https://doi.org/10.31489/2024Ec1/102-110
JEL I11, I14
UDC 339.133 (Received: 10 October 2023 | Accepted: 21 December 2023)

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Peculiarities of demand for medicines and assessment of the consequences of introducing co-payment in Kazakhstan

Abstract

Object: In the context of the population's growing need for medical care and limited resources of the healthcare system, the issue of assessing the population's demand for medical services, especially for medicines, in both developed and developing countries becomes relevant. The study aims to determine the characteristics of the population's demand for medicines in the Republic of Kazakhstan and assess the impact of co-payment mechanisms on medicine consumption.

Methods: To achieve this goal, we conducted a sociological survey of the population in all regions of Kazakhstan, with the participation of 1638 respondents. Questionnaire data were estimated using a logarithmic model.

Findings: As a result of evaluating the logarithmic model, we identified the main factors influencing the demand for medicines. An individual's poor health state increases the demand for and consumption of medicines. We observed decreased demand for medicines among those individuals who assessed their health status by non-medical factors. Individuals who used the services of private medical institutions increased their demand for medicines, unlike those individuals who used the services of specialized medical institutions. A large amount of time spent traveling to medical centers is also one of the factors in increasing drug consumption. Such factors as visits to emergency medical care, the presence of chronic diseases in family members, the gender and place of residence of the individual, and a large number of children in the family influence high demand.

Conclusions: The logarithmic model results show many factors influencing the demand for medicines; the introduction of co-payment further expands the variability of factors influencing the volume of medicine consumption by the population. Various co-payment mechanisms can both reduce consumption and encourage drug consumption.

Keywords*:* Co-payment in Kazakhstan, demand, healthcare, health, medical services, medicines, population.

Introduction

The medical services market is one of the few markets that has demonstrated stable growth and development in the pre-pandemic and post-pandemic periods. The global healthcare services market was estimated at $11.3 trillion in 2022 and will grow to $19.2 trillion by 2030. As part of the medical services market, the global pharmaceutical market, according to Statista, increased from 2001 to 2022 from 390.2 billion dollars to 1.482 trillion dollars. In Kazakhstan, the medical services market is dynamically developing, so in 2019, the volume of the medical services market amounted to 3.67 billion dollars. By 2022, the medical services market grew to 6.2 billion dollars, of which the volume of the pharmaceutical market was 1.7 billion dollars. Many factors, such as a favorable investment climate, increased healthcare system funding, improved disease detection, reduced mortality, increased birth rates, and the aging of the population, facilitated the development of the medical services market. For example, the population in Kazakhstan increased from 2019 to 2022, from 18.3 million to 19.7 million people, and the population aging index increased from 26.5 to 28.2 people per 100 children.

Based on the above factors, we aim to determine the characteristics of the population's demand for medicines in Kazakhstan and assess the impact of co-payment mechanisms on medicine consumption. During the research, we tried to answer the following questions: To what extent can various socio-economic factors affect the demand for medicines, and what are the prospects for introducing co-payment mechanisms for medicines in Kazakhstan? Understanding the reasons for low or high population demand for medical services will

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allow managers to improve the population's health more effectively, coordinate medical care, ensure accessibility of medical organizations, and encourage the population to use medical services. Understanding the characteristics of the demand for medicines helps to take measures to reduce excessive consumption and resistance to pharmaceuticals and improve the environment from pollution by pharmaceuticals (Hensher et al., 2020).

The features of the demand for medicines have been poorly studied in Kazakhstan; this study aims to fill this gap. Through a sociological survey and the construction of a logarithmic model, the main factors of demand for medical care were identified.

Literature Review

A close relationship with the production of medical services determines the demand for medical care. The state can determine priority areas for healthcare development based on demand models. Discrete choice models of health care show that changes in the price level influence changes in medical demand. For example, in developing countries, rising prices in public hospitals encourage people to switch to traditional and informal medicines of poor quality. The single-demand model suggests that when there is a lack of information about health care, the quality of care significantly influences demand (Mwabu, 2008).

A study conducted in the Tsegede region, northern Ethiopia, among 423 respondents using multinomial logistic regression showed that the complexity of the disease, the education of the respondents, the distance to the medical organization, and the quality and price of treatment were significant, and statistically associated with the demand for medical services. Lack of insurance systems and lack of information negatively impact demand in the medical field (Wellay et al., 2018). It is also essential that place of residence in urban or rural areas affects the level of demand in the healthcare sector. Thus, in Kazakhstan, other things being equal, it is highly likely that urban households will seek medical care and spend more on medical services (Thompson et al., 2003).

