

The Economic Implications of the Relationship between Pharmacy and Psychiatry in Lithuanian 2001-2020: The Problem of Biomedical Access

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Abstract Although previous research in Lithuania has indicated the construction of the diagnosis and treatment of mental illness through historical and cultural chapters, a considerable amount of research has been published in foreign literature that has emphasized the role of the pharmaceutical industry in diagnosing and treating mental illness. In this paper we examine the relationship between the pharmaceutical industry (pharmaceutical and medical device manufacturing companies), healthcare professionals and healthcare organizations in the mental health field. The relationship between the pharmaceutical industry (pharmaceutical and medical devices manufacturing companies) and healthcare professionals can be analyzed in two ways: research-oriented interactions and promotion practices. This relationship is inevitable and can be beneficial, however, conflicts of interest arise, which create a risk of potential harm to users and patients (e.g. as receiving suboptimal or unsuitable treatment, or waste of private and public money). This research analyzes both the relationship between the diagnosis and treatment of mental illness and the pharmaceutical industry market in Lithuania in 2010-2020, as well as the efforts of Lithuanian health care institutions in restructuring the mental health care system. Based on the analysis of the literature and statistical data, we state that after the restoration of independence, the main method of mental health treatment in Lithuania is

still medical treatment, i.e., patients with mental illnesses and behavioral disorders are treated with medication. The main factors determining the still dominant method of medical treatment of mental illness are the following: first of all, the Soviet legacy (the paradigm of medical treatment - the Soviet paradigm); secondly, the restoration of independence in our country has created excellent conditions for Western pharmaceutical companies to develop their activities and increase sales of medicines, including psychotropic drugs; and third, medical treatment is cheaper for the state than complex treatment. This study draws on an analysis of the social origins of mental illness, while reviewing the previously unappreciated role of the interests of pharmaceutical companies in expanding their markets for the treatment of mental illness with drugs.

Keywords Mental Health, Medical Treatment, Pharmaceutical Industry

1. Introduction

After the restoration of independence in Lithuania, psychiatry faced great challenges - it was necessary to abandon the flawed concept of diagnosis and medical

treatment of mental illnesses applied during the Soviet period, and to choose and develop principles for strengthening and protecting public mental health based on scientific knowledge and human values. The development of a system for the diagnosis and treatment of mental illness that combines medical care with psychosocial rehabilitation, and the provision of appropriate medical treatment in combination with psychotherapy, requires the partnership of doctors, researchers and pharmaceutical companies. This collaboration can be very successful and useful in the discovery and development of new drugs and medical devices that improve the health of the individual and society, as well as the diagnosis and treatment of diseases. But at the same time, controversial and non-transparent financial arrangements can emerge between the medical community and the pharmaceutical industry. Such financial connections can affect the objective professional judgment of physicians in diagnosing and prescribing treatment to patients. After the restoration of Lithuania's independence, excellent conditions were created for the establishment and development of the pharmaceutical sector in the country, but at the same time, conflicts of interest between the medical staff and the pharmaceutical industry became more frequent and complex.

Of course, this existing problem in the field of public health cannot be ignored, but the state of mental health in society itself is probably no less important. The most acute mental health problems in society are identified as latent, chronic and involving entire regions or social groups. Some of these problems, such as alcoholism and xenophobia, are recognized by experts as a Soviet legacy, while others - such as insecurity, aggression, suicidal behavior, stress, pessimism - are associated with a turning point, the transition to a market economy, and the loss of social security [1, 2]. And another global problem of the modern world - excessive communication on chat sites and online social networks [3].

Between 2001 and 2020, the number of people with mental and behavioral disorders and new illnesses increased significantly. The absolute number of patients with mental and behavioral disorders and new diseases increased by 36.19% in the long run in 2001-2020, and the number of patients per 1,000 population increased by as much as 69.13%. True, in the short run, compared to 2019, the number of people with mental and behavioral disorders and new illnesses decreased by 5.09 percent in the following 2020. It can be assumed that this decrease is due to the fact that new diseases were not diagnosed in time due to the unavailability of medical services during that period: in February 26, 2020 an emergency situation has been declared in Lithuania due to the spread of coronavirus (COVID-19), and two quarantines have been introduced since then: the first quarantine has been in place from March 16 to June 17, 2020 and a second quarantine from November 7, 2020 to June, 2021. At that time, inpatient and outpatient health care services were

severely curtailed or completely discontinued. However, when assessing morbidity over the long term, that slight decrease over a one-year period is not significant, with a large increase in morbidity observed over the long term. The number of pharmaceutical distribution companies increased about 1.4 times between 2010 and 2020, i. e. by 24.53 percent. In 2020, 156 pharmaceutical companies were operating in the Lithuanian pharmaceutical sector.

In order to understand more clearly why the number of patients with mental and behavioral disorders in Lithuania has increased significantly in the long run (from 2001 to 2020), we will include not only social and cultural but also economic variables in this study. The aim of this study is to find out why the number of mental illnesses in Lithuania has increased so rapidly since 2001, and to determine whether economic factors, such as pharmaceutical companies, may have an impact on the increase in the number of mental illnesses. Through both formal and informal means, the pharmaceutical industry has the opportunity to influence medical research and practice, which means that it could theoretically influence the diagnosis of various mental illnesses, which in turn are treated with drugs provided by the same pharmaceutical companies.

2. Literature Review and Theory

This part provides a brief overview of some perspectives on mental illness. It is shown that position of mental health in the overall health care system has changed during the 20th century by researching the development of the International Classification of Diseases (ICD) [4]. Thus, the interest to get better and more detailed classification for mental health is correlated with a rising standard of living. The concept of health started to include the wealth and prosperity, the possibilities to be active in one's life. Moreover, the goal of the physician was expanded not only to cure the disease, but to prevent the disease and to ensure patient's well-being. The mental health became a priority. In Lithuania, the new ways of interpreting and classifying mental health were developed in 1992 with the acceptance of the International Classification of Diseases, 10th version, which created new environment for psychiatry. Based on three paradigms: the psychiatrization of society, the labeling perspective and the anti-psychiatric school of thought, we investigate the relationship between increasing rates of mental illness and foreign pharmaceutical companies.

1. The psychiatrization of society as discussed in the Beeker et al. [5] research, is an interdisciplinary object investigated by medical and social sciences as well. The term "psychiatrization" was created in 1983 by Dušan Kecmanovic as a reference to labeling a social occurrence of a deviance from the

social norms in the society. In addition, the psychiatrization theory connects the concepts of:

- medicalization (Zola, Conrad, Illich as mentioned in Beeker et al. [5] research: the expanse of the medical control in defining formerly known non-medical problems as medical;
 - biomedicalization: an intensifying process of medicalization due to technological advance;
 - pharmaceuticalization: heightening consumption of drugs;
 - psychologization: defining as a pathology a process that used to be seen as normal.
2. The Labeling Theory of Mental Illness was firstly mentioned by Lemert [6,7] and developed by Scheff [8], Becker [9], Conrad [10], Szasz [11], Scull [12], Laing [13], Goffman [14] and other sociologists. The concept is to describe mental illness as labelling of deviance. Therefor the mental illness could be interpreted as socially constructed or could be seen as a social phenomenon; mental health is an arbitrary condition. Due to the new perspectives on the Labeling Theory, the idea was reformulated and changed into a Modified Labeling Theory [15,16] The authors of the Modified Labeling theory accepted the mental illness is a psychiatric fact, not only social construction, but researched and proved to be the significance negative effects of labeling on mental illness as well [17].
3. The Antipsychiatric model was developed at the similar time as the Labeling Theory of Mental Illness. It was used by Conrad et al. [18], Szasz [11,19], Laing [13,20] and others. This model created a strong criticism of existing practice of psychiatry and its validity. The idea was that the medical institution could be an agent of social control. The most radical version of the antipsychiatric model was in denying mental illness completely due to the lack of physical evidence in psychiatry. The mentioned paradigms open a discussion of interpreting mental health's concept as being strongly affected by social constructions of the society and sometimes even medical institutions. By using these assumptions this article attempts to theoretically contribute to the mentioned paradigms by presenting that mental illness can be actualized as a phenomenon that is related to larger economic processes. Thus, the main focus is in examining how the social construction of mental health at the micro level is constructed by the macro-economic conditions, specifically, the rise of drug companies within Lithuania.

