The Determinants of Patient Satisfaction with Compulsory Social Healthcare Insurance in Kazakhstan

by

Aigerim Assemova, Amira Bapisheva, and Daulet Turganov

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ABSTRACT

This paper aims to find the significant determinants of satisfaction with the compulsory social health insurance policy in Kazakhstan. From the comprehensive literature review, it is found that communication, access, health outcomes, and awareness are positively associated with satisfaction. The research is cross-sectional and the population for the survey includes people in Astana and Astrahan. The main research question is "what are the determinants of patient satisfaction with compulsory social healthcare insurance?" After testing the hypotheses on the factors determining the level of satisfaction with the new policy, we found that access, health outcomes, awareness, age, and gender are significant estimates of patient satisfaction. This study helps to develop recommendations for the improvement of the compulsory social health insurance system.

Keywords: Kazakhstan, Compulsory Social Health Insurance (CSHI), policy awareness, communication, health outcomes, access, satisfaction.

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CONTENTS

GLOSSARY OF TERMS

CHI - Compulsory Health Insurance

CSHI - Compulsory Social Healthcare Insurance

CSHIS - Compulsory Social Healthcare Insurance System

NU - Nazarbayev University

SHIF - Social Health Insurance Fund

VHI - Voluntary Health Insurance

INTRODUCTION

Any government faces a multitude of tasks, one of which is providing and maintaining basic medical care within the country (Raphael & Bryant, 2006). A well-functioning healthcare system improves the well-being of individuals and communities by ensuring equal access to medical services and allowing for opportunities to participate in healthcare decision-making (World Health Organization, 2010, p. 1). Health insurance is one tool for achieving the goal of equitable access, and it is a collective action issue because it concerns equity. The essence of such insurance is to finance healthcare expenses and extensive health insurance encompasses all the expenses for fundamental medical needs (Berchick et al., 2019, p.1). There are two types of insurance: voluntary and compulsory. Voluntary health insurance (VHI) is citizens' private insurance that allows them to receive medical services in private clinics that are not covered by a country's compulsory health insurance (CHI) system (Mossialos & Thomson, 2002). CHI entails a guarantee of free provision of medical services within the country, where a household's basic medical needs are met regardless of health condition or risk (Abel-Smith, 1992). Health insurance helps to create positive externalities especially considering infectious diseases, since universal coverage of preventative measures, such as vaccination, can result in a higher number of preventable deaths and a healthier working population (Miller et al., 2009). Since a healthier working population is an important determinant of economic growth, it is critical to consider health coverage (Well, 2007).

Kazakhstan did not have CHI until 2020 but instead had a mix of public and private healthcare systems. The state-funded healthcare system provided a variety of services, including the ability to schedule an appointment with a general practitioner (GP) and obtain GP referrals for further medical assistance and treatments. If the state did not cover certain procedures, then people had to pay out-of-pocket or use private voluntary health insurance (VHI) if they could afford the costs (sum of two accounts for private expenditure) (Katsaga et al., 2012, p.42). VHI is costly and expensive because it includes the maintenance of not only private clinics but also pharmacies, equipment, ambulances, and the front office itself with administrative staff (Mossialos & Thomson, 2002). As a result, it stands to reason that the VHI may not be available to every resident of Kazakhstan. Only 1.2% of the population was covered by voluntary health insurance in 2009 (Katsaga et al., 2012, p.56). This figure is accompanied by the fact that in 2014, VHI accounted for only 0.1% of total health spending (Sagan & Thomson, 2016, p.4). The proportion of the population that cannot afford VHI or whose employer organizations

do not provide it for them was forced to rely on municipal clinics financed by the state budget.

We can see that the low percentage of the population using VHI indicates that people have to spend disposable income for certain services that were not covered by the state. As a result, using services provided by state health organizations does not always lead to lower medical costs for patients. Ex-healthcare minister Yelzhan Birtanov reported in 2017 that 42% of total health spending was made up of private expenses, the majority of which were out-of-pocket payments for services not covered by the state (Altynsarina, 2019). In his address to the Nation, ex-President Nazarbayev indicated that the key priority for health services in Kazakhstan should be "affordable medical services with high standards of care" ("Strategy Kazakhstan-2050", 2012). Therefore, the main goal of implementing the compulsory social health insurance system (CSHIS) is to reduce out-of-pocket payments and financial instability risks for patients (Altynsarina, 2019). Ex-minister Birtanov emphasized that there is a need for a better healthcare financing scheme because people's costs have increased more than twice as much between 2009 and 2014 (Altynsarina, 2019). This suggests that there was significant underfunding within the healthcare system, forcing patients to spend significant amounts of personal income (Altynsarina, 2019). Therefore, the new CSHI is to be guided by the principles of "an adequate allocation of funds, their equitable distribution, and efficient use" (Balakrishnan, 2016). The Social Health Insurance Fund (SHIF), established by the Law "On Compulsory Social Health Insurance," is used to allocate and use funds (*Law of the Republic of Kazakhstan on compulsory social medical insurance*, 2015).

Aside from the new financing scheme, President Tokayev reiterated the sentiment of the importance of the CSHIS by stating that "the implementation of the compulsory health insurance system is designed to improve the quality and accessibility of medical services" (Akorda, 2019). Increased funding would result in higher wages for healthcare professionals and better service quality. The policy also aims to address the issue of quality discrepancies between private and public hospitals by creating competition for patients enrolled in the program (Altynsarina, 2019). Kazakhstan's CSHIS officially began operations in January 2020. As a result, policy implementation is still in its early stages.

This paper considers the level of satisfaction with the new system among the population in Astana and the rural town of Astrahan in the Aqmola region. There is an interim report by Health & Capital–the private company funded by USAID–about the level of

satisfaction of Kazakhstan's population with the new health insurance system. It claims that citizens are not satisfied with the system and they are simply unaware of the services they are entitled to (Health & Capital, 2021). This is why we aim to answer the primary research question, which is "what are the determinants of patient satisfaction with compulsory social healthcare insurance?". As previously stated, the CSHI system was established to obtain larger funding and provide higher-quality services. Hence, one way to find certain indicators of program success is to measure patient satisfaction (Prakash, 2010). Patients' level of satisfaction with the policy has an impact on the quality of care they receive (Hekkert et al., 2009). Aside from measuring the success and quality, patient satisfaction is also positively associated with compliance with recommended treatment options and consequently better health outcomes (Pascoe, 1983). McConnell (2010) presented a framework for determining the program's success or failure. He demonstrated that measuring the success of a policy is dependent on how consumers (in this case, patients) were received and communicated with during implementation (McConnell, 2010). This reception can be measured via a proxy variable of satisfaction. Therefore, evaluating patient satisfaction with the new system and exploring the determinants helps to understand whether the policy has succeeded or not. It also aids in understanding why people may be pleased or dissatisfied with the CSHI system. This makes it easier to develop policy recommendations for identified issues.