Some authors note the heterogeneity of price elasticity of demand in healthcare. The lowest elasticity is for preventive visits (-0.02), and the highest elasticity is for visiting specialist doctors (-0.32) and pharmaceuticals (-0.44). Elasticity varies depending on the patient's age, salary, working conditions, industry, and insurance (Ellis et al., 2017).

Drug demand has unique characteristics because four entities determine it. First, patients and drug consumers determine demand. Second, demand is driven by physicians as they act as patient agents. Third, demand is determined by insurers since they are primarily payers. Fourth, pharmacists determine demand by having information about drugs and influencing the drug dispensing process (Schweitzer & Lu, 2018).

The supplier of medicines often initiates this demand and can induce the demand for medicines. In addition, other factors also influence induced demand. For example, there can be information asymmetry, insufficient qualifications of a doctor and insufficient medical literacy of patients, marketing of pharmaceutical companies, a weak healthcare system, and illegal trafficking in counterfeit medicines. Understanding induced demand factors allows measures to reduce unnecessary drug consumption, which positively impacts public health (Mohamadloo et al., 2019).

Research shows that the most inelastic drugs are those used to treat chronic diseases, with a price elasticity of -0.08, and most studies also indicate that the overall price elasticity of drugs is around -0.2. Copayments for medicines have different effects on medicine consumption and largely depend on various factors (severity of the disease, age, income). People with low incomes and chronic diseases may reduce their demand for medicines with the introduction of copayments, thereby negatively affecting their health. Copayments do not affect the consumption of medicines by the working population with average incomes. Loss of treatment adherence is associated with cost-sharing in copayments and chronic diseases and with lack of recovery. Based on this, governments need to choose copayment schemes wisely to avoid the risk of reduced adherence, especially among inelastic treatment groups (Hernández-Izquierdo et al., 2019).

A study conducted in China shows that the main factor influencing the price elasticity of a drug is the type of disease. The price elasticity of demand varies depending on the drug category; for example, anticancer drugs have the most negligible elasticity, and drugs for treating cardiovascular diseases have the most extraordinary elasticity. It is also worth noting that in the group of antitumor and cardiovascular drugs, the absolute value of price elasticity for generics is higher than for original drugs. In the group of antimicrobial drugs, generic drugs have lower absolute elasticity values than brand-name drugs (Zhao et al., 2021).

The rapidly growing demand for medicines in Vietnam is due to several reasons: economic growth and increasing incomes, increasing demographics and urbanization, an aging population due to improvements in

living standards, environmental degradation, and unsafe food products (Angelino et al., 2017). An increase in the use of antibiotics and the emergence of resistance to them is typical for many countries, including Kazakhstan. Factors such as education level, income, and age are associated with antibiotic use and awareness (Iskakova et al., 2023).

A study conducted at the largest hospital in Botswana, Princess Marina, found four classes of drug supply and demand problems: supply problems, demand problems, regulatory problems, and institutional problems. The demand problem is characterized by irrational consumption of medicines and increased marketing strategies (Modutlwa et al., 2023). In developed and developing countries, demand is also negatively affected by poor drug distribution. A randomized trial conducted in 439 health facilities in Zambia confirmed that a direct distribution system through a cross-warehousing system, as opposed to a three-tier system, reduced the duration and frequency of drug shortages. In addition, the direct exchange of information between hospitals and the central drug supply authority reduces the blurring of accountability (Vledder et al., 2019).

Methods

We conducted a sociological survey on the topic: "Health and its impact on the characteristics of demand for medical services and medicines" among 1638 respondents in different regions of the Republic of Kazakhstan. The majority of respondents lived in Almaty — 27.5%, Almaty region — 12.9%, Astana — 7.6%, Turkestan region — 7%, Shymkent — 4.5%, the rest of the respondents lived in other regions of Kazakhstan — 40,5%. 71.8% of respondents lived in cities, 14.5% lived in rural areas, and 13.7% lived in urban settlements. Among the respondents surveyed, 35.7% were men, 64.3% were women. Table 1 presents the main questions and answers of respondents from the sociological survey.

