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The Influence of Medical and Socio-Economic Characteristics of the Population of Kazakhstan on the Frequency of Doctor Visits

Abstract

Object: to find out how the frequency of visits to doctors in Kazakhstan is determined by the medical and socio-economic characteristics of the population.

Methods: a survey with 1,638 participants assessed annual doctor visit frequency using a seven-option question. For balanced data, responses were grouped into categories (first, second, seventh, and fifth and sixth combined). Additional questions captured socio-economic and medical metrics. Data collection and variable selection are detailed in the article, which employs a regression model for analysis.

Findings: the authors touched upon the problem of low initiative of the population related to their health and "medical paternalism", typical phenomena for most post-Soviet countries. As a result of the simulation, it was found that the results of the evaluation of the polynomial logit and the polynomial probit correspond to each other.

Conclusions: the interpretation of the results in the polynomial model shows that any alternative is given in comparison with the base alternative, so increasing the independent variable makes the choice of the alternative more or less likely compared to the base alternative. So, the variables "Healthcare" and "Medical checkup" negatively affect the first category and positively affect the second, third and fourth categories.

Keywords: healthcare, frequency of visits to the doctor, satisfaction with medicine, socio-economic status, medical condition of the population, Kazakhstan.

Introduction

In 2022, life expectancy at birth in Kazakhstan reached 74.44 years. For Kazakhstan this indicator is the highest, so in 2000 this indicator was equal to 65.50 years; in 2005 — 65.91 years; 2010 — 68.45 years; 2015 — 71.97 years; 2020 — 71.37 years. In 2022, the number of deaths (133,500) decreased to the pre-pandemic level (133,500); during the COVID-19 pandemic in 2020, the death rate was 161,300 in 2021, 182,400. Mortality rates from the main nosologies are also decreasing accordingly: circulatory (32.7%), neoplasm (7.9%), deaths from injuries (5.3%), infant mortality (4.6%) (*Bureau of national statistics* of the *Agency for strategic planning and reforms* of the Republic of Kazakhstan, *2023*). By 2030, the population of Kazakhstan is projected to increase to 21 million people. At the same time, there are also a number of unresolved problems in the health care system of Kazakhstan: chronic underfunding of the health care system, high "private expenditures" of households on health care, high workload, aging and shortage of medical personnel, especially narrow profile doctors and other problems. The problem of shortage of medical personnel has been relevant for Kazakhstan for many years, for the last five years the shortage of medical personnel has increased from 10 to 23 thousand people. They try to cover the shortage of personnel, including by combining positions, which leads to an increase in the burden on doctors. Thus, according to the Accounts Committee of the Republic of Kazakhstan, one general practitioner has up to 1200 patients.

Given these facts, we set the goal to analyze the impact of medical and socio-economic characteristics of the population of Kazakhstan on the frequency of visits to the doctor. Based on the weak coverage of this problem in the scientific literature in Kazakhstan, the practical significance of the study is undoubtedly increasing for the health care sector. Often Kazakhstani people turn to doctors on the occasion of necessity 38.3%, on the occasion of medical examination 23% and only every fifth and sixth patient turns consciously

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and in time to consult a doctor. Also, according to the results of a sociological study conducted by the Research Institute for International and Regional Cooperation of the Kazakh-German University, it was found that 7.3% of respondents do not seek medical advice, 4.8% indicated that they were not sick and did not seek medical help during the year. There was no difference between rural and urban population, women spent more time on health than men (Nurgalieva, 2016). At the same time, research by Gedeon Richter Kazakhstan shows that 71 % of women engage in self-medication (Kazakhstan pharmaceutical bulletin, *2022*). In another study, based on a survey of 500 respondents, it was found that 35.8% of respondents very rarely visit and 9.2% of respondents do not visit health care facilities and only 21.2% of respondents indicated that they frequently visit health care organizations (Nyigmetullin, 2021). It is worth noting that in 2022 only 82.4% of the population of Kazakhstan was covered by compulsory health insurance.