The focus on pharmacy strong relations with a psychiatry keeps getting even more relevant due to prioritization of mental health in the society. The health of a person is expanded from being disease-free to having

opportunities in expressing oneself and being satisfied [4]. The biomedical model in treating mental health issues is switched to biopsychosocial model [1] which focus on giving the special skills and abilities for a person to become independent. Therefor the analysis of connection between pharmacy and psychiatry is a necessary reflection of new model's application.

On one side there is a record of pharmaceutical industry's agenda to expand mental care area by using public campaigns, media and lobbying public in the government [21]. Thus, the changes in mental health issues by consuming more medication could be disguised as social policy. On the other side, a question about objectivity of diagnosis as depression, bipolar disorder, schizophrenia, psychosis in providing drug treatment [22] is still pertinent. Joanna Moncrieff [22] analyzed how mentioned mental health treatment with drugs could be influenced by pharmaceutical industry's capitalist intention in treating more extensive minor mental health issues rather than focusing on rarer severe versions of the disease.

The importance to have applicable medicaments for mental health issues is noted by medical society itself. The gap between psychiatrists and pharmacists is being filled with Clinical Pharmacy in Psychiatry [23]. While the psychopharmacology is a medical field in securing the medications management and its necessity for patients, there is a need to secure the activity of pharmacy in the psychiatry.

Lithuania is a clear choice for studying the effects of capitalist development in rates of mental illness because it has experienced the rising influence of capitalism after the breakup of the Soviet Union, reformed its health care system and integrated western type of psychiatry. 2004 Lithuania became the part of the European Union and in 2018 the member of OCED, becoming part of these organizations led to the pressure from the international community to reform the health care system, including mental health policy [1]. One would expect the types of reforms in psychiatry enacted in Lithuania to increasingly resemble those observed in a capitalist system, however, Lithuania's health sector was not reformed as successfully as planned [24] who performed a comparative analysis between the health care systems of the Baltic States in the period of independence in 2006-2012, singled out that the financing of the health care system in Lithuania after the restoration of independence depends on both compulsory health insurance contributions and the state budget. Thus, the Lithuanian health care system relies on a mixed model which creates a certain financial instability. Moreover, it preserves the possibility of influence in decisions on the purchase of health services.

The challenges of the transition in the psychiatric field of Lithuania could be put in 5 different categories (Figure 1) [25]:



Figure 1. The challenges of economic transition

The creation and expansion of capitalist markets, researched by Szelenyi [26], in combination with fast economic reforms, and cost-effective ways to manage the Lithuanian health care needs was an appropriate medium for the Western medicine practices [27] and Foucault in 1965 [28] described model of labelling someone as mentally ill for-profit seeking. In addition, the global orientation in 1992 to mental health strengthened the position of psychiatry in the western world even more. The bigger attention to mental health issues and to one’s satisfaction in life gave a chance for pharmaceutical industry to expand its scope. This article focuses on Lithuania’s case between 2001 and 2020 due to its relevance and newness.

3. Methods and Analysis

Statistics were obtained from the databases of Lithuania Department of Statistics [29], Institute of Hygiene [30], Statistics of State Medicines Control Agency [31], Eurostat [32] and OECD health statistics [33]. Archival

data was used for general background information on changes in government policy regarding laws on mental health and to gauge public perception of mental illness.

Lithuania’s aspiration to join the European Union also led to various state reforms, after the implementation of which Lithuania became a member of the European Union in 2004. This accelerated Lithuania’s integration into the world and increased the influence of Western countries within the state. In 2007, the Lithuanian Parliament approved the Lithuanian Mental Health Strategy, taking into account the best practices of Western countries – to reduce hospitalization of the mentally ill, medical treatment, and creating a community model of health care services. In 2014, the updated Lithuania Mental Health Strategy 2014-2024 was approved. We employ an extended case study method by observing changes in psychiatry and mental health in Lithuania over approximately a 19-year period (from 2001 to 2020). This method utilizes an approach in which a profession is followed over a longer period of time. In doing so, we are focusing on psychiatrists’ experiences in conjunction with

other types of data [34].

Giedraitis [25] used a snowball approach and discussed the respondents accounts of the economic transition to capitalism, the role of medication versus psychotherapy and Western pharmaceutical companies influences on psychiatry in Lithuania. He emphasized the following findings: drug companies actively encourage doctors to attend conferences through informal enticements; informally, drug companies are able to "reward" doctors that prescribe their drugs through conference invitations. It seems that drug companies are "enticing" psychiatrists to prescribe medication; though such perks are common to medical conferences in the United States, one must remember the cultural and temporal context in which this "courting" it was taking place; the amount drug companies spent on conferences is a fraction of the amount earned from their potential sales.

In 2007 a Transparency International survey was conducted in Lithuania. This is the first such comprehensive study of the transparency of the relationship between the pharmaceutical industry and medicine in Lithuania. The study found that 65.4% of surveyed Lithuanian physicians meet with representatives of pharmaceutical companies 1-5 times a month, 26.6% - 6-25 times and only 5% of surveyed physicians never cooperated. The most popular incentive gifts from pharmaceutical companies to doctors are items for representation and scientific medical literature, which can be quite expensive. These items have been received by most of the doctors interviewed and the most times. Financial support for trips to seminars or conferences was more often provided by doctors working in six major Lithuanian cities and state medical institutions. Almost 13% of the respondents received support for medical scientific studies and preparation of articles. As many as 70% of respondents are positive about the fact that pharmaceutical companies financially support doctors' trips to seminars and conferences. When pharmaceutical companies inform about medicines, doctors' entertainment and meals are often organized at the same time [35].

In 2020 a report on the remuneration of specific physicians was published by the State Medicines Control Agency. Professionals were identified as having one of four 'transfer value objectives': remuneration for the services provided by the professional to transfer their medical knowledge and experience, including travel and accommodation costs; payment of registration fees for professional (scientific) events in which a specialist participated for the purpose of professional development; reimbursement of travel to professional (scientific) events attended by a specialist for the purpose of professional development and accommodation expenses during these events and the value purposefully transferred to specific natural persons through the legal entity - the recipient of the transferred value, when the target (final) recipient of such value is known in advance (individual) [36].

These results are similar to those of foreign authors research papers. Pharmaceutical industry and pharmaceutical sales representative (PSR) interactions influence physicians' attitudes and their prescribing behaviour and increase the number of formulary addition requests for the company's drug [37,38,39]. Authors Fickweiler et al. [37] assessed the quality of evidence by outcome using the Cochrane and GRADE methodologies. They report that there is a widespread interaction between the pharmaceutical industry and physicians. Interactions are in the form of personal communications, free gifts such as drug samples, sponsored meals, sponsored conference travel, funding for research and Continuing Medical Educations (CME) and honoraria. The frequency of these interactions is comparable between residents and physicians. The amount and type of gifts vary with the position of the physician in medical hierarchy, specialization and location of practice. Senior physicians usually avail of sponsored conferences/trips, research funding, honoraria and CME events. And the extent of these interactions varies with academic versus non-academic institutions: non-academic hospitals record more interactions than others. Mitchell et al. [39] focused on studies that measured physician-industry interactions in solely financial terms. The consistency of the payment-prescribing association across the type of prescribing decision, physician specialty, and drug class suggests that financial payments are an important mechanism by which physician-industry interactions influence prescribing. A systematic review also found that a large majority of studies found a positive association between industry payments and increased prescribing, including temporal and dose-response relationships.

3.1. Trends in Lithuania's Mental Health Care Field

According WHO mental health can be defined as a state of well-being enabling individuals to realize their abilities, cope with the normal stresses of life, work productively and fruitfully, and make a contribution to their communities [40].