Identifying issues that people have with compulsory social health insurance helps to further improve quality and adequately fund health coverage (as was the original goal of the implemented policy), as well as ensure compliance with the treatment process. Further, we explain the significance and implications of the study. If a patient is pleased with their visit to a health center, they are more likely to comply with treatment, resulting in better health outcomes for patients (Naidu, 2009, p. 367). Based on McConnell's (2010) framework, we can assess the program's success based on the program's intended users' receptivity. Patient satisfaction can be used as a variable of receptiveness, with higher levels of satisfaction indicating success in the early stages of policy implementation. Patient satisfaction influences the quality of care and aids in analyzing the system's benefits and drawbacks (Hekkert et al., 2009). Understanding satisfaction helps us propose possible solutions to issues raised by patients. Identification of issues can cause a further inquiry into the realm of the betterment of the policy and enactment of a comprehensive set of improvements, with which patients would be more satisfied and pleased. Future research on this topic will help the government in organizing a more

effective and efficient system.

This section provides an overview of the compulsory social health insurance system in Kazakhstan. Section 2 examines the existing literature in this field. Section 3 discusses the data collection tools and analytical methods used in the study. In Section 4, we discuss our research findings and in Section 5, these findings were thoroughly discussed. The conclusions of the study are presented in Section 6. The recommendations to policymakers are then provided in the final section.

LITERATURE REVIEW

Health insurance

A health insurance system is a tool that assists various stakeholders in improving their health (Institute of Medicine, 2001). The insurance does not only provide security to cover expenses in the event of unforeseen health risks or other insured events but also helps in preventative measures. Individuals without health insurance have a higher chance of postponing seeking treatment (Schoen & DesRoches, 2000). That is why the government often uses insurance policies as a provision of social protection for the population (Institute of Medicine, 2001). It is carried out in two forms: compulsory and voluntary. Compulsory insurance is mandated by law, whereas voluntary insurance is based on an agreement between the policyholder and the insurer (Nazarchuk, 2014). Organizations that provide health insurance offer their services to individuals and businesses for employee coverage in a voluntary health insurance system. The system of compulsory social health insurance (CSHI) is a state-run social protection system of healthcare coverage. It guarantees that the populace is insured and has equal access to medical and pharmaceutical care, regardless of age, gender, marital status, income, or place of residence (Zhuirikov et al., 2000). It works in the form of health protection of the population in the event of illness, injury, pregnancy and childbirth, disability, and old age. Many developed countries, including Germany, Switzerland, and Japan, have adopted a compulsory health insurance system, allowing funds to be reallocated from high-income earners to less fortunate segments of the population (Belgibaev & Rakhimbaev, 2010). This paper focuses on Kazakhstan's newly implemented system.

Compulsory Social Health Insurance System in Kazakhstan

Before the implementation of the Social Health Insurance System in Kazakhstan, residents received medical assistance funded directly from the state budget. Employers and self-employed citizens of the Republic of Kazakhstan began funding the Social Health Insurance Fund on January 1, 2017. Because demographic changes are unavoidable, the implementation of health insurance is a pressing need. An increase in health spending is expected because projections of the country's population structure until 2030 show that the proportion of the elderly population will rise to 11.2%, up from 6.9% in 2014 (Tleuzhanova, 2013). Furthermore, complaints from patients about the quality of medical care, low doctor qualifications, and ineffective hospital and clinic work organization create a general background of dissatisfaction with the existing healthcare

system among the population. It resulted in the adoption of international experience and the introduction and implementation of the CSHI policy (Saparova, 2017). Compulsory health insurance aims to provide all insured residents, regardless of income, with equal access to higher quality medical care (Saparova, 2017). Each person has the option of selecting a medical facility, either private or public, where they will be examined and treated. To meet the growing demand for healthcare coverage, it is expected that healthcare financing will rise through insurance premiums (Saparova, 2017).

There are several positive aspects to the compulsory social health insurance system. The first is that the CHI has the potential to provide more funding for the health sector than user charges (Abel-Smith, 1994). User charges are fees paid by individuals for medical services, which are denoted as unsustainable in practice (Abel-Smith, 1991). The insured in the compulsory health insurance system may be compelled to donate their funds to the common chest, while even those with lower incomes may contribute due to employers sharing costs and the possibility of a proportional tax rate (Abel-Smith, 1991). Since health expenditure in Kazakhstan is increasing, a sustainable model of financing is utterly needed, which is why compulsory health insurance is advantageous (Altynsarina, 2019). The second significant advantage of CHI over other systems is that it does not jeopardize the poor population's ability to access health services and allows them to engage in health-seeking behavior (Abel-Smith, 1994). This will allow Kazakhstan to reduce the population's reliance on personal medical spending.

At the same time, the CSHI system has some drawbacks. Designing such a system necessitates meeting complete and comprehensive criteria, such as patient satisfaction with the quality of services received, as well as technical quality (Abel-Smith, 1991). This health insurance scheme should also be profitable for health providers since their input into health providing heavily impacts health outcomes (Abel-Smith, 1991). Balancing between providers and patients necessitates an exhaustive process of healthcare system construction. Even the maintenance costs of such a system are high, which may outweigh any benefits negotiated with health providers (Wagstaff, 2010).

The merits and demerits of such a system were analyzed and the government of Kazakhstan considered that benefits outweighed costs. Under the new system, consumers can access a lot of services including outpatient treatment, drug provision, emergency services, constant care for chronic conditions, expensive diagnostic tests, and vaccination (*Law of the Republic of Kazakhstan on compulsory social medical insurance*, 2015).