Table 1. Results of a sociological survey on the topic: "Health and its impact on the characteristics of demand for medical services and medicines"

Questions asked to respondents	Respondents' answers to the questions asked				
Age	16—17 years old	18—24 years old	25—44 years old	45—64 years old	65 years and above
	12.3%	53%	22.5%	11.2%	1%
Family status	married	divorced	widowed	divorced	never married
	36.5%	3.2%	2.2%	1.6%	56.2%
Do you have children in your family?	have no children	1 child	2 children	3 children	4 or more children
	43.1%	16.7%	16.7%	12%	11.5%
Education	higher	average	secondary specialized	incomplete higher	lower secondary
	51%	10.4%	12%	24.1%	2.5%
Main occupation	maternity leave, pension	studied	unemployed	work, business, household	limited
	8.7%	40.7%	4.8%	44.7%	health options
Your health status	bad	average	good	found it difficult to answer	
	6.5%	33.3%	57.5%	2,7 %	
On what basis do you assess your own health?	based on medical examination	based on medical examination and well-being	based on how you feel	milk and honey	psychosomatics
	0.1%	19.7%	32%	48.1%	0.1%
Amount of time spent traveling to medical facilities	up to 30 minutes	up to 15 minutes	up to 1 hour	up to 2 hours	more than 2 hours
	40.5%	31.1%	20.6%	4.3%	3.5%
Do you purchase medications or receive them from the government?	I buy it myself	state	I buy some myself, some are issued by the state		I find it difficult to answer
	78.4%	5.4%	11 %		5,3 %
How much do you spend per month on medicines?	up to 11 dollars	from 11 to 22 dollars	from 22 to 45 dollars	from 45 to 79 dollars	more than 79 dollars
	37.6%	28.4%	20 %	7,6 %	6,4 %
Is constant medication necessary?	Yes	No	I find it difficult to answer		
	41,2 %	51,6%	7,2 %		
Note – compiled by the authors					

Respondents were also asked the following questions with the opportunity to select multiple answer options. If you sought medical help for a fee, then indicate the reason, the most popular answers: 24.6% of respondents answered that they wanted to be served at a high level (quickly and efficiently); 19.2% responded that the hospital doctor at their place of residence refused to issue a referral; 19% responded that it takes a long time to make an appointment for diagnostic examinations (30.1% of respondents did not seek medical care for a fee). If a patient went to emergency medical care, did he or she encounter any problems? The most popular answers:

- 29.5% of problems did not arise.
- 16.6% had a very long wait for an answer.
- 16% had a long wait for a medical team (34.9% of respondents did not go to emergency medical care).

The results of a sociological survey show that the majority of respondents (78.4%) buy medicines independently, and the majority (37.6%) prefer inexpensive medicines under $11. Of the respondents surveyed, 41.2% need to constantly take medications. Despite government regulation, rising drug prices are one of the main problems of many Kazakhstanis. One method to reduce the cost of medicines and the cost of purchasing medicines could be the introduction of copayment mechanisms for medicines.

It was supposed to introduce the rules for copayment for medicines and medical devices in Kazakhstan 2020. However, due to the unpreparedness of the healthcare system, the implementation of copayment was postponed to 2026. Community copayment for drug costs refers to the practice where patients pay a particular portion of the cost of drugs, and the government or insurance company covers the rest. It may be in the form of a fixed amount or a percentage of the total cost of the drug. There are various reasons for introducing copayments for medicines. One is reducing health care costs for the government or insurance companies. Introducing copayments can help to reduce the cost of purchasing drugs, especially if drug consumption is high.

However, co-paying for drug costs can also have negative consequences. The high cost of medications can create a financial burden for patients, especially those who depend on regular medications. Under these circumstances, patients may refuse medical treatment and reduce the dosage of medications, which may ultimately negatively affect their health. In addition to the financial burden, co-payments can create conditions for inequalities in access to medicines. Therefore, people with low incomes or without health insurance may have difficulty paying for medications and may not receive the treatment they need. This situation can exacerbate health inequalities and negatively impact public health. Ultimately, guaranteeing access to medicines is an essential aspect of public health. A balance between financial responsibility and access to medicines should ensure the best health outcomes for all citizens.