Mental health problems affect economic activity, i. s. declining productivity and increasing losses and disability costs, which can also affect education and justice systems. Mental health is currently one of the biggest challenges facing every country in the world. The prevalence of mental health disorders worldwide is very high and the number of patients with these mental health disorders is steadily increasing. Between 2001 and 2020, the number of people with mental and behavioral disorders and new illnesses increased significantly. The absolute number of patients with mental and behavioral disorders and new diseases increased by 36.19% in the long run in 2001-2020, and the number of patients per 1,000 population increased by as much as 69.13% (Table 1). In the short run, compared to 2019, the number of people with mental

and behavioral disorders and new illnesses decreased by 5.09 percent in the following 2020. It can be assumed that this decrease is due to the fact that new diseases were not diagnosed in time due to the unavailability of medical services during that period: in February 26, 2020 an emergency situation has been declared in Lithuania due to the spread of coronavirus (COVID-19), and two quarantines have been introduced since then: the first quarantine has been in place from March 16 to June 17, 2020 and a second quarantine from November 7, 2020 to June 2021. At that time, inpatient and outpatient health care services were severely curtailed or completely discontinued. However, when assessing morbidity over the long term, that slight decrease over a one-year period is not significant, with a large increase in morbidity observed over the long term.

The mental health market is segmented by disorder,

service, age group and region. Mental disorders (F00-F99) are divided into Organic and symptomatic mental disorders (F00-F09); Mental and behavioral disorders due to psychoactive substance use (F10-F19); Schizophrenia, schizotypal and delusional disorders ((F20-F29); Mood [affective] disorders (F30-F39); Neurotic, stress-related and somatoform disorders (F40-F48); Behavioral syndromes associated with physiological disturbances and physical factors (F50-F59); Disorders of adult personality and behavior (F60-F69); Mental retardation (F70-F79); Disorders of psychological development (F80-F89); Behavioral and emotional disorders with onset usually occurring in childhood and adolescence (F90-F98); Unspecified mental disorder (F99) [41]. Mental and behavioral disorders (F00-F99) the data of which are presented in the health statistics of the Hygiene Center are shown in Appendix Table 1).

Table 1. Development of Indicators of Mental and Behavioral Disorders in Lithuania in 2001-2020

Year	Absolute number of patients	Absolute number of patients % change	Number of patients per 1000 population	Number of patients per 1000 population % change
2001	163926		47,23	
2002	164092	0,10	47,66	0,91
2003	163109	-0,60	47,76	0,21
2004	170588	4,59	50,51	5,76
2005	170862	0,16	51,43	1,82
2006	175709	2,84	53,74	4,49
2007	179620	2,23	55,59	3,44
2008	187394	4,33	58,59	5,40
2009	186370	-0,55	58,92	0,56
2010	190698	2,32	61,57	4,50
2011	200285	5,03	66,14	7,42
2012	207673	3,69	69,51	5,10
2013	209840	1,04	70,95	2,07
2014	214119	2,04	73,02	2,92
2015	211022	-1,45	72,64	-0,52
2016	210545	-0,23	73,41	1,06
2017	221436	5,17	78,29	6,65
2018	231513	4,55	82,64	5,56
2019	235222	1,60	84,18	1,86
2020	223249	-5,09	79,88	-5,11

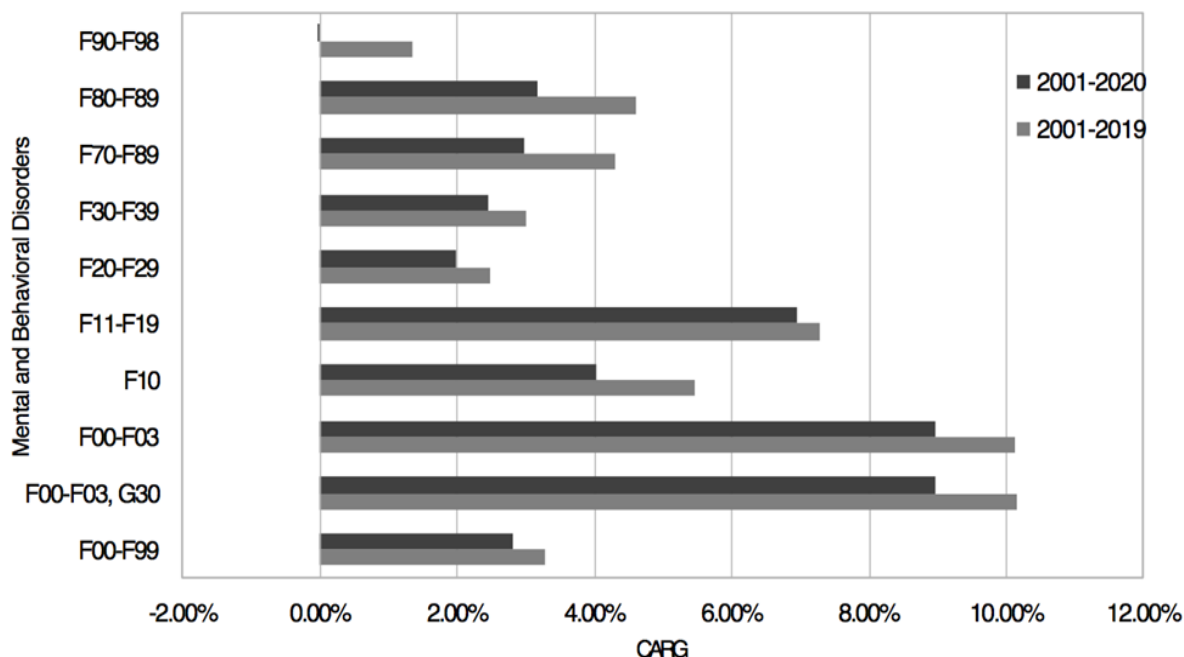


Figure 2. With Mental and Behavioral Disorders 1000 population compound annual growth rate in Lithuania in 2001-2020

The compound annual growth rate (CAGR) per 1000 population with Mental and Behavioral Disorders (F00-F99) was 3.26% between 2001 and 2019, and 2.80% between 2001 and 2020. These periods are distinguished separately due to the emergency and the two quarantines (Figure 2). Analyzing the individual groups of Mental and Behavioral Disorders, we observe that the highest compound annual growth rate in 2001-2019 and (2001-2020) were dementia (F00-F03), mental and behavioral disorders due to the use of other psychoactive substances (F11-F19) and mental and behavioral disorders in alcohol consumption (F10) and amounted to 10.13% (8.97%), 7.28% (6.94%) and 5.47% (4.02%). The obtained results showed that in the analyzed groups of patients with Mental and Behavioral Disorders, the compound annual growth rate per 1000 population increased. It is possible to distinguish 2001-2020. In the period 2001-2020, the group of behavioral and emotional disorders starting in childhood and adolescence (F90-F98), where the compound annual growth rate was negative (-0.02%), and in the period 2001-2019 the compound annual growth rate of this group of disorders was positive at 1.35%. It is likely that in 2001-2020 the lower compound annual growth rate in all groups of Mental and Behavioral Disorders was a consequence of the introduction of

emergency situations and quarantines in the Republic of Lithuania.

The compound annual growth rate of the number of newly diagnosed people with Mental and Behavioral Disorders (F00-F99) per 1000 population in the period 2001-2019 was 2.88% (Figure 3). The highest compound annual growth rate were dementia and Alzheimer's disease (F00-F03, G30), mental and behavioral disorders with psychoactive substances (F11-F19), and mental and behavioral disorders with alcohol use (F10). The group of mentally and behavioral disorders related to alcohol consumption per 1000 population with a new illness should be distinguished (F10). In 2012-2013, there was a very large% change, amounting to 238%. Therefore, this period is divided into two periods: 2001-2012 and 2012-2019. We can see that the compound annual growth rate for the period 2001-2012 was 0.99%, and in the period 2012-2019 it was as sought even 27.65%. Alcohol consumption, defined as the annual sales of pure alcohol in liters per person aged 15 and over in 2010 amounted to 13.5 liters, and in 2011 and 2012 already 14.7 liters. According to the data of the Lithuanian Department of Statistics, the consumption of legal alcoholic beverages per capita increased until 2012, and then started to decrease [42].