Literature review

Kim E. S., Park N., Sun J. K., Smith J., Peterson C., in their study tracked the life satisfaction and frequency of doctor visits of 6,379 Americans over the age of 50 for four years. As a result of the study, it was found that one factor of high life satisfaction was fewer doctor visits (Kim et al., 2014). Jenkins K. R., Zucker R. A., in their article analyzed how binge drinking in the elderly (+70), affects the frequency of visits to the doctor and concluded that frequent use of alcohol contributes to a decrease in seeking medical care in the United States (Jenkins, Zucker, 2010). In contrast, a study by Anzai Y, Kuriyama S, Nishino Y, Takahashi K, Ohkubo T, Ohmori K, Tsubono Y, Tsuji I. found that among population categories in Japan, people who abuse alcohol and people who do not abuse alcohol are more likely to seek medical care (Anzai et al., 2005).

St Sauver J. L., Warner D. O., Yawn B. P., Jacobson D. J., Mc Gree M. E., Pankratz J. J., Melton L. J., Roger V. L., Ebbert J. O., Rocca W. A. analyzed which non-acute conditions patients are more likely to see physicians for in Minnesota (Olmsted County). The following conditions were identified across all age groups: skin conditions, osteoarthritis and joint disease, back problems, lipid disorders, and upper respiratory diseases (St Sauver et al., 2013).

Collins C., Homeniuk R., in their study on the example of Ireland showed that 29.1 million consultations are carried out annually in the country, of which 21.3 million are carried out by general practitioners, 7.8 million by nurse practitioners. The average Irish person consults approximately 4.34 times per year, with an average time per consultation of 13.7 minutes (Collins, Homeniuk, 2021).

Stephenson E., Butt D. A., Gronsbell J, Ji C., O'Neill B., Crampton N., et al. in their article analyze the number of primary health care visits by Canadians in Ontario after the onset of the Covid-19 pandemic. They found that during the pandemic there was an increase in telephone and video visits (77.5% of all visits) and an increase in mental health-related visits, namely anxiety. Hematuria was also a pathology for which there were more visits during the pandemic than before the pandemic. In contrast, the number of visits for preventive care and chronic disease-related care decreased. However, diabetes, hypertension, and osteoarthritis remained the most frequently reported conditions among Canadians (Stephenson et al., 2021).

Mann E. G., Johnson A., Van Den Kerkhof E.G. investigated the relationship between chronic pain and the frequency of physician visits. It was found that chronic pain and multiple chronic conditions contribute to more visits to physicians and increase the cost of treatment and financing of the health care system (Mann et al., 2016).

Wang J., Zuo H., Chen X. in their study showed what factors influence infrequent visits of diabetic patients to their primary care physicians in two provinces in China. The researchers identified the following factors: urban residence, low income, lack of insurance, lack of follow-up and home visits. Urban patients also noted a shortage of medications and long distance to a medical facility. Rural patients reported a shortage of medications and concerns about the possible high costs of medical services. These factors are the most significant barriers to receiving timely health care (Wang et al., 2019).

The study by Siskou O., Kaitelidou D., Papakonstantinou V., Liaropoulos L., using Greece as an example, shows that rural residents seek medical care more often due to poor staffing of public outpatient medical facilities. It is also worth noting the systemic problems of the health care system in Greece, which force the population to turn more often to private health care facilities, such as: insufficient public funding of the health care system, the inflow of investment in the private health care sector and its correspondingly high level of development, the development of voluntary health insurance. It is also worth noting that in the share of households' private expenditure on health care, 66% of the total expenditure on outpatient services, of which 31.1% are dental services (Siskou et al., 2008).

The problem of inequality in receiving medical services is considered in the study by Allin S., Grignon M., Le Grand J. In the article the scientists note that people from higher social groups are more likely to use medical care compared to people from lower social groups. It is also worth considering the main factors that influence inequality: people's informed choices and preferences, poor quality of health services, poor health status (Allin et al., 2010; Spankulova et al., 2021). Layte R, Nolan A on the example of Scotland and Ireland compared the distribution of health care among children and found that in Scotland there is no inequity in the distribution of health care and visits to the general practitioner, and in Ireland in the category of children for whom the full cost of treatment was paid, the distribution of health care and significant visits to general practitioners are recorded in the rich (Layte, Nolan, 2015). Tavares L. P., Zantomio F., in their study on the example of southern European countries analyzed inequality in the distribution of health services among the elderly after 2008 and found that the problem of inequality has long been relevant in Spain, Italy and Portugal (Tavares, Zantomio, 2017).