Forecasting the demand for medicines when introducing a copayment scheme can be done in the following ways. Studying previous periods with copayment schemes can help predict future demand. By analyzing past drug sales and patient demand data, patients can identify trends and understand how demand changes when introducing a new copayment scheme. However, Kazakhstan has not previously introduced copayment schemes for medicines, and this approach is not applicable.

Market research can be conducted among patients and potential drug users to assess their attitudes toward the copayment scheme and predict how it will influence their purchasing behavior. Research methods may include surveys, focus groups, and analysis of their responses.

Computer models and simulations can help to forecast drug demand. Building models based on population data, economic factors, prices, and other variables allows for scenario analysis and predicting how drug demand will change under different copayment scheme options. Modeling considers various factors, including prices, availability, pharmacoeconomics, and consumer behavior.

It is also important to consider the possibility of adaptation and change in consumer behavior in response to the new co-payment scheme. Therefore, it is possible to predict changes in the demand for medicines due to the introduction of co-payments based on the price elasticity of demand for medicines. It assesses the sensitivity of demand to changes in the population's co-pay amount. The population's participation in paying for medicines represents a reduction in the population's income by the co-payment amount.

To estimate the price elasticity of demand for medicines by the population, it is possible to use a linear econometric model:

$$V_i = \beta_0 + \beta_1 I_i + X_i \gamma + \varepsilon_i, \;\; i = 1,2,\dots,N, \tag{1}$$

where V_i is the volume of demand for medical services or medicines, I_i is income (price), X_i is a vector of characteristics of consumer i and other indicators that can affect demand, β_0, β_1 are coefficients, γ is a vector of coefficients appropriate dimension. The income elasticity of demand can be estimated using the formula:

$$E = \frac{I}{V}\hat{\beta}_1. \quad (2)$$

Here $\hat{\beta}_1$ is the estimated value of the coefficient β_1, and I and V are the average values of income and volume, respectively.

Another approach is to use a linear-log regression model:

$$lnV_i = \beta_0 + \beta_1 lnI_i + X_i\gamma + \varepsilon_i, \;\; i = 1,2,\dots,N. \quad (3)$$

Then the estimate of the income elasticity of demand is equal to the estimated coefficient for the logarithm of income, i.e.:

$$E = \hat{\beta}_1. \quad (4)$$

When carrying out calculations, econometric tests should be performed to ensure the reliability requirements of the estimated model and the results obtained. However, when estimating a multiple regression model, the phenomenon of endogeneity is possible in addition to the usual tests for the significance of coefficients, multicollinearity, heteroscedasticity, and autocorrelation. Endogeneity occurs if the random term is correlated with some of the regressors in the model equation. One way to eliminate this problem is to use the instrumental variable method. However, finding instrumental variables is usually a complex and time-consuming task due to the availability of data that satisfies certain conditions. As in the study (Selezneva, 2014), the model parameters were estimated without considering possible endogeneity.

Results

Table 2 presents the results of evaluating the logarithmic model; this model was built based on data from a survey of 1638 respondents in all regions of Kazakhstan. To avoid possible heteroskedasticity, robust estimates of the coefficients were obtained. All estimated model coefficients are significant at the 1% level except one, which is significant at the 5% level.

Table 2. Estimation results using the logarithmic model

	lnLc	Coef.	Robust Std. Err.	t	P>t	[95% Conf. Interval]	
lnUc	Logarithm of income	.095	.030	3.15	0.002	.036	.154
A1	How would you rate your health? Health is poor	.420	.093	4.51	0.000	.237	.602
A2	Average health	.174	.050	3.46	0.001	.075	.272
C4	On what basis do you assess your own health? Milk and honey	-.133	.047	-2.81	0.005	-.225	-.040
C5	Psychosomatics	-.983	.072	-13.69	0.000	-1.123	-.842
AE	Indicate the reason why you sought medical care for a fee. The doctor at the medical institution at the place of residence did not issue a referral	.908	.159	5.72	0.000	.597	1.219
AK	High professionalism of doctors in a private clinic	.262	.068	3.82	0.000	.127	.396
AQ	Specialized institutions (diagnostic center, etc.)	-.759	.152	-4.98	0.000	-1.058	-.460
Hc	How long will it take you to travel to a medical facility?	.0016	.0007	2.26	0.024	.0002	.0029
AV	If you went to emergency medical services, did you encounter any of the following problems? Very long wait for a response	.244	.069	3.53	0.000	.109	.380
AZ	No, there were no problems	.156	.052	3.00	0.003	.054	.257