Determinants of patient satisfaction

The implemented system in Kazakhstan needs a certain measure of success. Measuring patient satisfaction is such a way to measure success (Prakash, 2010). Measuring only patient satisfaction is insufficient because it is critical to understand the underlying factors influencing satisfaction. Identifying the essential determinants of health insurance satisfaction is a complex task because satisfaction refers to "judgments of the quality of healthcare they received" (Aday & Andersen, 1974, p.215). Patient satisfaction is crucial because it can be used to measure how well a patient was cared for (Sitzia & Wood, 1997). According to patient satisfaction theory, the satisfaction level is determined by the sum of subjective measurements of various healthcare dimensions (Linder-Pelz, 1982). In the healthcare system, satisfaction is a critical concept to consider. Aside from the general notion that satisfaction brings customers back and hence profits the business in the long run, patient satisfaction has a direct impact on compliance levels. The more satisfied a patient is with a clinic visit and communication with physicians and nurses, the more likely they are to follow health recommendations and treatment plans (Naidu, 2009, p. 367). Investigation of the key determinants of patient satisfaction will have a spillover effect on health-seeking behavior and overall population health. The satisfaction level of patients with the policy has an impact on the quality of care they obtain (Hekkert et al., 2009). Thus, calculating patient satisfaction with the new system and investigating the determinants that influence satisfaction help in discerning how people perceive CSHI and what influences these observations. This expedites the development of policy recommendations for issues identified during the research. Determining issues with compulsory social health insurance will help to promote the quality of health coverage and ensure medical care compliance.

Since healthcare is not something tangible or homogeneous, there is no specific metric or internationally accredited scale of satisfaction measurement (Gill & White, 2009, p. 8-9; Hekkert et al., 2009). There is of course certain criticism of satisfaction measurements since most satisfaction surveys operate on subjective feelings of satisfaction and subjectivity might not depict a clear picture (Hekkert et al., 2009, p. 69). However, the literature has demonstrated that satisfaction has an impact on healthcare quality and survey results help to classify further ways of healthcare system development by making systems more effective (Aharony & Strasser, 1993).

As Tucker and Adams highlight, several factors affect the patients' fulfillment from the physician visit (2001, p.278-279). Communication, access, and health outcomes are

examples of these. It is also important to note that policy awareness also affects the satisfaction levels of patients, therefore we include it as another factor influencing patient satisfaction (Mohammed et al., 2011). There are, of course, numerous other determinants that influence patient satisfaction, including individual attention, helpfulness, and courtesy, administrative processes, patient flow, perception of healthcare providers and nurses, and infrastructure (Babbar & Koufterous, 2008; Johnson & Russell, 2015; Panchapakesan et al., 2015). We argue that four chosen independent variables (communication, access, health outcomes, and policy awareness) are more adequate determinants and may act as a proxy for many of the variables listed in the existing literature.

Patient-physician communication, which was discovered to have a significant association with overall satisfaction, is one of the key determinants of patient satisfaction, implying that maintaining constant communication results in higher patient satisfaction (Pieper et al., 2009; Piette, 1999; Tucker & Adams, 2001). Communication is defined as clear descriptions of medical procedures and tests (Piette, 1999). As for indicators of patient-physician communication, health providers' recommendations and advice about patients' well-being are used (Tucker & Adams, 2001).

Another determinant of satisfaction is access, which is defined as the ability to peruse required healthcare services (Piette, 1999). People's ability to obtain health services and barriers to this ability are the important cornerstones of questions of access (Tucker & Adams, 2001). Access may include issues with being able to make appointments, use diagnostic services, and availability of medical facilities.

Health outcomes, which have been identified as an important determinant of satisfaction in the literature, are defined as a general change in health status as a result of treatment (Rutledge & Nascimento, 1996, p. 24). Patients may have less knowledge than healthcare workers about assessing medical outcomes, but they still develop certain views about general changes in their health. If patients believe that the treatment provided by healthcare professionals is effective or not effective, these beliefs are referred to as perceived health outcomes (Tucker & Adams, 2001).

Finally, one of the factors that influence population satisfaction is awareness (Dong et al., 2017). Studies showed that lack of awareness in Burkina Faso, Uganda, and Nicaragua negatively affected the enrollment rates in health insurance schemes in their respective countries (De Allegri et al., 2006; Basaza et al., 2008; Thornton et al., 2010). There is also a link between awareness of service availability and satisfaction with healthcare

services. People who have insurance are more satisfied if they are aware of the financial contributions made to the insurance fund by employees and employers. Participants who are less informed about insurance schemes are more likely to be dissatisfied with the service provided (Mohammed et.al., 2011).

Aside from the main predictor variables (communication, access, health outcomes, and awareness), sociodemographic characteristics play an important role in researching satisfaction with healthcare insurance, implying that people have different opinions about healthcare depending on social or cultural factors (Fox & Storms, 1981). The sociodemographic characteristics have no direct impact on health insurance satisfaction, but rather act as moderating variables between the main predictor variables and satisfaction level (Mummalaneni & Gopalakrishna, 1995). As a result, it is evident that to find significant determinants of satisfaction, we must include control variables such as age, gender, marital status, income level, ethnicity, and place of residence (Tucker & Adams, 2001). There is a gap in the literature review about the determinants of patient satisfaction in Kazakhstan. This study provides the first look into the determinants of satisfaction with the CSHI system and provides recommendations for policymakers. The research methodology will be described in detail in the following section.

RESEARCH METHODS

In this paper, a cross-sectional research design is used. It is because more than one case is considered at a single point in time (Bryman, 2016, p.59). A cross-sectional research design helps to state patterns of association between multiple variables (Bryman, 2016, p.59). Therefore, it aids in determining the relationship between the independent and dependent variables. A cross-sectional research design, on the other hand, cannot precisely predict causation. This is regarded as one of the design's shortcomings.

Because the dependent variable is ordinal and the assumptions for ordinal logistic regression are satisfied, the ordinal logistic regression model is used in this study. The regression model aids in the organization of comprehensive predictions. It is critical to identify the research's independent, dependent, and control variables.