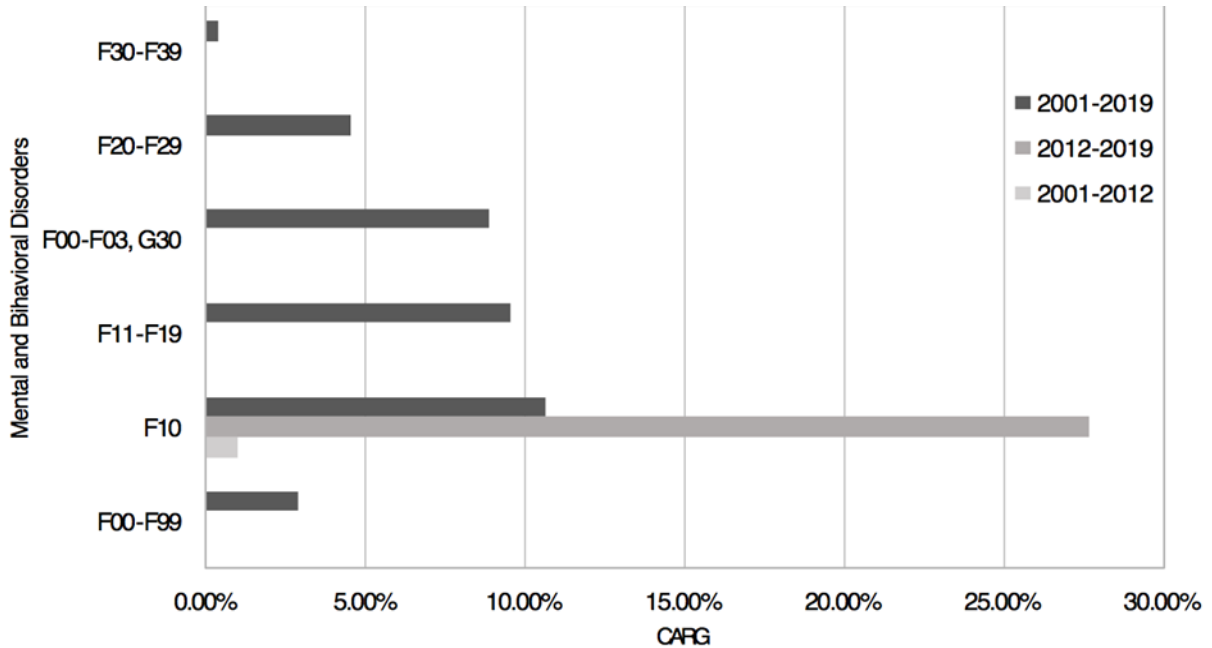


Figure 3. Newly ill persons with Mental and Behavioral Disorders per 1000 population compound annual growth rate in Lithuania in 2001-2019

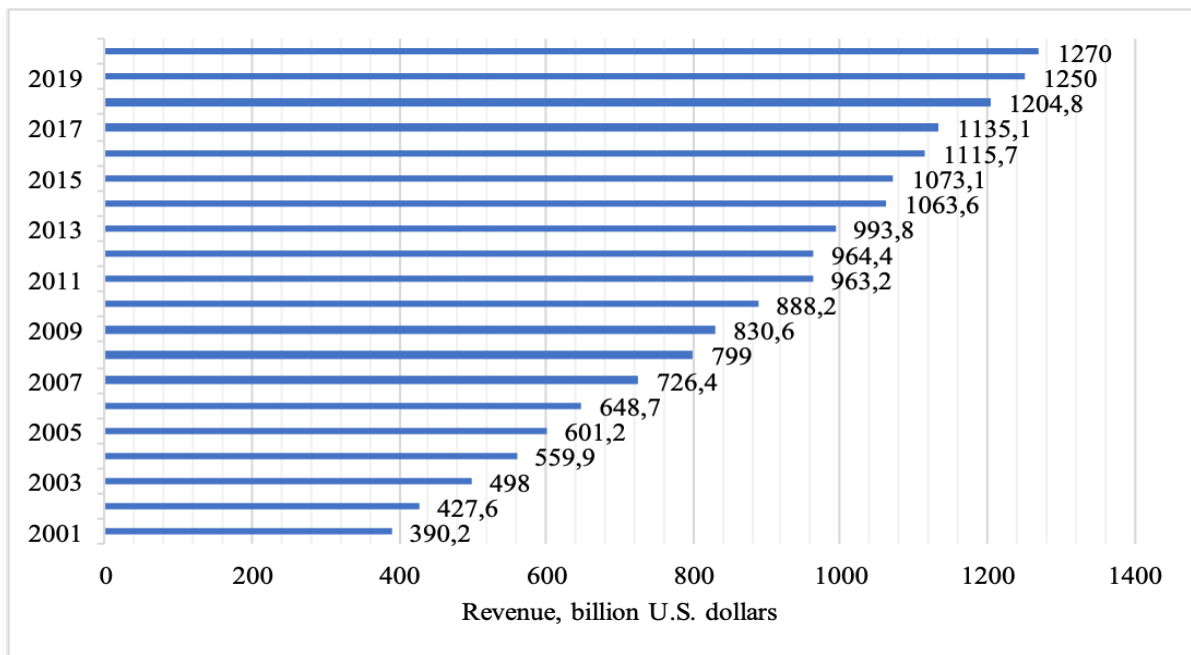


Figure 4. Global pharmaceutical revenue from 2001 to 2020

3.2. Pharmaceutical Market and Pharmaceutical Consumption

In the global context, the pharmaceutical industry is identified as one of the most important, and certain features of this industry are very often associated in some countries with public health indicators such as morbidity, infectious or chronic disease rates. It is one of the fastest growing and expanding industries, and the sector's production volumes and revenues are constantly

increasing globally. The pharmaceutical industry is responsible for the research, development, production, and distribution of medications. The global pharmaceutical market has experienced significant growth during the past year. In 2020, the value of the market was on the order of USD 1,27 trillion, i. e. 31,22 percent more than in 2001 [43,44] (Figure 4).

The pharmaceutical industry is most developed in the United States, Western Europe (Switzerland, Germany, Great Britain, France and elsewhere), Japan. Production

of some drugs is expanding in China, India and other Asian countries. In the third quarter of 2021, worldwide sales of pharmaceutical products were worth \$ 1,186 billion, of which total U.S. pharmaceutical sales were about \$ 555 billion, or 46.8 percent worldwide sales of all drugs; sales in Europe amounted to USD 228 billion (19.22% of total global sales) and in emerging markets to USD 285 billion (24.03% of global sales). The world's best-known pharmaceutical companies are Pfizer, Merck and Johnson & Johnson in the United States, Novartis and Roche in Switzerland, Sanofi in France and others [43].

Although Chinese pharmaceutical companies have

expanded very rapidly in recent years, the U.S. and European pharmaceutical companies are dominant in the global pharmaceutical market [45] (Table 2). In 2/2/2022, China Resources was the company with the largest revenue of 99,437.6 billion U.S. dollars; Johnson & Johnson was the world's largest company with profits of 20,878 billion U.S. dollars. The largest share of pharmaceutical revenue corresponds to branded and patented medicines and among therapeutic drugs oncologic, antidiabetic, respiratory, autoimmune disease, antibiotic and vaccine drugs are the most sales in 2018 [44] (Figure 5).

Table 2. Pharmaceutical companies

Rank of Fortune Global	Pharmaceutical companies	Country	Revenues billion U.S. dollars	Profits billion U.S. dollars	Employees
94	Johnson & Johnson	U.S.	93,775	20,878	134.500
281	Pfizer	U.S.	69,337	19,889	78.500
232	Merck	U.S.	52,607	7,197	73.500
147	Roche Group	Switzerland	65,676	15,408	101.465
218	Novartis	Switzerland	52,385	9,807	105.794
276	Sanofi	France	42,580	14,031	99.412
69	China Resources	China	99,437.6	4,330.2	370,955
109	Sinopharm	China	77,278.2	1,258.7	176,686