Jc	Do you or any of your family members need to take certain medications on a regular basis?	.206	.048	4.27	0.000	.111	.301
K1	Do you purchase medications yourself, or do you receive them from the government? On one's own	-.492	.080	-6.15	0.000	-.649	-.335
K2	The state helps	-.378	.125	-3.01	0.003	-.624	-.131
Mc	What's your gender?	-.108	.049	-2.18	0.029	-.204	-.011
Sc	Do you have children in your family?	.064	.017	3.80	0.000	.031	.097
V3	Please indicate what area you live in? Settlement	.196	.069	2.83	0.005	.060	.332
Cons	Constant	7.775	.361	21.52	0.000	7.066	8.484
Note – compiled by the authors							

Income was calculated as the average of total income divided by the number of people in the family. The estimated income elasticity of drug demand is 0.095, with a 95% confidence interval of [0.036, 0.154]. According to Liu & Chollet (2006) and other studies, most estimates of income elasticities of demand for health care fall between 0 and 0.2. It means that the resulting estimate of 0.095 for the elasticity of demand for medicines is in this interval.

The estimated coefficients for the model variables make it possible to assess how different factors will influence the demand for medicines. An important factor influencing the demand for medicines is the health status of the respondent, especially if the health status is poor. Those individuals who assess their health not by medical examination or well-being but rely on consuming milk and honey and psychosomatics, on the contrary, reduced this demand.

Those who sought medical help for a fee because the doctor at their residence refused to issue a referral or because the high professionalism of doctors in a private clinic increased the demand for medicines. Moreover, those who turned to specialized institutions, on the contrary, reduced demand.

The more time people spent traveling to a medical facility, the more likely they were to buy medicines. The impact on the demand for medicine for any problems when going to emergency medical care is ambiguous, but those who go to it tend to buy medicines. People buy more medicine if one of their family members needs to take certain medications regularly. However, people who do this independently or with government help buy fewer medications.

Men buy less medicine than women. The more children in a family, the more medicines are purchased. Depending on the locality, people living in urban settlements tend to purchase medicines more than those living in cities and rural areas.

Based on the obtained estimates of the elasticity of demand for drugs by income, it is possible to make predictions about changes in the amount of drug consumption after the introduction of co-payment mechanisms. By definition, the elasticity of demand for drugs is:

$$E = \frac{I}{V}\frac{\Delta V}{\Delta I}. \quad (5)$$

Here V is the volume of consumption of medicines, I is income before the introduction of co-payment, ΔI is the amount of co-payment, ΔV is the change in the volume of consumption of medicines. Hence, taking into account that $\Delta V = V' - V$, where V' is the volume of consumption of medicines after the introduction of co-payment, we can write:

$$V' = V\left(1 + E\frac{\Delta I}{I}\right). \quad (6)$$

Based on this formula, it is possible to obtain estimates for the average expenditure of individuals after the introduction of co-payment for drug costs.

Conclusions

In this study, using a logarithmic model, we assessed the influence of various factors on the demand for medicines in the Republic of Kazakhstan. An increase in life expectancy, an increase in chronic diseases, and an increase in public and private spending on healthcare largely determine the relevance of the problem of determining the main factors influencing the demand for medicines. A better understanding of the nature of the demand for medicines will allow healthcare systems to plan purchases more effectively, avoid shortages

of medicines, and regulate excessive consumption of medicines in medical institutions and among the population. Excessive drug consumption contributes to increased drug resistance, especially antibiotic resistance. By analyzing the behavior of drug consumers and introducing a co-payment mechanism, it is possible to help to reduce not only the excessive consumption of drugs but also healthcare costs for the state, insurance companies, and households. Undoubtedly, it is necessary to consider various negative factors, for example, inequality of access to medicines due to the introduction of co-payments. The study showed that those individuals who do it themselves or with the state's help buy little medicine. Of course, introducing co-payments for medicines in 2026 will change the consumer behavior of the population and the demand for medicines.

Complementary Data

This research has been funded by the Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan (Grant № AP14869863).

References

Angelino A. Pharmaceutical Industry in Vietnam: Sluggish Sector in a Growing Market / A. Angelino, D. T. Khanh, N. An Ha, T. Pham // International Journal of Environmental Research and Public Health. — 2017. — 14(9). — P. 976. https://doi.org/10.3390/ijerph14090976.