Independent Variables

Access, communication, health outcomes, and awareness are all independent variables (see Table 1). Communication refers to how clear medical personnel appears to be when explaining health-related circumstances. It is measured by asking respondents four questions about their perceptions of health professionals' explanations of procedures and examinations, as well as the usage of a comfortable language by healthcare professionals. Similarly, access is measured by asking five questions about the convenience of the health provider clinic's location, the convenience of time for appointments, access to healthcare at a point of non-emergent need, in-hospital waiting time, and the length of time between booking an appointment and attending the appointment. Health outcomes are operationalized by inquiring about the well-being of patients following treatment. Patients' awareness of their rights to medical help is measured by asking five true-or-false questions about their knowledge of the health insurance policy.

Dependent Variable

The dependent variable is satisfaction level, which is a subjective feeling of being fulfilled with the present services. To reiterate, satisfaction is crucial because it has a direct impact on the compliance behavior of patients, creates a spillover effect on the health-seeking behavior, and influences patients’ quality of care during their in-patient and out-patient visits.

Control Variables

Age, gender, marital status, income level, education, employment status, and place of residence are all control variables. Control variables ensure the research's internal validity. These variables assisted in determining and, in many cases, moderating the relationship between the determinants and patient satisfaction (Mummalaneni & Gopalakrishna, 1995). Incorporating some of these variables into the analysis aids in the development of a more comprehensive model that generates relevant and significant associations.

Operationalization of Variables

Table 1 contains descriptions, particularly the operationalization of variables (created by authors).

Table 1. Descriptions of variables (authors).

Variable	Variable type	Scale	Questions used for operationalizing a variable
Satisfaction	Ordinal	0-4, 4 represents "definitely yes" for each question and the sum of answers for all questions is calculated (0-12)	1) Are you satisfied with the shift to the new CSHI system? 2) Are you satisfied with the range of services provided by the CSHI? 3) Are you satisfied with the services provided by CSHI?
Communication	Ordinal	0-4, 4 represents "strongly agree" for each question and the sum of answers for all questions is calculated (0-16)	1) Please, show whether you agree with the following sentence: reception and call-center employees conveyed information about the appointment clearly. 2) Please, show whether you agree with the following sentence: reception and call-center employees spoke the language that is the most convenient for me. 3) Please, show whether you agree with the following sentence: medical professionals gave

			adequate information about procedures and examinations included within the CSHI system. 4) Please, show whether you agree with the following sentence: medical professionals spoke the language that is the most convenient for me.
Access	Ordinal	0-4, 4 represents "strongly agree" for each question and the sum of answers for all questions is calculated (0-20)	1) Please, show whether you agree with the following sentence: there is a public medical clinic on the accessible distance from my place 2) Please, show whether you agree with the following sentence: appointments are made at a convenient time for me. 3) Please, show whether you agree with the following sentence: appointment booking services are available during working hours. 4) Please, show whether you agree with the following sentence: waiting lines in medical clinics are short. 5) Please, show whether you agree with the following sentence: there is little time between appointment booking and the appointment itself.
Health outcomes	Ordinal	0-4, 4 represents "strongly agree"	1) Please, show whether you agree with the following sentence: my health got better after the treatment.
Awareness	Ordinal	0 and 1, where 1 represents the correct answer and the sum of answers for all questions is calculated (0-5)	1) Please, show whether the following sentence is correct: "CSHI is a health insurance system available for all residents of Kazakhstan". 2) Please, show whether the following sentence is correct: "People can access diagnostic services via CSHI".

			3) Please, show whether the following sentence is correct: People can acquire drugs in inpatient clinics via CSHI. 4) Please, show whether the following sentence is correct: People can get appointments with specialists via general practitioner referrals. 5) Please, show whether the following sentence is correct: Dental treatment is included in CSHI for certain groups of people.

Sample

Surveys were conducted in Astana, and Astrahan to collect primary data. Astana is Kazakhstan's capital city, with a population of over a million people, while Astrahan is a city in northern-central Kazakhstan with a population of just over 6000 people. This study's population consists of Astana and Astrahan residents. Surveys consisted of two parts, the first of which contained closed-ended questions about the determinants of satisfaction. The second part concerned an open-ended question about the opinion of respondents on how to improve the existing system.

A snowballing sampling method is used to select the sample for this study. We do not employ enough financial resources to conduct randomized and representative studies, so we attempted to contact our acquaintances to encourage them to participate in the survey and disseminate it further. Internal validity can be strengthened by controlling for universal confounders, such as age, gender, etc., which we implemented. The cross-sectional design's internal validity is relatively weak (Bryman, 2016, p.60), as it is difficult to establish causal relationships between variables. Snowballing sample is not representative of the entire population, so it may not be universal enough to generalize and may jeopardize the external validity of the research.

Hypotheses

Following the identification of independent, dependent, and controlled variables and the analysis of existing academic literature, the following hypotheses are tested:

1. Patients' notions of communication with doctors are positively correlated with the satisfaction level, meaning that higher values of the communication score correspond to a higher value of satisfaction.
2. Patients' notions of access to healthcare are positively correlated with the satisfaction level, meaning that higher values of the access score correspond to a higher value of satisfaction.
3. Patients' notions of health outcomes after the treatment are positively correlated with the satisfaction level, meaning that a higher value of health outcomes corresponds to a higher value of satisfaction.
4. Patients' notions of awareness about the existing policy are positively correlated with the satisfaction level, meaning that higher values of the awareness score correspond to a higher value of satisfaction.
5. Control variables describing people's socio-demographic context (age, gender, and place of residence) have a significant relationship with the dependent variable of satisfaction.

FINDINGS

In this section, we will present the research findings. The descriptive statistics and the results of the regression analysis will be depicted. Table 2 summarizes the descriptive statistics. We tested the variables, which were created by combining several questions, for reliability, including awareness, access, communication, and satisfaction.

The variables that were created by the combination of several questions were checked with Cronbach's alpha test. It is used to confirm the reliability of the variables in explaining the individual questions asked by the respondents. The test revealed that all of the variables created were comparatively reliable and explained the phenomenon it denoted. “Communication” had a scale reliability coefficient of 0.71, “access” had 0.67, “awareness” had 0.72, “health outcomes” had 0.7 and “satisfaction” had 0.65. If Cronbach’s alpha is higher than 0.65, then it is considered adequate for exploratory research (Nunnally, 1978).