In a study by Lostao L., Geyer S., Albaladejo R., Moreno-Lostao A., Santos J. M., Regidor E., it is shown that before and after the economic crisis, considering data from 2006–2011, the frequency of visits to the doctor and hospitalization rates in Germany and Spain did not change dramatically, regardless of education and household income (Lostao et al., 2017). Garcia-Gomez P., Hernandez-Quevedo C., Jimenez-Rubio D., Oliva-Moreno J. in their article described the inequitable distribution of long-term care among the non-institutionalized population with disabilities in Spain and documented differences in long-term care among different social groups. Researchers noted that formal services are more concentrated among the more affluent population (Garcia-Gomez et al., 2015). Piotrowska D. E., Jankowska D., Huzarska D., Szpak A. S., Pedzinski B. conducted a study on the use and non-use of dental services among the Polish population and determined that the urban population, the most affluent population and the most educated population use dental services the most (Piotrowska et al., 2020).

Oburota O. S., Olaniyan O., investigated health care inequalities, the impact of insurance and health care financing on inequalities in Nigeria (Oburota, Olaniyan, 2020). Xin Xie., Qunhong Wu et al. in their study analyzed the inequality of health care receipt in China among people with chronic non-communicable diseases and identified overuse of health care services by the rich and underuse of services by the poor (Xie et al., 2014). Terraneo M. investigated the problem of health care utilization in 12 European countries by people aged 50+. It was determined that people with higher level of education have more health care resources, especially in obtaining specialist and dental services (Terraneo, 2021). Anirban Mitra in his article discusses inequality, health care costs, age specific population, the problem of aging population and the impact of COVID-19 (Anirban, 2021).

Methods

Data. The number of respondents to be interviewed should be large enough to ensure the validity and representativeness of results. Obviously, an increase in the sample size leads to an increase in the accuracy of the estimates obtained. Although, increasing the sample size is costly. In (Competition Commission Report, 2011) it is recommended to interview not less than 400 respondents to provide a balance between the representativeness of the sample, the stability of the obtained results and the cost of the data collection.

Thus, the questionnaire was used to survey a total of 1638 people, 1054 women and 584 men, aged from 16 to 65+. The questionnaire contained questions related to a person's socioeconomic status, his/her medical conditions. Socioeconomic status of respondents was measured using a multidimensional index based on age, marital status, educational attainment, employment, professional position, family income, number of children, and type of settlement. Medical conditions of a respondent were evaluated through the set of questions related to pills consumption, medical expenses, health self-rating, travel time to closest medical center, etc. The frequency of doctors' visits was measured by the question "How many times you visit a doctor per year?" Answers to the question were falling into one of seven alternatives:

Category 1: Do not visit,
Category 2: Less than once a year,
Category 3: Once a year,
Category 4: 2–3 times a year,
Category 5: Once a month,
Category 6: Few times a month,
Category 7: Hard to answer.

"Hard to answer" alternative was added to the available answers — this is one of the recommendations (Arrow et al., 1993) to consider the opinions of those who cannot make up their minds regarding the choice of alternative. Table 1 demonstrates distribution of answers across all seven alternatives.

Table 1. Distribution of responses

Category	Frequency of visits	Number of respondents	Proportion of respondents, %
1	Do not visit	109	6.65
2	Less than once a year	195	11.90
3	Once a year	349	21.31
4	2–3 times per year	669	40.84
5	Once a month	149	9.1
6	Few times per month	110	6.72
7	Hard to answer	57	3.48
Total		1638	100.0
Note – compiled by the authors			

Table 1 shows that the popular answer is 2–3 times a year. As can be seen from the table, 3.48% of respondents chose the "Hard to answer" alternative. These results might be due to some characteristic features of Kazakhstani population such as low initiative. Most of the population today feels weak protection, irrational reliance on the authorities of the state, which for some reason should help them. For example, Burmykina O. N. in her comprehensive study revealed that the overwhelming majority of Russian citizens are characterized by a low level of health culture (Burmykina, 2000). The study reveals a pervasive lack of understanding across multiple dimensions of individual health, including limited awareness of pertinent issues, a tendency to manage illnesses without medical consultation, delayed physician visits, non-compliance with medical instructions, and reluctance toward preventive care. This suboptimal health literacy is attributed to a socio-cultural factor termed "paternalism", which extends its influence to the broader context of public health, affecting how individuals engage with healthcare systems and professionals. The impact of paternalistic attitudes on public health is further substantiated by the growing body of research on the concept of "Medical Paternalism". Given Kazakhstan's extensive historical ties with Russia, it is plausible to anticipate a similarly low level of health literacy in the Kazakhstani population.