Ellis R. P. Healthcare demand elasticities by type of service / R. P. Ellis, B. Martins, W. Zhu // J Health Econ. — 2017. — 55. — P. 232. https://doi.org/10.1016/j.jhealeco.2017.07.007.

Hensher, M. Health care, overconsumption, and uneconomic growth: A conceptual framework / M. Hensher, B. Canny, C. Zimitat, J. Campbell, A. Palmer // Soc Sci Med. — 2020. — 266:113420. DOI: 10.1016/j.socscimed.2020.113420.

Hernández-Izquierdo, C. The effect of a change in co-payment on prescription drug demand in a National Health System: The case of 15 drug families by price elasticity of demand / C. Hernández-Izquierdo, B. González López-Valcárcel, S. Morris, M. Melnychuk, I. Abásolo Alesson // PLoS ONE. — 2019. — 14(3). — P. e0213403. https://doi.org/10.1371/journal.pone.0213403.

Iskakova N. Factors Influencing Antibiotic Consumption in Adult Population of Kazakhstan / N. Iskakova, Z. Khismetova, D. Suleymenova, Z. Kozhekenova, Z. Khamidullina, U. Samarova, N. Glushkova, Y. Semenova // Antibiotics. — 2023. — 12(3):560. https://doi.org/10.3390/antibiotics12030560.

Liu S. Price and Income Elasticity of the Demand for Health Insurance and Health Care Services: A Critical Review of the Literature Final Report / S. Liu, D.J. Chollet // Mathematica Policy Research Reports. — 2006. — P. 103.

Modutlwa N. The Supply and Demand Challenges of Medicines at Princess Marina Hospital, Gaborone, Botswana / N. Modutlwa, S. Moyo, N. Tshuma // IJIMES. — 2023. — Vol. 3. — No. 3. — P. 1–9.

Mohamadloo A. The Main Factors of Induced Demand for Medicine Prescription: A Qualitative Study / A. Mohamadloo, S. Zarein-Dolab, A. Ramezankhani, J. Jamshid // Iran J Pharm Res. — 2019. — 18(1). — P. 479–487.

Mwabu G. The Demand for Health Care / G. Mwabu // International Encyclopedia of Public Health. — 2008. — P. 84–89. https://doi: 10.1016/B978-012373960-5.00164-7.

Schweitzer S. O. Pharmaceutical Economics and Policy: Perspectives, Promises, and Problems / S. O. Schweitzer, J. Z. Lu // Oxford University Press. — 2018. — 3rd ed. — P. 408. https://doi.org/10.1093/oso/9780190623784.003.0006.

Thompson R. Health-seeking behavior and rural/urban variation in Kazakhstan / R. Thompson, N. Miller, S. Witter // Health Econ. —2003. — 12. — P. 553—564. https://doi.org/10.1002/hec.749.

Vledder M. Improving Supply Chain for Essential Drugs in Low-Income Countries: Results from a Large Scale Randomized Experiment in Zambia / M. Vledder, J. Friedman, M. Sjöblom, T. Brown, P. Yadav // Health Systems & Reform. — 2019. — 5(2). — P. 158–177. https://doi: 10.1080/23288604.2019.1596050.

Wellay T. Demand for health care service and associated factors among patients in the community of Tsegedie District, Northern Ethiopia / T. Wellay, M. Gebreslassie, M. Mesele, H. Gebretinsae, B. Ayele, A. Tewelde, Y. Zewedie // BMC Health Serv Res. — 2018. —10. — 18(1). — P. 697. https://doi: 10.1186/s12913-018-3490-2.

Zhao M. Heterogeneity in Price Elasticity of Medicine Demand in China: Moderate Effect From Economic Incentive and Quality Difference / M. Zhao, P. Nie, J. Wu // Frontiers in pharmacology. — 2021. — 12. — 688069. https://doi: 10.3389/fphar.2021.688069.

Селезнева Е. В. Развитие форм участия населения в оплате медицинской помощи: дис. … канд. экон. наук. [Текст] / Е. В. Селезнева. — М.: НИУ–ВШЭ, 2014. — 231 с.