Table 2. Descriptive Statistics (authors).

	Obs	Frequency percentage	Mean (standard deviation)
age	159		
18-24	55	34.59%	
25-44	74	46.54%	
45-64	27	16.98%	
65+	3	1.89%	
gender	159		
male	52	32.7%	
female	107	67.3%	
residence	159		
Astana	112	70.44%	
Astrahan	47	29.56%	
health outcomes	159		2.233 (.894)
(0) strongly disagree that health got better	5	3.14%	
(1) somewhat disagree	26	16.35%	
(2) neither agree nor disagree	63	39.62%	
(3) somewhat agree	57	35.85%	
(4) strongly agree	8	5.03%	
awareness	159		3.365 (1.507)
(0-1) not aware of what CSHI entails	22	13.84%	

(2-3) somewhat aware	52	32.7%	
(4-5) fully aware	85	53.46%	
access	159		9.918 (3.545)
(0-4) no access to healthcare facilities	18	11.32%	
(5-9) low access	75	47.17%	
(10-14) some access	60	37.74%	
(15-20) full access	6	3.77%	
communication	159		9.748 (2.686)
(0-4) no communication from doctors	6	3.77%	
(5-8) low communication	45	28.3%	
(9-12) some communication	90	56.6%	
(13-16) full and clear communication	18	11.32%	
satisfaction	159		5.969 (2.579)
(0-4) low satisfaction with CSHI	33	20.75%	
(5-8) some satisfaction	98	61.64%	
(9-12) full satisfaction	28	17.61%	

Health outcomes, access, communication, and satisfaction have options of "strongly disagree" 0 to "strongly agree" 4. Access had 5 questions, communication had 4 questions, health outcomes had 1 question, and satisfaction had 3 questions. awareness was tested with 5 true-false questions and the correct answer is given the value 1 and incorrect 0.

Age, gender, ethnicity, education, income level, marital status, and place of residence are all control variables in our study. It was hypothesized that of all potential control variables, age, gender, and place of residence could have a significant relationship with satisfaction. According to the analysis, only age and gender have a significant relationship with satisfaction. The place of residence has an insignificant relationship with satisfaction. It is probably due to the fact that we had a small sample of Astrahan residents (29.56%). Furthermore, some Astrahan respondents claimed that they have the means to travel to Astana for a variety of health-related issues, skewing the existing results and rendering the relationship between place of residence and satisfaction insignificant. Due to various factors, the ethnicity variable has an insignificant relationship with satisfaction: 1) our sample contains few members of ethnic minorities, which skews our sample; 2) there are no discernible differences in treatment received by any ethnicity. The income level, education level, and marital status variables are not significant with satisfaction as under the new compulsory social health insurance system everyone has access to this system, regardless of income level, education level, or marital status. Thus, ethnicity, income, education, and marital status were not included in the presented model.

The first survey questions are about control variables, such as respondents' socioeconomic status. Only after these questions, questions regarding independent variables and the dependent variable of satisfaction were asked. Our survey received 222 responses to our survey, but only 159 of them were accepted after data cleaning. Some of the entries were not fully completed and lacked answers for more than half of the questions, therefore they were omitted.

From Table 2, we can notice that three factors may have considerably influenced our results. One of them is that 67.3% of respondents are female. This can be related to the fact that during our survey, the limited conversations have shown that men tend to refuse to participate in a survey more often than women. The second result is the number of respondents from Astana which is 70.44% while the number of respondents from Astrahan is only 29.56%. It can be explained by the fact that there was only one field trip to Astrahan to conduct a survey. Thirdly, this skewed sample may also be related to the fact that the survey link was sent to Nazarbayev University (NU), whose students include many Astana residents. This fact may have distorted our results.

The purpose of this Policy Analysis Exercise was to identify the association between various predictor variables and satisfaction with Kazakhstan's compulsory social health insurance system. Having described the variables used, we now move on to show the results of the regression analysis of satisfaction. The results are shown in Table 3. We can see from the ordered logistic regression analysis that all but one (communication) of the independent variables (health outcomes, awareness, access) are significant and positive estimators of satisfaction.

For the health outcomes variable, we can say that in contrast to strongly disagreeing with the statement that patient health improved, strongly agreeing with the same statement would result in a 57.l1 times increase in the odds of having higher levels of satisfaction, given all of the other variables in the model are held constant. Only strongly agreeing with health improvement after treatment represented a significant relationship with satisfaction, while other answers failed to provide significant associations.

When respondents answer that there was some degree of access to healthcare facilities (10-14 in the access score) compared to no access at all, we expect 5.14 times increase in the odds of having higher levels of satisfaction, ceteris paribus. A similar is true for those, who answered that they have full access (15-20 in the access score), such people can expect an increase of 29.95 times in the odds of higher satisfaction.

Respondents, who answered two or three questions out of five correctly on the topic of policy awareness, have a 3.57 times increase in the odds of being more satisfied, while those who answered four or five correctly are 15.85 times more likely to be more satisfied. Communication was not a significant estimator of satisfaction.

We used three individual-level control variables that we hypothesized as being significantly associated with satisfaction. Of those, age and gender are in strongly significant relationships with satisfaction. Compared to 18-24 years old, being 25-44 years old reduces the odds of having a higher satisfaction score by 62%, ceteris paribus. This means that respondents aged 25-44 are more likely to be dissatisfied with the health services provided. Other age groups did not show a statistically significant estimation. It was predicted that elderly people aged 65 and up would be less satisfied with the CSHI. However, in our research, this age group did not report a significant correlation most probably due to the small number of respondents who are 65+, only 1.89% of the sample. The analysis also showed that women compared to men have odds of obtaining a higher satisfaction score decreased by 76%, meaning that for women satisfaction is likely to be lower. Finally, the place of residence does not play any role in determining satisfaction.