To ensure an even distribution of the number of observations in each category, categories one, two and seven, and five and six were combined. Thus, the dependent variable Visits_Frequency was constructed as a categorical variable that takes four possible values:

Visits_Frequency = 1 if there is no answer or number of visits is zero or less than one per year

Visits_Frequency = 2 if number of visits is one per year

Visits_Frequency = 3 if number of visits is 2–3 per year

Visits_Frequency = 4 if number of visits is one or more per month

Thus, it is assumed that each respondent while expressing the frequency of doctors' visits had to choose among the above four alternatives.

Model. The probability that respondent i will select alternative j is:

$$p_{ij} = p(y_i = j) = \frac{exp(x_i^{'}\alpha_j)}{\sum_{k=1}^{4} exp(x_i^{'}\alpha_{jk})} = F(x_{ij}\beta)$$

where x is the vector of respondent's socioeconomic characteristics.

Thus, to investigate the frequency of doctors' visits by Kazakhstani population (Visits_Frequency) the following regression model was employed:

$$Visits\ frequency = \alpha + \beta\ X + \varepsilon, \qquad (1)$$

where the dependent variable is the frequency of doctors' visits (*Visits_Frequency*). Here X is the vector of independent variables consisting of medical and socioeconomic characteristics of respondents and ε is the random error of the model.

The explanatory variables include medical and socioeconomic characteristics of respondents:

Health_status — self-rated health status of respondent (respondents were asked to rate own health based on a 4-level scale ranging from poor to excellent);

Pills consumption — whether respondent or family member consumes pills on a regular basis.

Pills expenses — monthly expenditures on medicines.

Pills_source — whether pills are bought by respondent or distributed by the government.

Living standards — level of life of the family (respondents were asked to rate own living standards based on a 4-level scale ranging from "not enough money to afford food" to "enough money to afford all needs").

Age — respondent's age.

Gender — respondent's gender (male/female).

Education — respondent's education.

Income — average monthly income per family member.

Employment_industry — sector of respondent's employment.

City — type of a settlement (city/town/rural area).

Marital status — respondent's marital status.

Employment_status — respondent's employment status.

Kids — number of children.

Location — place of residence.

Medical_checkup — whether respondent had a medical check-up within last three months.

Healthcare — whether respondent takes care of his/her health.

Sickness — whether respondent was sick within last twelve months.

Travel_time– travel time to the medical center.

Professionals_availability — availability of professionals in the medical center.

Regression (1) was estimated using multinomial logistic and multinomial probit models. The choice of an appropriate estimation technique is driven by the categorical nature of the dependent variable. One approach to multinomial data is to nominate one of the response categories as a baseline, which means that to estimate the model, one set of coefficients needs to be normalized to zero. In this case there are (j-1) sets of coefficients to be estimated and the coefficients of other alternatives are interpreted in reference to the base outcome.

For estimation purposes, the category 1 corresponding to the "No answer or number of visits is zero or less than one per year" response to the doctors' visits frequency question was selected as a baseline.

Results

Estimation results are presented in Tables 2 and 3. Table 2 presents the results of the multinomial logit model while Table 3 presents the results of the multinomial probit model.