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Қазақстанда дәрілік заттарға сұраныстың ерекшеліктері және бірлескен төлем енгізудің салдарын бағалау

Аңдатпа:

Мақсаты: Халықтың медициналық көмекке деген сұранысының артуы және денсаулық сақтау жүйесінің шектеулі ресурстары жағдайында дамыған және дамушы елдерде халықтың медициналық қызметтерге, әсіресе дәрілік заттарға сұранысын бағалау мәселесі өзекті болып отыр. Зерттеудің мақсаты — Қазақстан Республикасындағы халықтың дәрілік заттарға сұранысының ерекшеліктерін анықтау және қосымша төлем тетіктерінің дәрілік заттарды тұтынуға әсерін бағалау.

Әдісі: Осы мақсатқа жету үшін Қазақстанның барлық өңірлерінде 1638 респонденттің қатысуымен халыққа әлеуметтік сауалнама жүргізілді. Сауалнама деректері логарифмдік модель арқылы бағаланды.

Қорытынды: Логарифмдік модельді бағалау нәтижесінде дәрілік заттарға сұранысқа әсер ететін негізгі факторлар анықталды. Жеке адамның денсаулығының нашарлығы сұранысты және сәйкесінше дәрі-дәрмектерді тұтынуды арттырады. Медициналық емес факторлармен денсаулық жағдайын бағалаған адамдарда дәрі-дәрмектерге сұраныстың төмендеуі байқалды. Жеке медициналық мекемелердің қызметтерін пайдаланған адамдар мамандандырылған медициналық мекемелердің қызметтерін пайдаланған адамдарға қарағанда дәрі-дәрмектерге деген сұранысын арттырды. Медициналық орталықтарға баруға көп уақыт жұмсау да дәрі-дәрмектерді тұтынуды арттыратын факторлардың бірі. Жоғары сұранысқа жедел медициналық көмекке жүгіну, отбасы мүшелерінде созылмалы аурулардың болуы, адамның жынысы мен тұрғылықты жері, отбасындағы балалардың көп болуы сияқты факторлар да әсер етеді.

Тұжырымдама: Логарифмдік модельдің нәтижелері дәрілік заттарға сұранысқа әсер ететін көптеген факторларды көрсетеді, бірлесіп төлеуді енгізу халықтың дәрі-дәрмектерді тұтыну көлеміне әсер ететін факторлардың өзгергіштігін одан әрі кеңейтеді. Бірлесіп төлеудің әртүрлі механизмдері тұтынуды азайтып, дәрі-дәрмектерді тұтынуды ынталандыруы мүмкін.

Кілт сөздер: Қазақстанда бірлесіп төлеу, сұраныс, денсаулық сақтау, денсаулық, медициналық қызметтер, дәрі-дәрмектер, халық.

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Особенности спроса на лекарства и оценка последствий введения сооплаты в Казахстане

Аннотация:

Цель: В условиях растущих потребностей населения в медицинской помощи и ограниченности ресурсов системы здравоохранения актуальным становится вопрос оценки спроса населения на медицинские услуги, в особенности на лекарственные средства, как в развитых, так и развивающихся странах. Цель исследования заключается в определении особенностей спроса населения на лекарственные средства в Республике Казахстан и оценке влияния механизмов сооплаты на потребление лекарств.

Методы: Для достижения указанной цели был проведен социологический опрос населения во всех регионах Казахстана с участием 1638 респондентов. Данные анкетирования были оценены логарифмической моделью.

Результаты: В результате оценки логарифмической модели были определены основные факторы, влияющие на спрос на лекарственные средства. Плохое состояние здоровья индивида увеличивало спрос и соответственно потребление лекарственных средств. Снижение спроса на лекарства наблюдалось у тех индивидов, которые оценивали свое состояние здоровья немедицинскими факторами. Индивиды, которые пользовались услугами частных медицинских учреждений, увеличивали свой спрос на лекарства в отличие от тех индивидов, кто пользовался услугами специализированных медицинских учреждений. Большое количество времени, потраченное на дорогу в медицинские центры, также является одним из факторов увеличения потребления лекарств. На высокий спрос влияют и такие факторы, как обращения в скорую медицинскую помощь, наличие у членов семьи хронических заболеваний, пол и место жительства индивида, большое количество детей в семье.

Выводы: Результаты логарифмической модели показывают множество факторов, влияющих на спрос на лекарственные средства, внедрение сооплаты еще больше расширяет вариативность факторов, оказывающих влияние на объемы потребления лекарств населением. Различные механизмы сооплаты могут как сократить потребление, так и стимулировать потребление лекарственных средств.