There are assumptions inherent to the model we use. Ordered logistic regression assumes that the relationship between different types of outcomes is the same. For example, to use ordered logistic regression, we must ensure that the relationship between low satisfaction level and some satisfaction level is the same as the relationship between some satisfaction and full satisfaction. This is the proportional odds assumption, which needs to be checked to properly justify using ordered logistic regression. A log-likelihood test can be provided to assess whether the assumption is violated or not. When we checked it with “omodel” on STATA, we get the value for Chi-squared equal to 4.41 with a p-value equal to 0.73, which is not significant and thus means that the assumption is held. In order to assess the goodness of fit of our model, we can use the Hosmer-Lemeshow test, which results in a p-value equal to 0.98, which means that our model is a good fit (Fagerland & Hosmer, 2017). We performed the VIF test to check for multicollinearity. The mean VIF was 1.35, which corresponds to the low level of multicollinearity and below the value of 10, which is the common threshold.

Table 3. Ordered logistic regression (authors).

satisfaction	Odds ratio	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
age	1	.	.	.	.	.	
25-44	.378	.169	-2.18	.029	.158	.907	**
45-64	.447	.253	-1.42	.155	.147	1.356	
65+	.297	.426	-.85	.398	.018	4.946	
gender	1	.	.	.	.	.	
Female	.235	.112	-3.03	.002	.092	.599	***
residence	1	.	.	.	.	.	
Astrakhanka	.634	.311	-.93	.353	.242	1.66	
health outcome	1	.	.	.	.	.	
(1) somewhat disagree	.363	.428	-0.86	.39	.036	3.654	
(2) neither agree nor disagree	1.417	1.609	0.31	.759	.153	13.122	
(3) somewhat agree	1.822	2.111	0.52	.604	.188	17.644	
(4) strongly agree	57.107	94.675	2.44	.015	2.216	1471.847	**
awareness	1	.	.	.	.	.	
(2-3) somewhat aware	3.568	2.291	1.98	0.048	1.014	12.561	**
(4-5) fully aware	15.848	10.881	4.02	0	4.127	60.866	***
access:	1	.	.	.	.	.	
(5-9) low access	2.835	2.01	1.47	.142	.706	11.381	
(10-14) some access	5.137	4.03	2.09	.037	1.104	23.907	**
(15-20) full access	29.95	47.749	2.13	.033	1.316	681.454	**
communication	1	.	.	.	.	.	
(5-8) low communication	.779	1.045	-0.19	.852	.056	10.776	
(9-12) some communication	3.275	4.383	0.89	.375	.238	45.117	
(13-16) full and clear communication	1.309	1.98	0.18	.859	.067	25.402	
Constant	.07	1.65	.	.	-3.163	3.304	
Constant	5.052	1.714	.	.	1.693	8.41	

**** p<.01, ** p<.05, * p<.1*

DISCUSSION

To remind, we have five hypotheses advanced from the literature review.

H1: Patients' notions of communication with doctors are positively correlated with the satisfaction level, meaning that higher values of the communication score correspond to a higher value of satisfaction.

According to the literature, communication is positively correlated to satisfaction level (Tucker & Adams, 2001). When testing for a correlation between communication and satisfaction, we see that this hypothesis proves to be rejected. There was no significant relationship between communication and satisfaction, which means that even with greater communication from healthcare providers, including reception and medical workers, there is no observable change in satisfaction. This could happen for a variety of reasons. It could be because of the way the questions are constructed. They may yield not necessarily the results because people might differently understand what is meant by communication in the context of this work. We have used Tucker and Adams' paper (2001) as an example for the creation of the survey and this result shows that we could have done something different, for instance, asking questions in the form of different scenarios. Another reason is that Kazakhstan's case might be unique. People may rate communication as excellent or poor, but other factors are more important to overall satisfaction, and communication by medical personnel has no effect on them. Mentality can therefore be an important explanation for such an occurrence, though particularly hard to measure.

H2: Patients' notions of access to healthcare are positively correlated with the satisfaction level, meaning that higher values of the access score correspond to a higher value of satisfaction.

When checking for the association between access and satisfaction, one can notice that there is a positive correlation between the two variables. This is consistent with the findings in the literature (Tucker & Adams, 2001). This depicts the picture that if access to necessary health services is extended to a higher degree, the odds of people having higher satisfaction with the new healthcare system will be higher. That is an illustrative result, which shows that ensuring full access for as many people would be quite beneficial. People's well-being and satisfaction will improve if they believe they can easily access any medical services they require. Access can be provided in the face of

more specialized medical professionals in rural areas as well as easier appointment registration to certain diagnostic services offered in big cities. Access, therefore, should be a point of discussion for further development of the existing policy.

H3: Patients' notions of health outcomes after the treatment are positively correlated with the satisfaction level, meaning that a higher value of health outcomes corresponds to a higher value of satisfaction.

People's perceptions about the improvements in their health after clinic visits are represented by the health outcomes variable. The literature review outlined that health outcomes will be in a positive association with satisfaction (Tucker & Adams, 2001). When we look at the correlation, we see that there is a positive correlation between variables of health outcomes and satisfaction. We believe that health outcomes are an important variable in this model because, when compared to other variables, changing from "strongly disagree" to "strongly agree" results in the greatest increase in the odds of being more satisfied. If people strongly believe that their health has improved as a result of the medical visit, their satisfaction with the provided healthcare is significantly increased. Improving people's well-being is directly related to how those people perceive the healthcare delivery system.

H4: Patients' notions of awareness about the existing policy are positively correlated with the satisfaction level, meaning that higher values of the awareness score correspond to a higher value of satisfaction.

Respondents were questioned on their knowledge of the current policy and what it entails. To reiterate what was previously stated, lower awareness corresponds to lower satisfaction with service provision (Mohammed et.al., 2011). The findings revealed a significant relationship between policy awareness and satisfaction. This demonstrates that if people are more aware of the services available to them, they are more likely to be satisfied with them. This relates to the fact that people may be dissatisfied with the current health insurance system in part due to a lack of awareness. This provides an opportunity for the government to improve patient satisfaction and quality of care by increasing effective public awareness campaigns.

H5: Control variables describing people's socio-demographic context (age, gender, and place of residence) have a significant relationship with the dependent variable of satisfaction.