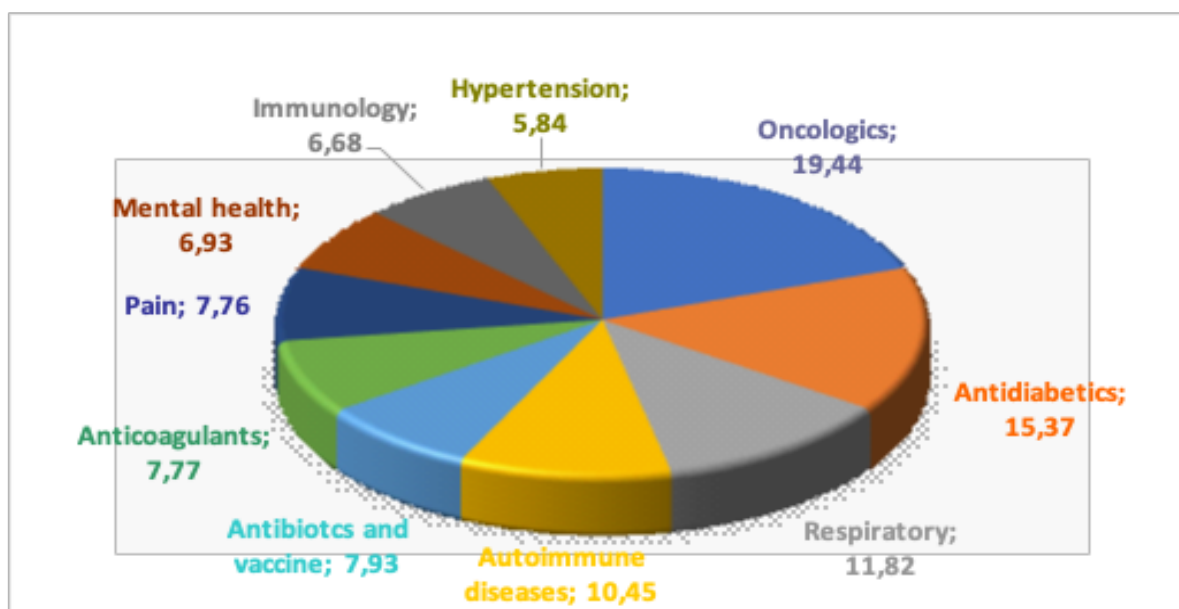


Figure 5. Global revenue by pharmaceutical group in 2018, percent

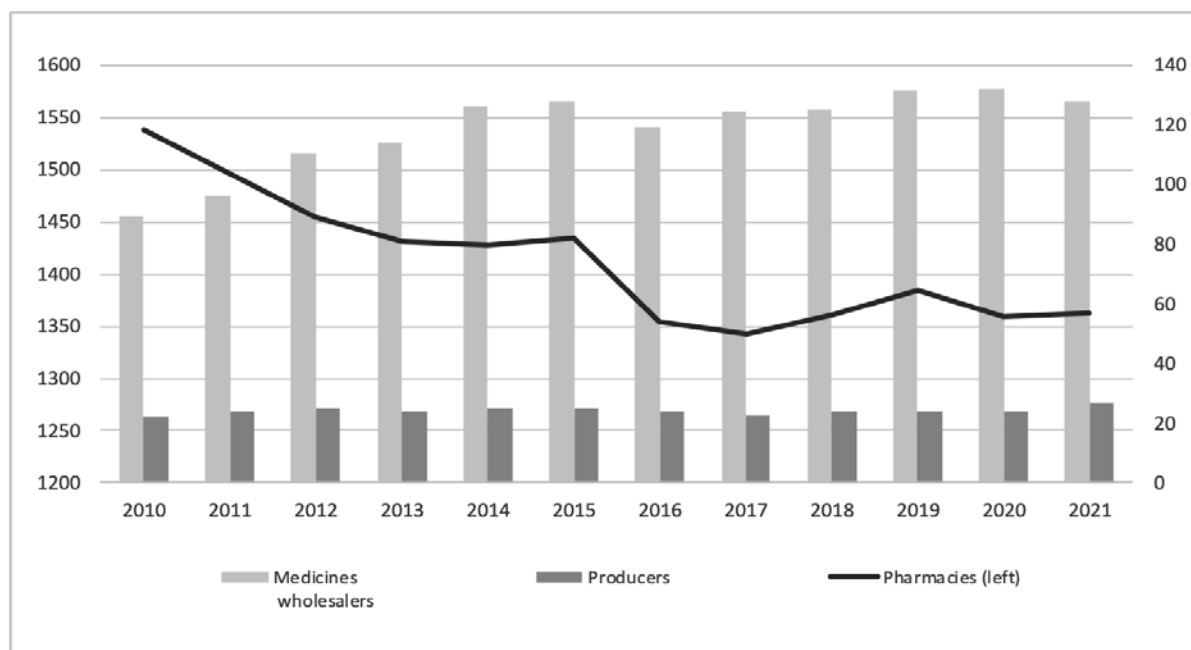


Figure 6. Pharmaceutical companies in Lithuania

The Lithuanian pharmaceutical market is highly competitive, with strict European quality standards and increasingly price regulation. One of the key objectives of pharmaceutical policy is to ensure that high-quality, safe and effective medicines are available on the market. The essential principles of the regulation of pharmaceutical activities are established by the Law on Pharmacy. They are detailed in the resolutions of the Government of the Republic of Lithuania and the orders of the Minister of Health. In Lithuania, pharmaceutical activities and the market for medicines are controlled by the State Medicines Control Service under the Ministry of Health. The focus of health policy is on the reimbursement of medicines, the main principles of which are set out in the Law on Health Insurance of the Republic of Lithuania, as well as on the effectiveness of market control of medicines. The registration, industrial manufacture, wholesale distribution, pharmacovigilance, clinical trials, information and advertising of medicinal products and the activities of pharmaceutical professionals in the European Community are regulated. The provisions of the EU pharmaceutical legislation have been transposed into national law.

The Lithuanian pharmaceutical industry has such features as a small number of companies; these companies are small and produce traditional low-cost and generic medicines, mostly imported raw materials are used, and chemical synthesis activities are not widely carried out

[46] (Figure 6).

The Anatomical Therapeutic Chemical classification system and the Defined Daily Dose as a measuring unit have become the gold standard for international drug utilization monitoring and research [47]. The Defined Daily Dose is the assumed average maintenance dose per day for a drug used for its main indication in adults. Defined Daily Doses are assigned to each active ingredient in a given therapeutic class by international expert consensus [48].

Statistics provided by the OECD on the use of anxiolytics (N05B), hypnotics and sedatives (N05C), antidepressants (N06A) provide us with the following conclusions (Figure 7). Hypnotics and sedatives (N05C), antidepressant (N06A) use are increasing every year, and anxiolytics (N05B) use is declining. Etneris and Gerasimavičiūtė [49] participants of the “Create for Lithuania” program, analyzed the problem of benzodiazepine use in Lithuania during their research. Consumption of benzodiazepine in our country is 2-3 times higher than in the neighboring countries of the Northern European region and 2 times higher than the average consumption in OECD countries. The analysis of good practices of foreign countries and the opinion of Lithuanian experts revealed that in order to reduce the scale of the problem, it is necessary to concentrate efforts on the education of the public and doctors, and to initiate certain changes in the system.

