Factors that impact students' satisfaction with medical care at the Nazarbayev University Health Center

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Executive Summary

Healthcare services play a significant role for students' well-being, which influence academic performance and personal fulfillment. Nevertheless, educational institutions such as universities usually lack efficient assessment tools to measure the level of students' satisfaction with medical services and to investigate which factors significantly affect the students' satisfaction. So, this research focuses to identify the factors influencing students' satisfaction with healthcare services provided by the University Health Center (UHC) at Nazarbayev University (NU). NU is a leading institution in Central Asia, with its own healthcare center - UHC. It was established in 2018. Since the beginning of its functioning, the UHC has conducted surveys among students twice a year. These surveys measure students' level of satisfaction regarding time spent and performance of medical staff during the check-ups. However, these assessments do not provide a full scope of specific factors affecting students' satisfaction with the UHC's medical care and furthermore how much these factors are significantly correlated with students' satisfaction. To address this issue, this research examines factors such as trust, communication, expertise, facilities, and visit frequency using the SERVQUAL model to analyze the correlation between these factors and satisfaction rates.

The SERVQUAL model relies on five dimensions - tangibles, reliability, responsiveness, assurance, empathy. Within this frame, the SERVQUAL five dimensions are correlated with practical factors for this study, which are trust, expertise, communication, facilities, and visit frequency. The approach used provided a possibility to enable a better understanding of students' expectations, which may help to improve the quality of services provided at UHC.

The research used quantitative research to collect primary data through structured surveys. These surveys were sent to 7517 students and 289 responded. Students were from different demographics, held different education levels, and were different nationalities. The survey questions are designed to measure the important factors listed above and are used as explanatory variables such as trust, expertise, communication, facilities, and visit frequency, affecting the dependent variable, students' Health Care Service satisfaction. Each factor was further examined through sub-variables, such as staff professionalism (expertise), appointment reminders (communication), and

cleanliness (facilities). To test the setup hypotheses, we applied a logit model of estimating the probability of students satisfaction with the factor uttered above.

The logit model applied provided an empirical result, namely which factors are significantly correlated with the DV, the probability of students being satisfied with the health service provided by the NU UMC. First, the factors of **trust** and **expertise** played a significant role that influences satisfaction rate. For example, students who showed higher levels of trust in UHC were more likely to represent overall satisfaction with the services. Notably, trust-building initiatives like personalized care were identified as significant for a positive perception of the UHC. Expertise was also important for satisfaction. For students, professional and skilled healthcare providers play a significant role as well. Consistent, reliable care and high levels of staff competence were directly linked to improved patient experiences. Also, **communication** was seen as a strong factor of satisfaction. Students cited clarity of information, responsiveness, and empathetic interaction as most important in whether they had a positive experience. Effective communication fills the gap between patient expectations and service quality.

However, some factors had little or no effect on students' satisfaction. For example, facilities were identified as a less significant factor. Students care about the level of facilities, nevertheless they prioritize interpersonal interconnections more. **Visit frequency** showed no impact on the satisfaction level at all. This suggests that frequent visits alone do not enhance perceptions of service quality, highlighting the importance of other factors like trust and expertise.

In summary, among the five hypotheses tested, trust, expertise, and communication were strongly correlated with the DV, students' satisfaction, demonstrating their substantial influence on satisfaction. Facilities showed partial support, while visit frequency was not directly linked to satisfaction.

The research findings have several policy implications. To improve student satisfaction in health care service, first enhance communication skills among healthcare staff, so that they can clearly communicate about diagnoses and treatments. Second, invest in their professional development through specific training. Third, improve facilities to reduce overcrowding and optimize space. Fourth, establish working feedback tools for gathering

different perspectives on the services provided. Fifth, improve trust through personalized care.

