responsible and rational use of medicines at all levels - from the state to the pharmacy level.

4. The analysis of changes in the definition of the role of pharmacists in the healthcare system is carried out.

5. The international experience of regulating the consumption of medicines on the example of the UK, Canada, Australia, Sweden, and Japan was studied.

6. Recommendations are developed to strengthen the influence of pharmacists on the rational use of medicines, taking into account current trends in the development of the pharmaceutical sector and the introduction of information technology.

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