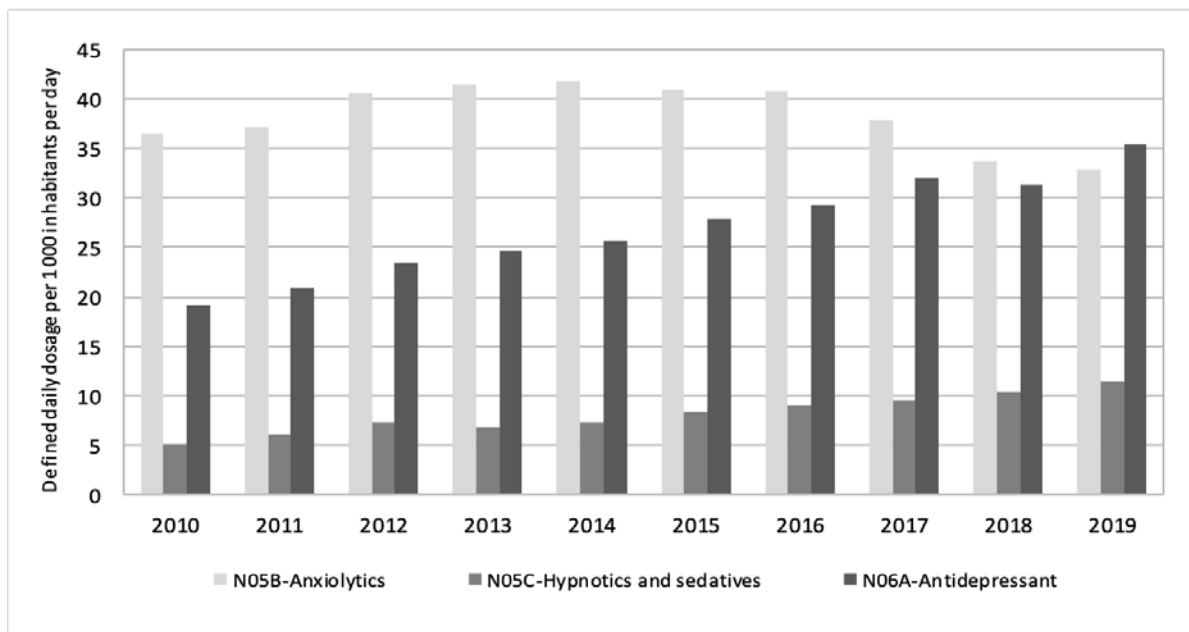


Figure 7. Pharmaceutical consumption in Lithuania, 2010-2019

3.3. The Dilemma of Doctors' Salaries

The ways in which pharmaceutical industry and pharmaceutical sales representative (PSR) interactions influence physicians' attitudes vary. But must remember the cultural and temporal context in which this "courting" is taking place. During the Soviet era, Lithuanian, medical doctors were (and continue to be) paid very little relative to their Western counterparts. According to government statistics, in 1997, the average worker in Lithuania earned 785 litas (approximately 196 USD) per month, whereas those engaged in human health activities earned only 640 litas (approximately 160 USD) per month. In 1997, doctors and other medical personnel earned, on average, the same amount per month as those engaged in sewage and refuse disposal, only 640 litas (approximately 160 USD) per month [25]. According to the latest data of the State Health Insurance Funds, in 2017 the average monthly salary (gross) of a doctor working in Lithuania was 1641 euros (Net salary), 2280 euros (Gross salary), in 2019 the Net salary increased by about 10 % - up to 1810 euros and the Gross salary up to 2573 euros. For comparison, the average monthly Gross salary rose across the country and in 2019 was 1296,4 euros. In 2020, already during the global COVID-19 virus pandemic, which burdened the health care system, the average doctor's salary was raised by another 15 % - the Net salary up to 2081 euros, the Gross salary – 3017 euros. It is important to take into account that the salaries of doctors working in health care institutions vary greatly depending on the medical institution where they work, for example, comparing three randomly selected primary mental health care centers' 2019 Net salaries show

significant differences: Klaipėda Mental Health Center average Net doctor's salary in 2019 was 2292 euros, at the Rokiškis Mental Health Center - in the same year 2019 - 1678 euros, at the Vilnius City Mental Health Center - 1599 euros. In tertiary mental health care institutions: 3848 euros were paid in Rokiškis Psychiatric Hospital in 2019, and 2023 euros in 2019 in Vilnius Republican Psychiatric Hospital [50].

3.4. Lithuania's High Suicide Rate as a Public Health Problem

A second explanation of why drug companies have been able to market their products so easily in Lithuania revolves around the incidence of suicide in Lithuania. In Interwar independent Lithuania, suicide rates were low. The indicators of some other European countries were 5-6 times higher at that time. The problem of the extraordinary prevalence of suicides in Lithuania was formed during the years of the Soviet regime. In 1998-2002, very high suicide rates were established [51]. The problem may in part be the result of a country's history and psychosocial tensions following the economic and social changes of the 1990s [52]. In Lithuania, the problem of suicide remains acute, although there have been positive developments. Compared to other countries of the Organization for Economic Cooperation and Development, the number of suicides per 100,000 inhabitants in Lithuania is very high. It is gratifying only that Lithuania is no longer the first among the countries of the Organization for Economic Co-operation and Development (Figure 8).

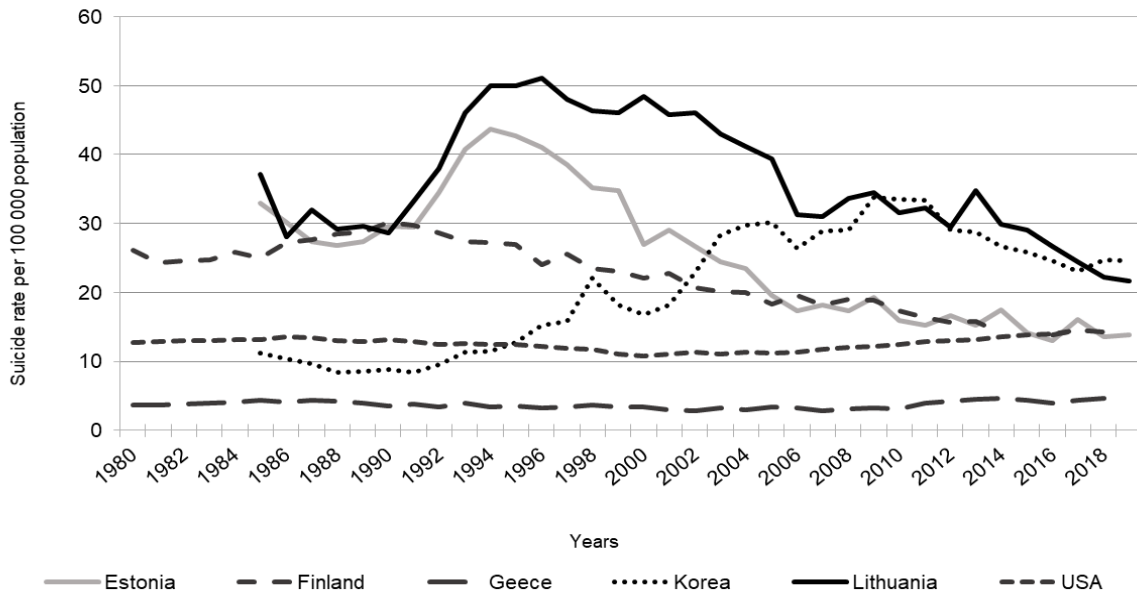


Figure 8. Trends in suicide per 100,000 population in selected OECD countries, 1980-2019

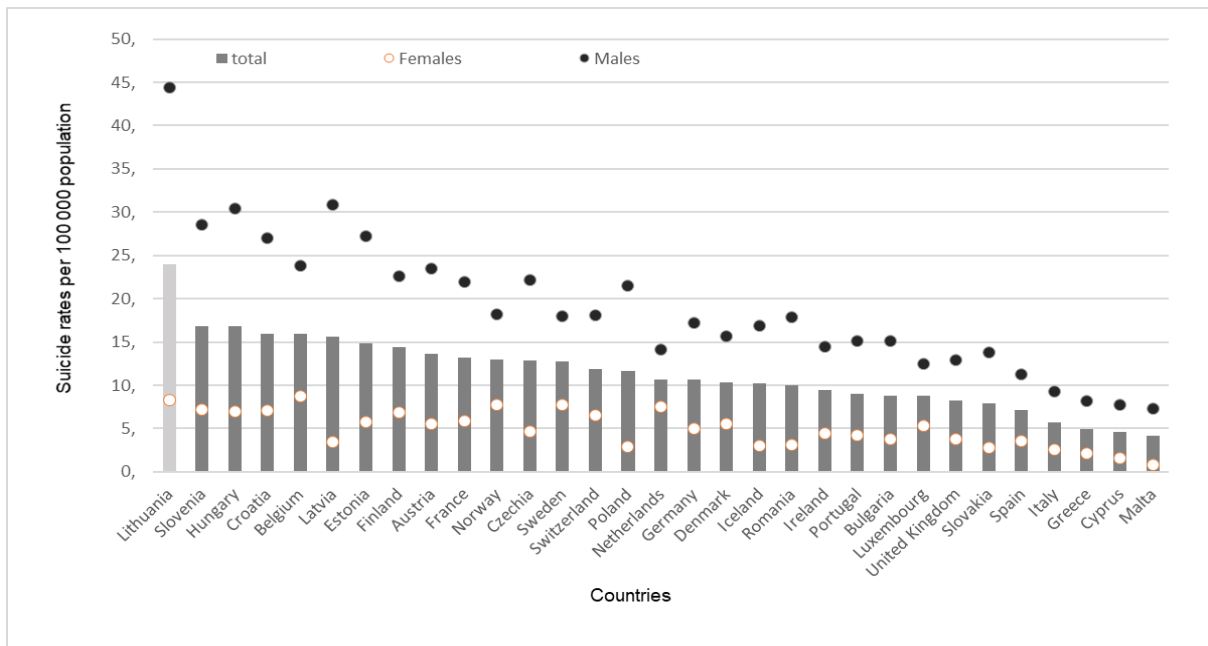


Figure 9. The number of suicides per 100,000 population in European countries in 2018 (or nearest year)

Although the number of suicides is decreasing, if we analyze European countries, Lithuania is still in the leading position (Figure 9). Also, compared to other nations, even those close by, such as Estonia, Latvia, Poland Lithuania’s suicide rate is very high. In Lithuania in 2018 the highest number of suicides per 100,000 population was recorded in 2006 and amounted to 23.98 suicides. Number of male suicides per 100,000 population in 2018 was more than five times higher than female suicides, 44.38 and 8.31, respectively. Progress has been made in reducing suicide rates, but this remains a

significant cause of death, especially among men [52].