The insights gained from this study will not only improve healthcare service provision at NU but also contribute to broader efforts to enhance students' well-being and healthcare satisfaction within university environments in Kazakhstan. From a practical perspective, the research findings will provide valuable knowledge for University Medical Center Corporate Fund (UMC CF) management at Nazarbayev University, facilitating improvements in service quality and reducing dissatisfaction levels.

The research limitations include sample size, which includes only NU students and does not provide information about other universities. In addition, the research used only quantitative methods without qualitative. In this regard, future research must include interviews or focus groups for a better understanding. At the same time, it limits generalizability.

With these limits, however, this study found some empirical evidence that some factors such as trust, communication, and expertise influence students' satisfaction with healthcare services. By addressing these areas through targeted interventions, Nazarbayev University's UHC can set new benchmarks for quality healthcare delivery. The findings also provide actionable insights for other institutions seeking to enhance student well-being, fostering healthier and more supportive campus environments.

Table of Contents

List of abbreviations

NU – Nazarbayev University

UHC – University Health Center

UMC CF – University Medical Center Corporate Fund

List of figures

List of tables

1. Introduction

Healthcare services, both public and private, seldom collect comprehensive feedback from patients on a regular basis (Saif, 2014). This lack of data represents a missed opportunity to enhance transparency and accountability, which are critical for maintaining high-quality service delivery. Recognizing and addressing students' needs and concerns can enable the UHC to better align its services with students' expectations, fostering a more supportive and empowering healthcare environment. Since students constitute an important yet often overlooked segment of society, gathering their feedback should be a top priority.

The objective of this research is to identify and assess the factors affecting students' overall satisfaction with the quality of healthcare services provided by the UHC at Nazarbayev University. NU[1] is widely recognized as one of the leading higher education institutions in Central Asia and it has its own medical center - UHC, which was established in 2018. UHC has since focused on achieving high standards in its services to meet the healthcare needs of NU's growing student and staff population. The UHC employs 65 staff members, including both healthcare specialists and administrative personnel.

Students' satisfaction with healthcare services is a key determinant of their general wellness at higher education institutions (Shaw, 2020). For example, a study by Tadin et al. (2022) found that students who felt supported by university health services reported higher levels of both mental and physical well-being. Additionally, patient satisfaction is a major factor in identifying and improving healthcare outcomes, as patients with high levels of satisfaction are more likely to follow treatment plans, maintain continuous relationships with their healthcare providers, and achieve better outcomes (Aljaberi et al., 2018). In fact, higher levels of satisfaction among patients have led to increased market share, improved financial performance, and fewer complaints (Pouragha and Zarei,

[1] The University Health Center of Nazarbayev University was selected as the research setting for this study because of its funding structure, which differentiates it from other higher education settings in Kazakhstan. The Center's funding and financial resources originate from three main sources: the Guaranteed Value of Free Medical Care, Compulsory Social Medical Insurance and Voluntary Medical Insurance. In addition, Nazarbayev University performs as an autonomous institution governed by its own legal framework that makes its healthcare system an ideal topic of discussion for this study. This unique arrangement enables the adoption of a framework that can be applied in other university health centers throughout Kazakhstan.

2016). Furthermore, patient satisfaction records are used as a key determinant of service providers' payment in healthcare organizations (Pouragha and Zarei, 2016).

The main problem, which is outlined in this research, is that the UHC faces a gap in understanding the key factors that impact students' satisfaction which restricts its ability to effectively address students' healthcare needs. The UHC conducts surveys twice a year to find out the amount of time students spend on check-ups and medical staff performance only, and other factors are not covered. For example, in 2023, the survey questions were distributed to 3974 students by NU Health and Safety Department, out of which 144 participants responded by sharing their experience on waiting time and medical staff performance during the check-ups. According to appendices 3 and 4, which represented waiting time during the medical check-ups, all services were delivered efficiently within 5 to 10 minutes, with percentages ranging from 75% to 90%, which represents a significant level of satisfaction. Appendices 5 and 6 represented an evaluation of medical specialists ranked from Poor to Excellent. The analysis highlighted overall strong satisfaction with UHC services, though targeted improvements are needed in reception, chest X-rays, neurologists, and especially gynecology to address areas of higher dissatisfaction. Overall, this information does not provide a full picture regarding the satisfaction factors. This study aims to identify and analyze the primary drivers of satisfaction, including trust, communication, expertise, facilities, and visit frequency, by utilizing the SERVQUAL model to fulfill the satisfaction factors understanding gap at UHC. The insights gathered will guide targeted improvements to enhance the overall healthcare experience for students. In this regard, the following research questions will be examined during the research process:

1) **To what extent are NU students satisfied with the healthcare services provided by the UHC?**

   This question focuses on students' general levels of satisfaction and provides insight into how the UHC is perceived in terms of service quality. At the same time, it allows for the examination of areas where expectations are met or exceeded and identifies areas that may not meet students' expectations.

2) **What factors impact students' satisfaction with medical care at NU?**

   This question is crucial for identifying which characteristics most influence satisfaction levels. Using the SERVQUAL model, the research focuses on elements such as trust, communication, facilities, expertise, and visit frequency.

Gathering and analyzing these elements will allow the research to propose targeted improvements to the student healthcare experience. Additionally, this question offers an opportunity to highlight specific aspects of healthcare services that did not meet students' needs or expectations.

The findings of this study will provide valuable insights for UMC CF's management, facilitating enhanced service quality and reduced dissatisfaction levels. This study will also offer educational implications, enabling the results to be integrated into potential training programs for future healthcare managers. From a scientific perspective, the research aims to address a significant gap in studies on healthcare satisfaction within higher education settings in Kazakhstan, an underexplored topic in the field of public administration research.

In summary, this study tackles an important and under-discussed issue in Kazakhstan's educational healthcare system by identifying the variables that influence students' satisfaction with healthcare services at the UHC. By examining factors such as communication, facility quality, visit frequency, trust, and expertise, this research seeks to provide specific insights that can inform improvements in the UHC's service delivery. Ultimately, this study not only highlights the unique healthcare needs of students but also establishes a framework that could guide healthcare management practices in other Kazakh university settings, raising the standard for students' satisfaction and well-being.

2. Literature review

This literature review explores key factors influencing students' satisfaction with healthcare services at NU, utilizing the SERVQUAL model as a theoretical framework. The SERVQUAL model, developed by Parasuraman, Zeithaml, and Berry (1988), evaluates service quality based on five dimensions: tangibles, reliability, responsiveness, assurance, and empathy. This review integrates insights from global research on healthcare satisfaction, emphasizing the importance of trust, expertise, communication, facilities, and visit frequency as predictors of satisfaction. Clear hypotheses are formulated for each variable to guide the study.

2.1. The SERVQUAL model as a theoretical framework

The SERVQUAL model is a fundamental theoretical framework in this study, guiding the exploration of factors that affect student satisfaction with healthcare services at UHC. Healthcare providers can improve the patient experience by identifying and fixing gaps in the SERVQUAL dimensions shown in Figure 1:

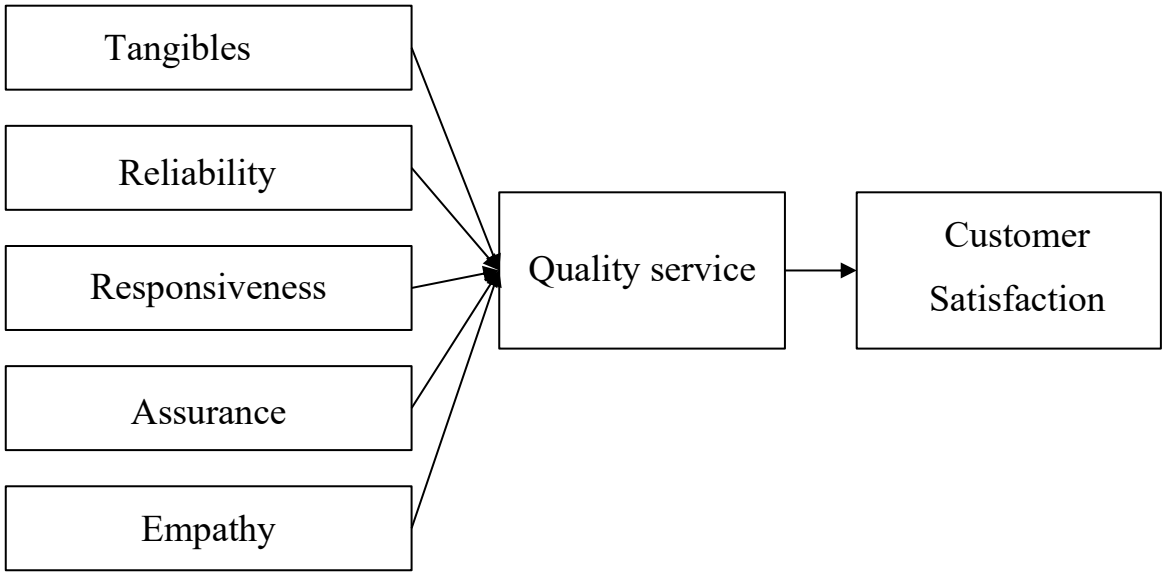

Figure 1. The SERVQUAL model. Parasuraman, Zeithaml and Berry (1988)

1. Tangibles: Appearance of staff, equipment, and physical facilities.
2. Reliability: Consistently offering reliable and precise service.
3. Responsiveness: Readiness to help and quickly attend to patient requirements.
4. Assurance: Staff's knowledge, courtesy, and ability to instill trust and confidence.

5. Empathy: Tailored attention and empathy towards patients' requirements. (Parasuraman et al., 1988).

In the healthcare field, these aspects enable providers to systematically assess and enhance their services. Babakus and Mangold (1992) validated the model's effectiveness in hospital settings, highlighting its importance in comprehending patient satisfaction. This study utilizes the SERVQUAL model to evaluate factors impacting satisfaction at the UHC, connecting its components to trust, expertise, communication, facilities, and frequency of visits. Specifically:

- **Reliability** is linked to **trust**, as patients need consistent and dependable care to feel safe.
- **Assurance** is connected to **expertise**, showing the significance of the skills, knowledge, and confidence that healthcare professionals provide to patients.
- **Responsiveness** involves **communicatio**n that focuses on timely, empathetic, and efficient interactions between healthcare professionals and patients.
- **Tangibles** correspond with **facilities**, emphasizing the importance of the actual infrastructure and the visual attractiveness of the healthcare setting.
- **Empathy** is connected to **visit frequency**, as regular and tailored interactions enhance comprehension of patients' needs and build stronger relationships.

In the upcoming Theory and Hypotheses section, a more in-depth exploration of the connections between each variable and students' satisfaction will be conducted, showing how trust, expertise, communication, facilities, and visit frequency all play a part in enhancing the healthcare experience.

Table 1. Factors that have influence on students' satisfaction

Factor	Definition	Source
Trust	the patient's confidence in healthcare providers	Abdullah, M. Z. et al. (2022); Aljaberi et al. (2018); Baker et al., 2003; Doriza S. (2019); Gyamfi (2019)
Expertise	meeting patients' needs effectively and reliably	Alshurideh (2014); Doriza (2019); Pouragha and Zarei

		(2016); Saif (2014); Tadin et al. (2022)
Communication	delivering clear, responsive, empathetic information	Gyamfi, P. A. (2019); Hailey, B. J., Pargeon, K., & Crawford, V. (2000); Shaw, A. K. (2020)
Facilities	equipped, accessible spaces for healthcare delivery	Eriksen, A., Litvinova, Y., & Rechel, B. (2022); Jones, A. M., Koolman, X., & Van Doorslaer, E. (2006); Sapri M., Kaka A., & Finch E. (2009)
Visit frequency	impact of regular healthcare visits	Cho et al., 2004