Correlations between control variables and satisfaction yield mixed results. The first variable is age, which significantly and negatively correlates with satisfaction. It is found that in contrast with 18-24 years old respondents, 25-44 years old people are less likely to be satisfied. For other ages, there were no noticeable significant associations with satisfaction scores. There is a likely explanation for the decreasing satisfaction for the 25-44 aged people. It might be explained by the fact that with increasing age, people have more experience with the healthcare institutions and services they provide, which is what is depicted in this negative and significant association. The more people interact with the healthcare providers, the less they are content with the quality of services, which is indirectly shown by satisfaction. The sample contains a small number of people aged 45 and older, thus it might be an explanation for no significant relationships with satisfaction for older age groups.

Another important relationship is the correlation between gender and satisfaction. Female respondents' responses revealed that, when compared to men, they are more likely to be dissatisfied. It can be explained by the fact that women tend to visit a broader range of doctors due to different health needs, and thus encounter more sources of dissatisfaction. Women have different health needs than men, which necessitates gynecologist visits and dealing with pregnancy-related issues, which may explain the gender gap in this case. There is also the fact that women's societally expected gender role is to look after a child, which includes visiting health centers with them more often than men. This may help to explain why women use the healthcare system more frequently than men. Women can express their dissatisfaction with the healthcare system if it fails to meet the required demand for services (Hulka et al., 1975, p.657). Furthermore, the gender-satisfaction relationship can be attributed to the fact that 67.3% of our respondents are female, which may have skewed the results.

The last control variable used in the model was the place of residence, which we hypothesized had a significant relationship with satisfaction due to differences in the availability of certain health services. It was found that place of residence had no significant relationship with satisfaction. The limitation of this study is that people in Astrahan could travel to Astana for health services, which could have skewed the results and influenced the significance of the relationship between place of residence and

satisfaction. We can see from the number of people who were dissatisfied with the new system that the majority of people are less likely to be satisfied with the current healthcare system.

There are several limitations to the research that was conducted. Due to time constraints and a lack of funding, the sample size was limited. The sample was gathered in a snowballing fashion, which means that people shared it with their peers. The snowballing sampling method is not suitable for generalization, but it is useful for detecting specific patterns. Because many NU students took part in this survey, the results may have been influenced by this fact. In comparison to many people, especially in rural areas, all NU students receive insurance from the university and are more privileged in being able to access a wider range of medical services. According to the literature, communication should be a significant estimator of satisfaction; however, this was not the case in this work. Therefore, it may be the limitation of this study that our questions were not clear to a respondent and future studies may include questions that are constructed in form of scenarios.

CONCLUSION

The aim of this study was to identify significant determinants of satisfaction. This paper looked at citizens' satisfaction with Kazakhstan's compulsory health insurance system (CSHI), which went into effect in January 2020. A survey of the recipients was used to collect and analyze primary data. The city of Astana and the rural town of Astrahan were chosen to cover both urban and rural areas. The research was carried out using a cross-sectional design. We were able to make hypotheses based on the literature review about the factors that may influence the level of satisfaction with the CSHI system. However, the study's findings revealed that some of the factors gleaned from the literature review were not statistically significant. Overall, the findings show that access to healthcare, health outcomes, awareness, age, and gender all have an impact on satisfaction with the CSHI system. The research findings are useful in developing recommendations to improve the quality of the CSHI system.

There are several limitations in the conducted research. First, due to time constraints and a lack of funding, the sample size was limited. Second, the sample was collected through a snowballing method, which means that people shared it with their peers. Although the results from snowballing sampling method cannot be generalized, it is useful for detecting specific patterns. A large percentage of the sample consisted of NU students, which might have muddied our results.

RECOMMENDATIONS

Following our open-ended survey question and our research findings, two recommendations are made for improving Kazakhstan's compulsory social health insurance system in order to increase satisfaction with it:

1. The Ministry of Healthcare and the Ministry of Communications and Information should cooperate in increasing public awareness of the new health insurance system's guaranteed medical assistance through systematic information campaigns using immersive digital tools.
2. Improve access to the healthcare system by designating specific days in state clinics in each major city for people from rural areas to visit specialized medical professionals and receive basic diagnostic services, with the assistance of the Ministry of Healthcare and local *akimshiliks*. The ultimate goal is to build more clinics in rural areas.

Firstly, awareness is an imperative determinant of satisfaction. One of the most important directions for reforming the system of social protection in the modern state should be the deployment of targeted public relations programs on a regional and national scale to explain citizens' social rights and the conditions for their implementation. The public relations campaign aimed at raising awareness about health rights should be carried out through social media, utilizing immersive online storytelling tools (Allagui & Breslow, 2016). Digital engagement should be done so it precipitates conversations about chosen topics. Infographics, animations, and pictures present a more vivid avenue of storytelling. The Ministry of Healthcare and the Ministry of Communications and Information of Kazakhstan should make disseminating information about the healthcare system as simple and concise as possible. Since our findings show that greater awareness leads to greater satisfaction, it would be one of the most important policies to consider. This policy can be implemented for residents of both Astana and Astrahan.

Second, the results of this study revealed that increased access leads to higher levels of satisfaction among the population. People, particularly in rural areas, frequently have to wait in long lines to see certain specialist doctors. To avoid this, the Ministry of Healthcare and local *akimshiliks* must work together to plan specific days when only people from rural areas can receive specialized services such as medical professionals' assistance and diagnostic services. The previous point about raising awareness is especially relevant here, and the Ministry of Communications and Information should be

heavily involved. This solution can serve as a stopgap measure while plans to build more hospitals and medical centers are expedited. The proposed solution is primarily aimed at residents of rural areas; however, with the addition of more clinics in small towns, residents in large cities will find it easier to schedule appointments due to reduced traffic from rural areas.

These are preliminary recommendations, and more research is needed. To reach safer conclusions, future research should focus on more dimensions of satisfaction and strive to create a more random and representative sample for all of Kazakhstan. Nonetheless, despite serious limitations, our study presents interesting results that led to the discussion of the determinants of satisfaction. Respectively, this study is the first interim assessment of the determinants of the success of the CSHI system in Kazakhstan. The results should be incorporated into social science discourse and governmental policy in Kazakhstan for the time being with the aims of future research.

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Appendix 1.