Suicide is perceived as a great public health issue in Lithuania. The growing perception of suicide as a major public health problem in Lithuania is important for this research because suicide is linked to various diagnoses of mental illness. Among suicide victims, 60% suffer from depression, about 30% have other psychiatric illnesses, including post-traumatic stress disorder and about 10% have no established psychiatric diagnoses [53].

Various explanations have been proposed in explanation of such a high rate. One is related to the rapid

pace of social and economic change in Lithuania. Another proposed explanation is related to Lithuania's high rate of per capita alcohol consumption. Historically, the suicide rate in Lithuania has been roughly proportional to rates of alcohol consumption. Although alcohol consumption has decreased by about 10 % between 2010 and 2017, it remains a major public health concern in Lithuania: at 12.3 liters consumed per adult in 2017, Lithuanians were the heaviest drinkers in the EU, exceeding the EU average by 25% [54]. Karpuškienė [55] conclude that alcohol restriction policies (the Law on Alcohol Control, 2018), met with a relatively favorable public attitude, may have adjusted levels of alcohol consumption and its patterns, but the increase in the number of young people among alcohol consumers is not in line with the expected policy outcomes.

Suicides have been identified as one of the main public health problems in Lithuania. Suicide is a complex phenomenon that reflects not only a person's mental health but also the state of the social context in which the person lives. The prevalence of suicide is one of the most significant indicators of mental health in society [56]. The Mental Health Strategy was adopted in 2007. Among other measures to strengthen public mental health, suicide prevention was envisaged through national and regional programs. The Lithuanian Health Strategy for 2014–2025 aims to reduce the standardized suicide mortality rate in 2025 to 12.0 cases per 100 thousand cases. population. Achieving such an ambitious goal requires the mobilization and targeted action of all sectors (health, education, social security and labor, home affairs, NGOs, etc.). However, as the National Audit Office [57] notes, there is no approved suicide prevention strategy, there is no single institution responsible for coordinating the implementation of suicide prevention measures at the national level, therefore there is a lack of systematic implementation of these measures and suicide solution. In Lithuania, suicide prevention measures are not planned properly, there is no comprehensive system for providing assistance to persons at a risk of suicide.

3.5. Changes in Health Care Structure

Since effective psychotherapy is a potentially long treatment that is more expensive than drug therapy, the latter was favored by the government. Changes in health care reform favorably influenced pharmaceutical companies' ability to sell their products. After the various financial crises associated with the disintegration of the Soviet Union and Lithuania's subsequent drive towards national independence, psychiatry in Lithuania and the remaining post-Soviet countries underwent turmoil. As Polubinskaya [58] indicates, there was a movement among psychiatrists in Lithuania to make a conscious break with the past.

The biomedical model dominates the Lithuanian mental

health system. Since the establishment of a 1995 law, which promises all employed Lithuanians health coverage, there has been, a movement towards greater biological-medical treatment of mental health, according to the first president of the Lithuanian Psychiatric Association. This movement was facilitated by the dominance of the so-called biological model under Soviet rule. Lithuanian psychiatrists were trained in the Soviet tradition to view mental illness as a biological phenomenon that is not caused by social factors [25]. And further ongoing drug treatment is noticeable - instead of examining the patient more closely, experimenting with drugs. Funding flows are directed accordingly, with the bulk of funding going to medicines rather than psychosocial rehabilitation services. And, as experts have noted, this is not only a lack of scientific knowledge about treatment, but also the result of lobbying the activities of pharmaceutical companies, whose influence is very strong [1].

3.6. Influence of Medical Model under Soviet Rule

The biological perspective used to be the dominant one under the Soviet rule, when patients with mental illness were isolated from the public by being admitted to treatment facilities and treatment was based on medication. Due to the surviving hospital infrastructure and the biomedical model that has dominated for many years and current psychiatric practices in post-Soviet countries can be traced to the Soviet style psychiatry of the past half-century. Rather than "talking" therapy, which is much more common in the West, Soviet psychiatry stresses the role of biological and chemical form of treatment [59]. This bio-medical reliance has established societies that see the role of medication more differently than Western societies. Medication, especially in the field of mental health is an obligatory part of treatment in all post-Soviet countries. After the collapse of the Soviet Union, after the restoration of independence, the state, including Lithuania, began to feel pressure from the international community to change the methods of mental health treatment. Professional associations in Lithuania and other post-Soviet countries are seeking to develop new approaches to treatment. For example, Polubinskaya [58] indicates the intention of the Lithuanian Psychiatric Association to "*develop diagnostic and therapeutic [sic.] approaches other than biological psychiatry.*" Polubinskaya's work relates to our research by indicating the legacy of the medical model in Lithuania, and the LPA's attempt at reform to move away from biological psychiatry. A study conducted in 2002 in Kaunas mental health centers revealed both the persistent paternalistic relationship between the psychiatrist and the patient and the prevailing medical access [60] – it is difficult to abandon long-standing biomedical practices despite the emerging need for community mental health care. After Lithuania's accession to the European Union in 2004, legal

documents were prepared to update the Lithuanian model of mental health treatment, and in 2007 the Lithuanian Parliament approved the Lithuanian Mental Health Strategy, a legal act recognizing mental health as the most important area of public health, quoting 9.1. point: "Mental health is recognized as the most important area of public health at the beginning of the 21st century <...>, as the burden of mental disorders on society is constantly growing and is becoming more prevalent than other health disorders." and sets out the direction of the necessary reforms, citing point 9.2: "it is necessary to free the field of mental health from occupational, political and geographical isolation and to integrate this field as much as possible into the public health system, primary health care, general health care, education, social security and other sectors" [61].

This document consolidates the state policy to reform the mental health sector by moving to community services, as well as strengthening the network of primary health care services and interdisciplinary access. The need for the described reforms is based on the poor mental health of Lithuanian society, emphasizing the number of suicides, the high use of intoxicants as alcohol, the extent of bullying among children, and domestic violence. Objectives set on ensuring human rights; modern services that meet the needs of patients; equilibrium in the development of a biopsychosocial model; promoting autonomy and participation; treatment of minor health disorders in non-specialized health care facilities; mental health promotion and prevention of mental disorders as an integral and priority part of the implementation of health, education and social protection strategies; strengthening the role of patients, their families and the non-governmental sector [61].

5 years after the approval of the Lithuanian Mental Health Strategy, a qualitative expert study evaluating the Lithuanian mental health policy was conducted (2012-2013). The study found that despite the goals set and the

announced reform, the Lithuanian mental health system has not been renewed. Maintained medication, as well as hospitalizations, the network of primary mental health care is still inefficient, and innovative services are implemented by non-governmental organisations that do not have much political power, so innovation is usually absorbed by existing structures.

In 2020, the Lithuanian Mental Health Forum was organised by the Ministry of Health of the Republic of Lithuania. The Report published by the Forum critically evaluates the activities of the mental health sector. During the discussion, it was stated that community mental health care services are not properly developed in Lithuania, there is a lack of funding, and "the imbalance between medical and non-medical treatment due to the lack of specialists as psychologists, psychotherapists" [62]. All this determines the establishment of Lithuanian mental health policy not in the new biopsychosocial model, but in the long-standing biomedical model.

The medical profession in Lithuania has a cultural and professional predisposition to see mental health as something to be treated biologically, further enabling the drug companies to market their products to the medical community.