Theory and Hypotheses

2.2. Trust and clients' satisfaction

Trust is a cornerstone of patient satisfaction and plays a critical role in shaping healthcare experiences. Defined as the confidence patients have in healthcare providers to act in their best interest, trust fosters strong doctor-patient relationships (Baker et al., 2003). Studies highlight that trust correlates with consistent care and better satisfaction outcomes. Baker et al. (2003) found that patients who trust their regular physicians report higher satisfaction levels, emphasizing trust's role in ongoing relationships.

Doriza (2019) further illustrates that trust mediates the relationship between service quality and satisfaction. Dimensions such as accountability, responsiveness, and empathy significantly impact trust, which in turn enhances satisfaction. Moreover, Abdullah et al. (2022) reveal that trust influences patients' behavioral intentions, such as their willingness to return for future visits or recommend the service to others.

In the university healthcare context, trust is nurtured through transparent communication, professional competence, and ethical behavior. Gyamfi (2019) underscores that effective

communication, combining technical knowledge with empathy, strengthens trust, leading to higher satisfaction.

H1: Trust increases students' satisfaction with healthcare services.

2.3. Expertise and clients' satisfaction

Expertise, encompassing healthcare providers' technical and interpersonal skills, is another critical determinant of satisfaction. Pouragha and Zarei (2016) identify key factors such as professional competence, service delivery, and the physical environment as contributors to outpatient satisfaction. Alshurideh (2014) expands on this by emphasizing predictors such as cleanliness, waiting times, and staff behavior.

The SERVQUAL dimensions - reliability, assurance, and responsiveness - are particularly relevant in assessing expertise. Doriza (2019) highlights that consistent and empathetic care enhances perceptions of expertise, which in turn boosts trust and satisfaction. Additionally, Tadin et al. (2022) categorize expertise into extrinsic factors (e.g., communication and technical skills) and intrinsic factors (e.g., patient demographics), underscoring the complexity of this variable.

In educational settings, expertise extends to administrative support and resource availability. Saif (2014) notes that high-quality management and infrastructure contribute to positive perceptions of healthcare services among students.

H2: Expertise enhances students' satisfaction with healthcare services.

2.4. Communication and clients' satisfaction

Effective communication is integral to healthcare delivery, bridging the gap between patient expectations and service provision. Gyamfi (2019) shows a positive correlation between healthcare providers' communication skills and patient satisfaction. Instrumental communication, which reflects technical proficiency, and effective communication, characterized by empathy, are both crucial for fostering trust and satisfaction.

Shaw (2020) emphasizes that communication tailored to the unique needs of young adults improves healthcare experiences. Students who feel heard and understood are more likely to express their concerns, leading to better health outcomes and satisfaction. However, gaps often exist between healthcare providers' perceptions and patients' actual

experiences, highlighting the need for systematic feedback mechanisms (Hailey et al., 2000).

By aligning with the SERVQUAL dimensions of responsiveness and empathy, effective communication ensures that students feel valued and supported, ultimately enhancing their satisfaction.

H3: Effective communication positively influences students' satisfaction with healthcare services.

2.5. Facilities and clients' satisfaction

The quality and accessibility of healthcare facilities significantly affect patient satisfaction. Facilities encompass physical infrastructure, equipment, and overall environment. Eriksen et al. (2022) stress the significance of contemporary, easily accessible facilities for enhancing healthcare results in Kazakhstan. In the same way, Saha et al. (2018) point out that healthcare facilities designed to meet the specific needs of the community improve both satisfaction and health results.

Facilities in the university setting should be created with the students' particular requirements in mind, such as easily accessible locations, tidy surroundings, and up-to-date equipment. According to the SERVQUAL model, tangible aspects are crucial in influencing students' opinions on service quality.