Survey questions

General questions about respondents:

1. What is your age?

   18-24, 25-34, 35-44, 45-54, 55-64, 65+

2. What is your gender?

   Male, female, other:____

3. What is your marital status?

   Single, married, widowed, divorced/separated, other

4. What is your income level? (in tenge)

   <42,500; 42,500-120,000; 120,000-223,000; 223,000-350,000; 350,000-500,000; 500,000<

5. What is your educational background (completed degree)?

   Middle school (5-9 grades); high school (10-12 grades); Community college degree; Bachelors; Masters; PhD; other:_____

6. What is the place of your residence?

   Astana, Astrakhanka, other:_____

7. What is your ethnicity?

   Kazakh, Russian, Uzbek, Uyghur, Ukrainian, other:____

8. What is your preferred language of communication?

   Kazakh; Russian; other:_____

9. What is your employment status?

   Full-time, part-time, unemployed, other:_____

10. Are you enrolled in the compulsory social health insurance system (CSHI)?

    Yes, no, maybe/not sure

11. Did you use the services provided by the CSHI?

    Yes; no

Awareness questions:

12. Please, show whether the following sentence is correct: "CSHI is a health insurance system available for all residents of Kazakhstan".

    False, true

13. Please, show whether the following sentence is correct: "People can access diagnostic services via CSHI".

    False, true

14. Please, show whether the following sentence is correct: People can acquire drugs in inpatient clinics via CSHI.

False, true

15. Please, show whether the following sentence is correct: People can get appointments with specialists via general practitioner referrals.

False, true

16. Please, show whether the following sentence is correct: Dental treatment is included in CSHI for certain groups of people.

False, true

Access questions:

17. Please, show whether you agree with the following sentence: there is a public medical clinic on the accessible distance from my place

Strongly disagree; disagree; neither agree nor disagree; agree; strongly agree

18. Please, show whether you agree with the following sentence: appointments are made at a convenient time for me.

Strongly disagree; disagree; neither agree nor disagree; agree; strongly agree

19. Please, show whether you agree with the following sentence: appointment booking services are available during working hours.

Strongly disagree; disagree; neither agree nor disagree; agree; strongly agree

20. Please, show whether you agree with the following sentence: waiting lines in medical
clinics are short.

Strongly disagree; disagree; neither agree nor disagree; agree; strongly agree

21. Please, show whether you agree with the following sentence: there is little time between appointment booking and the appointment itself.

Strongly disagree; disagree; neither agree nor disagree; agree; strongly agree

Communication questions:

22. Please, show whether you agree with the following sentence: reception and call-center employees conveyed information about the appointment clearly.

Strongly disagree; disagree; neither agree nor disagree; agree; strongly agree

23. Please, show whether you agree with the following sentence: reception and call-center employees spoke the language that is the most convenient for me.

Strongly disagree; disagree; neither agree nor disagree; agree; strongly agree

24. Please, show whether you agree with the following sentence: medical professionals gave adequate information about procedures and examinations included within the CSHI system.

Strongly disagree; disagree; neither agree nor disagree; agree; strongly agree

25. Please, show whether you agree with the following sentence: medical professionals spoke the language that is the most convenient for me.

Strongly disagree; disagree; neither agree nor disagree; agree; strongly agree

Outcomes questions:

26. Please, show whether you agree with the following sentence: my health got better after the treatment.

Strongly disagree; disagree; neither agree nor disagree; agree; strongly agree

Questions about satisfaction with CSHI:

27. Are you satisfied with the shift to the new CSHI system?

Definitely not, probably not, might or might not, probably yes, definitely yes

28. Are you satisfied with the range of services provided by the CSHI?

Definitely not, probably not, might or might not, probably yes, definitely yes

29. Are you satisfied with the services provided by CSHI?

Definitely not, probably not, might or might not, probably yes, definitely yes

Other questions:

30. Please, show whether you agree with the following sentence: "I am well aware of the CSHI system and services it provides".

Strongly dissatisfied, dissatisfied, neither satisfied nor dissatisfied, satisfied, strongly satisfied

31. Please, indicate the resource used for obtaining information about CSHI,

Reception, call-center, media channels, other:_____

32. What do you think are the issues with the CSHI? (Inpatient and outpatient clinics, ambulance, medical facilities and equipment, reception and call-center services, etc.)

_____

Appendix 2.

Figure 1. STATA code (authors)

```
. ologit rsatisfaction i.rcommunication i.health_outcome i.raccess i.rawareness i.age i.gender i.r
> esidence, or

Iteration 0:   log likelihood = -147.94248
Iteration 1:   log likelihood = -102.09887
Iteration 2:   log likelihood = -96.966112
Iteration 3:   log likelihood = -96.767546
Iteration 4:   log likelihood = -96.767115
Iteration 5:   log likelihood = -96.767115

Ordered logistic regression                     Number of obs     =        159
                                                LR chi2(17)       =     102.35
                                                Prob > chi2       =     0.0000
Log likelihood = -96.767115                     Pseudo R2         =     0.3459
```

rsatisfaction	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
rcommunication						
5-8	.7794432	1.044527	-0.19	0.852	.0563761	10.7764
9-12	3.274806	4.382645	0.89	0.375	.2377004	45.11712
13-16	1.30888	1.980486	0.18	0.859	.0674425	25.40187
health_outcome						
Somewhat disagree	.3631605	.4277877	-0.86	0.390	.0360927	3.65408
Neither agree nor disagree	1.41724	1.609321	0.31	0.759	.1530655	13.12229
Somewhat agree	1.822437	2.11092	0.52	0.604	.188239	17.64393
Strongly agree	57.10667	94.67504	2.44	0.015	2.215701	1471.847
raccess						
2	2.835011	2.010423	1.47	0.142	.7062082	11.3809
3	5.136798	4.030212	2.09	0.037	1.103722	23.90702
4	29.95031	47.74854	2.13	0.033	1.316333	681.4544
rawareness						
2	3.568413	2.291218	1.98	0.048	1.013755	12.5608
3	15.84818	10.88056	4.02	0.000	4.126555	60.8655
age						
25-44	.378249	.1688542	-2.18	0.029	.1576858	.9073249
45-64	.4469863	.2530887	-1.42	0.155	.1473446	1.355983
65+	.2972401	.4264358	-0.85	0.398	.017862	4.946348
gender						
Female	.2348305	.1122068	-3.03	0.002	.092052	.5990676
residence						
Astrakhanka	.6337141	.3114218	-0.93	0.353	.2418762	1.660327