Table 2. Estimation results of multinomial logit model

Variables	Category 2	Category 3	Category 4
Health_status	0.136	-0.113	-0.720***
	(0.195)	(0.174)	(0.221)
Medical_checkup	1.073***	1.152***	2.120***
	(0.233)	(0.211)	(0.267)
Healthcare	0.317**	0.423***	1.362***
	(0.137)	(0.123)	(0.170)
Sickness	-0.071	0.418*	0.245
	(0.240)	(0.225)	(0.288)
Gender	0.183	0.324	-0.112
	(0.218)	(0.198)	(0.246)
Kids	-0.157**	-0.041	-0.119
	(0.079)	(0.068)	(0.087)
City	-0.000	-0.006	0.002
	(0.010)	(0.009)	(0.012)
Pills_expenses	0.020	0.154*	0.127
	(0.100)	(0.089)	(0.109)
Pills_consumption	0.017	-0.045	0.033

	(0.222)	(0.198)	(0.250)
Employment_industry	-0.006	0.008	-0.032
	(0.026)	(0.023)	(0.029)
Age	0.279***	0.049	0.066
	(0.098)	(0.090)	(0.109)
Travel_time	-0.057	-0.264***	-0.159
	(0.104)	(0.096)	(0.122)
Income	-0.047	-0.072	-0.101
	(0.058)	(0.051)	(0.063)
Living standards	-0.064	-0.145	-0.311**
	(0.132)	(0.120)	(0.157)
Marital_status	-0.018	0.006	0.005
	(0.041)	(0.006)	(0.007)
Employment_status	0.046	0.207	-0.040
	(0.237)	(0.214)	(0.267)
Education	0.106	0.037	0.109
	(0.101)	(0.090)	(0.115)
Pills_source	0.258	0.213	0.607***
	(0.189)	(0.177)	(0.201)
Location	-0.112	-0.081	-0.292***
	(0.093)	(0.084)	(0.113)
Professionals_availability	-0.199	-0.039	0.089
	(0.225)	(0.203)	(0.263)
Constant	-2.563**	-2.417**	-5.050***
	(1.118)	(1.012)	(1.297)
Note – compiled by the authors			

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3. Estimation results of multinomial probit model

Variables	Category 2	Category 3	Category 4
Health_status	0.102	-0.077	-0.480***
	(0.137)	(0.128)	(0.150)
Medical_checkup	0.721***	0.779***	1.429***
	(0.157)	(0.147)	(0.174)
Healthcare	0.211**	0.283***	0.906***
	(0.097)	(0.090)	(0.112)
Sickness	-0.070	0.312*	0.149
	(0.173)	(0.166)	(0.196)
Gender	0.158	0.277*	-0.069
	(0.155)	(0.145)	(0.168)
Kids	-0.108*	-0.025	-0.081
	(0.055)	(0.050)	(0.060)
City	0.000	-0.004	0.001
	(0.007)	(0.007)	(0.008)
Pills_expenses	0.001	0.107*	0.075
	(0.069)	(0.064)	(0.074)
Pills_consumption	0.019	-0.043	-0.001
	(0.156)	(0.145)	(0.171)
Employment_industry	-0.003	0.007	-0.017
	(0.018)	(0.017)	(0.020)
Age	0.193***	0.022	0.029
	(0.067)	(0.063)	(0.072)
Travel_time	-0.011	-0.177**	-0.083
	(0.074)	(0.070)	(0.083)
Income	-0.028	-0.047	-0.072*

	(0.041)	(0.037)	(0.043)
Living standards	-0.037	-0.101	-0.187*
	(0.093)	(0.087)	(0.104)
Marital_status	-0.010	0.004	0.004
	(0.029)	(0.004)	(0.004)
Employment_status	0.041	0.177	-0.042
	(0.167)	(0.156)	(0.182)
Education	0.061	0.013	0.076
	(0.070)	(0.065)	(0.077)
Pills_source	0.176	0.126	0.444***
	(0.129)	(0.123)	(0.134)
Location	-0.081	-0.053	-0.204***
	(0.067)	(0.062)	(0.076)
Professionals_availability	-0.186	-0.068	-0.022
	(0.161)	(0.150)	(0.180)
Constant	-1.786**	-1.661**	-3.223***
	(0.797)	(0.743)	(0.876)
Note – compiled by the authors			

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Estimation outcomes for both multinomial logit and multinomial probit are in line with each other confirming the robustness of results. As for the interpretation of results in multinomial model, results for any alternative are given in comparison to the base alternative. In this case an increase in the independent variable makes the selection of this alternative more or less likely relative to the base alternative. For example, *Healthcare* and *Medical checkup* positively affect the choice of categories 2, 3 and 4 in comparison to category 1.