H4: High-quality and accessible facilities increase students' satisfaction with healthcare services.

2.6. Visit Frequency and clients' satisfaction

How often patients visit healthcare providers indicates how much they are interacting with each other. Cho et al. (2004) discovered that regular appointments result in increased familiarity and trust, allowing patients to assess service quality more efficiently. Frequent communication also allows healthcare providers to meet the changing needs of patients, which can enhance satisfaction.

Increased frequency of visits corresponds with the reliability and responsiveness aspects of SERVQUAL, as reliable and responsive care builds trust and ensures services are up to expectations. Regular trips to the healthcare provider by college students can create

enduring connections with medical professionals, cultivating a positive and dependable healthcare setting.

H5: Increased visit frequency positively impacts students' satisfaction with healthcare services.

2.7. Integrated framework: linking key factors to SERVQUAL model

The five factors - trust, expertise, communication, facilities, and frequency of visits - correspond with the SERVQUAL aspects to jointly impact the quality of the service. Trust and communication showcase empathy and assurance, with expertise demonstrating reliability and responsiveness. Facilities are tangible elements, while how often someone visits highlights how dependable and prompt they are. Combined, these variables create a thorough framework for evaluating satisfaction at UHC.

Specific sub-variables provide additional layers of analysis for each variable as shown in Figure 2. Healthcare providers' **expertise** is determined by their competence and professionalism, guaranteeing students receive dependable and timely care. **Communication** involves effectively **delivering information** clearly and **explaining medical conditions or treatments** to increase trust and satisfaction. **Facilities** are assessed based on the quality of their **physical infrastructure** and the presence of necessary **equipment**, creating a suitable setting for healthcare services. Assessing **visit frequency** involves looking at **how often healthcare visits** occur and **the feelings or attitudes** students have toward these visits, which mirrors their continued connection with the center. **Trust** among students depends on their **belief in the UHC staff** and the accuracy of the **health information** given to them.