3.7. Recent Changes in Psycho-Pharmacology and Psychiatry in Lithuania

As indicated, there are many informal benefits to being a psychiatrist or other medical doctors. Table 3 indicates the increase or decrease in number of various types of health care professionals in Lithuania. Like the total number of doctors, the number of psychiatrists per 10,000 population in Lithuania increased between 1993 and 2020. The compound annual growth rate of the number of psychiatrists per 10,000 population was 1.51%. The number of psychiatrists per 10,000 population increased from 1.4 to 2.1.

Table 3. Number of doctors per 10,000 population by specialties and year and compound annual growth rate

Year	Doctor	Family doctor	Internal diseases	Pediatrics Specialist	Surgeon	Orthopedist-traumatologist	Psychiatrist
1993	39.9	0.2	14.1	5.5	2.8	0.8	1.4
1994	40.8	0.3	14.2	5.5	2.7	0.9	1.5
1995	40.7	0.3	14.1	5.5	2.7	0.9	1.5
1996	41.1	0.6	13.8	5.4	2.7	0.9	1.5
1997	41.4	0.8	13.5	5.4	2.7	0.9	1.6
1998	41.3	0.8	13	5.2	2.5	0.7	1.6
1999	41.4	1.6	12.7	5.2	2.4	0.8	1.6
2000	40.2	2.2	11.9	5.2	2.4	0.9	1.6
2001	40.4	2.9	11.6	4.9	2.5	0.9	1.7
2002	40.4	3.6	10.7	4.6	2.5	0.9	1.7
2003	40.3	4.4	10.2	4.3	2.5	0.9	1.8
2004	39.9	5	9.6	4	2.5	1	1.8
2005	41.5	5.3	9.5	4	2.5	1	1.8
2006	41.6	5.5	9.7	3.9	2.7	1	1.8
2007	42.7	5.7	9.6	3.9	2.7	1	1.9
2008	42.1	5.7	9.8	3.9	2.7	1.1	1.8
2009	42.1	5.8	9.6	3.8	2.7	1.1	1.8
2010	43.3	6.1	9.6	3.8	2.7	1.1	1.8
2011	44.4	6.2	9.8	3.8	2.8	1.1	1.8
2012	45.6	6.4	9.7	3.8	2.9	1.2	1.8
2013	46.1	6.5	9.7	3.7	3	1.2	1.9
2014	46.2	6.8	9.6	3.6	3	1.2	1.9
2015	46.7	7.1	9.4	3.5	3	1.4	1.9
2016	48	7.4	9.9	3.5	3	1.4	1.9
2017	48.9	7.8	9.8	3.5	3.1	1.4	2
2018	49	7.5	9.8	3.6	3.1	1.5	2
2019	48.3	7.5	9.7	3.5	3.1	1.5	1.9
2020	47.2	7.3	9.5	3.4	3.2	1.4	2.1
CAGR	0.62%	14.25%	- 1.45%	-1.77%	0.50%	2.09%	1.51%

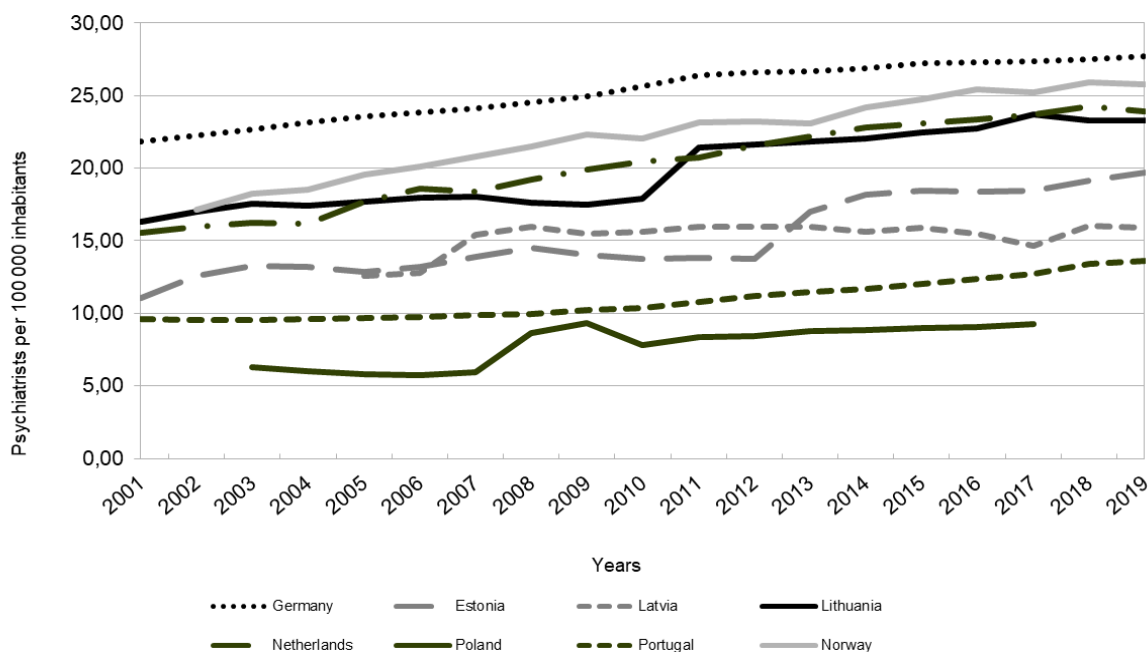


Figure 10. Trend of the number of psychiatrists per 100,000 population in selected European countries, 2001-2019

The same tendencies prevail in Lithuania as in the EU countries (Figure 10). The number of psychiatrists per 100,000 population is increasing in all countries. Compared to the nearest countries, we see that the number of psychiatrists per 100,000 population is the highest in Lithuania. Lithuania is ahead of Poland, Estonia and Latvia.

4. Conclusions

In summary, this research explains the possible relation between economical pursuit of pharmaceutical companies and the growth of mental and behavioral disorders. There are three factors which should be taken into consideration.

First, Lithuania’s model of psychiatry is affected by the experience in Soviet times. Due to the changes in economic and political field there is a need for a change in treating mental illness, but it requires a lot of time and resources, which could be lacking.

Second, the global orientation to mental health inspired the growth of pharmacy industry around the world. The new concept of health pushes the government to focus on problems like suicide and to solve them as soon as possible. Thus, the influential pharmaceutical industry could give a way in solving mental health problems in quicker, safer and cheaper terms as in comparison to new biopsychosocial model.

Third, the public health care system in Lithuania experiences demographic challenges as well as financial, and the pharmacy by creating relations with medical institutions could at least help solve financial problems for

a doctor. The stable number of students who choose psychiatric residency is related to a good position of psychiatric field.

Three problems as:

- the tension in Lithuanian psychiatry to change and develop;
- the health care system’s goal in providing free and effective treatment for citizens;
- the growing influence of pharmaceutical companies over the world, generate the specific environment where economic factors could affect the mental health system in unpredicted ways.

Pharmacy could help by making treatment of mental health more available, but the more expensive psychotherapy should be implemented as well. There should be initiative in avoiding overmedicalization by monitoring the relationship between pharmacy and psychiatry. Moreover, pharmaceutical companies are for-profit companies, which tends to expand the market for their products. Marketing by using the importance of mental health in person’s life can create the need for psychotropic drugs. The complicated valuation of mental health, which tends to change once in a while, leaves a grey area for a physician in deciding the need for a drug. Finally, the research contributes to the field of social economy and public health by studying how and why the economy and public health can be related. The ways how mental health issues are dealt with in a society are connected with the economical orientation of the same society. If the society is capitalist, the issues of mental health create the supply and the markets supply demands.

Appendix

Table 1. Systematic list of diseases

Disorders	ICD-10-CM
Mental and behavioral disorders	F00-F99
Dementia	F00-F03
Dementia and Alzheimer's disease	F00-F03, G30
Mental and behavioral disorders due to use of alcohol	F10
Mental and behavioral disorders due to other psychoactive substance (not alcohol) use	F11-F19
Schizophrenia, schizotypal and delusional disorders	F20-F29
Mood [Affective] Disorders	F30-F39
Mental retardation and disorders of psychological development,	F70-F89
Disorders of psychological development	F80-F89
Behavioral and emotional disorders with onset usually occurring in childhood and adolescence	F90-F98

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