Generally, for choice models interpretation of results becomes quite difficult. The estimated coefficients rarely allow researchers to directly test hypotheses of interest. Though, hypothesis testing could be available through the marginal effects that show the impact of an increase in regressor on the probability of selecting alternative j:

$$\frac{\partial p_{ij}}{\partial x_i} = p_{ij}(\beta_j - \underline{\beta_i}).$$

Even though there are three sets of results (one alternative is selected as a baseline), there are four sets of marginal effects for each of the alternatives. Interpretation of marginal effects is easier: each unit increase in the regressor increases/decreases the probability of selecting alternative j.

Table 4 presents the marginal effects of all regressors on the probability of selecting any of four alternatives.

Table 4. Marginal effects

Variable	Category 1	Category 2	Category 3	Category 4
Health_status	0.020	0.058**	0.005	-0.083***
	(0.022)	(0.026)	(0.030)	(0.021)
Medical_checkup	-0.171***	-0.004	0.026	0.148***
	(0.025)	(0.028)	(0.033)	(0.024)
Healthcare	-0.074***	-0.033*	-0.018	0.125***
	(0.016)	(0.018)	(0.022)	(0.016)
Sickness	-0.033	-0.065**	0.096**	0.002
	(0.028)	(0.032)	(0.040)	(0.028)
Gender	-0.033	0.004	0.074**	-0.045*
	(0.025)	(0.028)	(0.035)	(0.023)
Kids	0.011	-0.018*	0.014	-0.007

	(0.009)	(0.010)	(0.012)	(0.008)
City	0.000	0.001	-0.001	0.001
	(0.001)	(0.001)	(0.002)	(0.001)
Pills_expenses	-0.013	-0.018	0.027*	0.004
	(0.011)	(0.013)	(0.015)	(0.010)
Pills_consumption	0.003	0.010	-0.016	0.003
	(0.025)	(0.028)	(0.034)	(0.024)
Employment_industry	0.000	-0.001	0.004	-0.004
	(0.003)	(0.003)	(0.004)	(0.003)
Age	-0.014	0.041***	-0.021	-0.007
	(0.011)	(0.014)	(0.015)	(0.010)
Travel_time	0.021*	0.025*	-0.047***	0.002
	(0.012)	(0.014)	(0.017)	(0.012)
Income	0.009	0.003	-0.005	-0.007
	(0.007)	(0.007)	(0.009)	(0.006)
Living standards	0.019	0.014	-0.011	-0.022
	(0.015)	(0.017)	(0.021)	(0.015)
Marital_status	0.000	-0.003	0.002	0.001
	(0.002)	(0.007)	(0.004)	(0.001)
Employment_status	-0.018	-0.011	0.055	-0.025
	(0.027)	(0.031)	(0.037)	(0.025)
Education	-0.007	0.009	-0.011	0.009
	(0.011)	(0.013)	(0.015)	(0.011)
Pills_source	-0.039*	0.003	-0.023	0.059***
	(0.021)	(0.022)	(0.027)	(0.017)
Location	0.017	-0.002	0.012	-0.027**
	(0.011)	(0.012)	(0.015)	(0.011)
Professionals_availability	0.018	-0.034	0.005	0.012
	(0.026)	(0.029)	(0.036)	(0.025)
Note – compiled by the authors				

Standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Results in Table 4 demonstrate a very significant and negative effect of *Healthcare* and *Medical check-up* on the probability of choosing category 1.

Discussions

Issues related to the number of visits to a doctor are both relevant for Kazakhstan and other countries. In 2016, there were three visits to a doctor per Kazakhstani; in 2020, this indicator has increased to 4.1 visits. Kazakhstanis visit a doctor less frequently than residents of OECD countries (the OECD average is 6.8 visits, in South Korea the number of visits reaches 17), but the younger age of Kazakhstanis should be taken into account. Weak coverage of this problem in Kazakhstan was the reason for this study. In this study, medical and socio-economic characteristics of the population of Kazakhstan and their impact on the frequency of visits to the doctor were analyzed through a sociological survey.