Ключевые слова: сооплата в Казахстане, спрос, здравоохранение, здоровье, медицинские услуги, лекарства, население.

References

Angelino, A., Khanh, D. T., An Ha, N., & Pham, T. (2017). Pharmaceutical Industry in Vietnam: Sluggish Sector in a Growing Market. *International Journal of Environmental Research and Public Health*., *14*(9), 976. https://doi.org/10.3390/ijerph14090976.

Ellis, R. P., Martins, B., & Zhu, W. (2017). Healthcare demand elasticities by type of service. *J Health Econ*., 55, 232. https://doi.org/10.1016/j.jhealeco.2017.07.007.

Hensher, M., Canny, B., Zimitat, C., Campbell, J., & Palmer, A. (2020). Health care, overconsumption, and uneconomic growth: A conceptual framework. *Soc Sci Med*., 266:113420. https://doi: 10.1016/j.socscimed.2020.113420.

Hernández-Izquierdo, C., González López-Valcárcel, B., Morris, S., Melnychuk, M., & Abásolo Alesson, I. (2019). The effect of a change in co-payment on prescription drug demand in a National Health System: The case of 15 drug families by price elasticity of demand. *PLoS ONE.*, *14*(3), e0213403. https://doi.org/10.1371/journal.pone.0213403.

Iskakova, N., Khismetova, Z., Suleymenova, D., Kozhekenova, Z., Khamidullina, Z., Samarova, U., Glushkova, N., & Semenova, Y. (2023). Factors Influencing Antibiotic Consumption in Adult Population of Kazakhstan. *Antibiotics*, 12(3):560. https://doi.org/10.3390/antibiotics12030560.

Liu, S. & Chollet, D. J. (2006). Price and Income Elasticity of the Demand for Health Insurance and Health Care Services: A Critical Review of the Literature Final Report. *Mathematica Policy Research Reports*, 103.

Modutlwa, N., Moyo, S., & Tshuma, N. (2023). The Supply and Demand Challenges of Medicines at Princess Marina Hospital, Gaborone, Botswana. *IJIMES, 3*(3), 1–9.

Mohamadloo, A., Zarein-Dolab, S., Ramezankhani, A., & Jamshid, J. (2019). The Main Factors of Induced Demand for Medicine Prescription: A Qualitative Study. *Iran J Pharm Res*., *18*(1):479–487.

Mwabu, G. (2008). The Demand for Health Care. *International Encyclopedia of Public Health.*, 84–9. https://doi: 10.1016/B978-012373960-5.00164-7.

Schweitzer, S. O. & Lu, J. Z. (2018). Pharmaceutical Economics and Policy: Perspectives, Promises, and Problems, 3rd ed. https://doi.org/10.1093/oso/9780190623784.003.0006.

Selezneva, E. V. (2014). Razvitie form uchastia naseleniia v oplate meditsinskoi pomoshchi [Development of forms of population participation in paying for medical care. *Candidate's thesis*. Moscow: NIU–VShE [in Russian].

Thompson, R., Miller, N., & Witter, S. (2003). Health-seeking behavior and rural/urban variation in Kazakhstan. *Health Econ*., 12, 553–564. https://doi.org/10.1002/hec.749.

Vledder, M., Friedman, J., Sjöblom, M., Brown, T., & Yadav, P. (2019). Improving Supply Chain for Essential Drugs in Low-Income Countries: Results from a Large Scale Randomized Experiment in Zambia. *Health Systems & Reform.*, *5*(2), 158–177. https://doi.org/10.1080/23288604.2019.1596050

Wellay, T., Gebreslassie, M., Mesele, M., Gebretinsae, H., Ayele, B., Tewelde, A., & Zewedie, Y. (2018). Demand for health care service and associated factors among patients in the community of Tsegedie District, Northern Ethiopia. *BMC Health Serv Res.*, *18*(1), 697. https://doi.org/10.1186/s12913-018-3490-2.

Zhao, M., Nie, P, & Wu, J. (2021). Heterogeneity in Price Elasticity of Medicine Demand in China: Moderate Effect From Economic Incentive and Quality Difference. *Front. Pharmacol*., 12, 688069. https://doi.org/10.3389/fphar.2021.688069.