Conclusions

According to the results of the study, by applying regression using polynomial logistic and polynomial probit models, it was found that variables such as "Medical checkup" and "Healthcare" positively affect the

choice of the second, third and fourth categories compared to the first category. It was also found that marital status of the respondent equally influences the choice of alternatives by the respondents. The variable "Travel time to health center" significantly affects the choice of first and second category. The variable "Age" has the most positive effect on the second category. The variable "Respondent's health status" positively affects the second category and negatively affects the fourth category. The variable "Has the respondent been sick in the last 12 months" has a negative effect on the second category and a positive effect on the third category. It is worth noting that undoubtedly, medical and socio-economic factors play a major role in respondents' choice of categories. This study undoubtedly expands the understanding of the factors influencing the frequency of visits to the doctor by respondents.

Complementary Data

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Қазақстан халқының медициналық және әлеуметтік-экономикалық сипаттамаларының дәрігерге бару жиілігіне әсері

Аңдатпа:

Мақсаты: Қазақстанда дәрігерлерге жүгіну жиілігі халықтың медициналық және әлеуметтік-экономикалық сипаттамаларымен қалай анықталатынын анықтау.

Әдісі: 1638 адам қатысқан сауалнамада жеті таңдаулы сұрақ арқылы жыл сайынғы дәрігерге бару жиілігі бағаланды. Теңдестірілген деректерді алу үшін жауаптар санаттарға топтастырылды (бірінші, екінші, жетінші, бесінші және алтыншыны алғанда). Қосымша сұрақтар әлеуметтік-экономикалық және медициналық көрсеткіштерді көрсетті. Деректерді жинау және айнымалыларды таңдау, талдау үшін регрессиялық модель қолданылғаны мақалада егжей-тегжейлі сипатталған.

Қорытынды: Авторлар посткеңестік кеңістіктегі көптеген елдерге тән халықтың денсаулығы мен «медициналық патернализмге» қатысты бастамасының төмендігі мәселесін қозғайды. Модельдеу нәтижесінде полиномиальді логитпен полиномиальді пробитті бағалау нәтижелері бір-біріне сәйкес келетіні анықталды.

Тұжырымдама: Полиномиальді модельдегі нәтижелерді түсіндіру кез келген баламаның негізгі баламамен салыстырғанда берілетіндігін көрсетеді, сондықтан тәуелсіз айнымалының ұлғаюы балама таңдауды негізгі баламамен салыстырғанда азды-көпті ықтимал етеді. Осылайша, «денсаулық сақтау» және «медициналық тексеру» айнымалылары бірінші санатқа, ал екінші, үшінші және төртінші санаттарға теріс әсер етеді.

Кілт сөздер: денсаулық сақтау, дәрігерге жүгіну жиілігі, медицинаға қанағаттану, әлеуметтік-экономикалық мәртебе, халықтың денсаулық жағдайы, Қазақстан.

Л.С. Спанкулова, М.Б. Нурмаханова, Е.Б. Букатов

Влияние медицинских и социально-экономических характеристик населения Казахстана на частоту посещения врача

Аннотация:

Цель: Выяснить, как частота обращений к врачам в Казахстане определяется медицинскими и социально-экономическими характеристиками населения.

Методы: В ходе опроса, в котором приняли участие 1638 человек, оценивалась частота ежегодного посещения врача с помощью вопроса с семью вариантами ответов. Для получения сбалансированных данных ответы были сгруппированы по категориям (первая, вторая, седьмая, пятая и шестая вместе взятые). Дополнительные вопросы отражали социально-экономические и медицинские показатели. Сбор данных и отбор переменных подробно описаны в статье, для анализа которой использовалась регрессионная модель.

Результаты: Авторы затронули проблему низкой инициативы населения в отношении своего здоровья и «медицинского патернализма», характерную для большинства стран постсоветского пространства. В результате моделирования было установлено, что результаты оценки полиномиального логита и полиномиального пробита соответствуют друг другу.

Выводы: Интерпретация результатов в полиномиальной модели показывает, что любая альтернатива дается в сравнении с базовой альтернативой, поэтому увеличение независимой переменной делает выбор альтернативы более или менее вероятным по сравнению с базовой альтернативой. Таким образом, переменные «здравоохранение» и «медицинский осмотр» отрицательно влияют на первую категорию и положительно — на вторую, третью и четвертую.

Ключевые слова: здравоохранение, частота обращений к врачу, удовлетворенность медициной, социально-экономический статус, состояние здоровья населения, Казахстан.

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