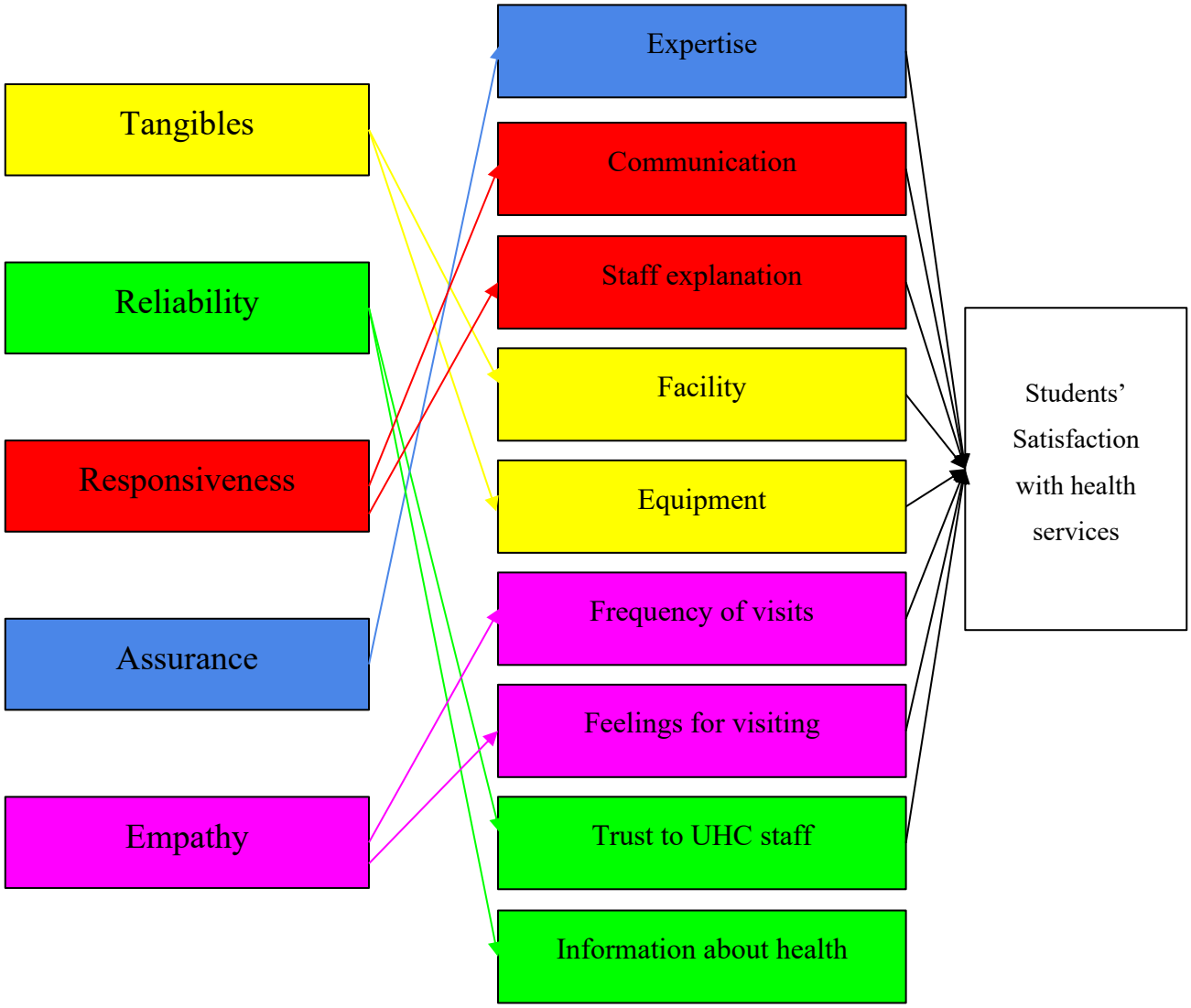

Figure 2. Conceptual model

This literature review offers a theoretical and empirical foundation for comprehending the factors that effect student satisfaction with healthcare services. The study systematically assesses the importance of trust, expertise, communication, facilities, and visit frequency by using the SERVQUAL model. These insights contribute to targeted improvements in healthcare services, ensuring that they meet students' unique needs and expectations.

3. Research design

The subjects of this research are NU students, including from the Foundation program, Undergraduate, and Graduate programs, and students majoring in diverse academic disciplines. The subjects include individuals from Kazakhstan and international students. This allows a unique chance to explore the factors impacting student satisfaction with healthcare delivered at the UHC. The study shows that the comprehension of patient demographic data is essential in designing healthcare services to meet unique needs and expectations.

The study is based on quantitative research using primary data to address our objectives. The primary data was collected by conducting a structured survey, which concentrates on overall medical services provided at the UHC. We decided to use the quantitative method analysis, since it helps us to assess the relationship and correlation between multiple variables and enhances the validation of key determinants of student satisfaction.

3.1. Primary data

We have conducted an online structured survey through Google Forms sending our questionnaire to NU students by email. The questionnaires were sent to 7517 students from NU. We tailored the survey in a way that it assessed students' perceptions and experiences in terms of five independent variables measuring their overall satisfaction with the healthcare services. Also, the survey included information on students' demographic data such as age, gender, level of education and nationality. With regard to survey questions, we have included only closed questions with Likert scale replies along with multiple choice options for some questions. This allows us to quantify students' feedback effectively based on suggestions from existing studies that employ similar methodologies, which we are using in our study. The full survey is included in the Appendix.

3.2. Variables

Our study has one dependent variable (student satisfaction) and five independent variables including trust, communication facilities, expertise and visit frequency. Each variable is operationalized in the following manner and by the following sub-variables as represented in Table 2:

- *Student satisfaction* is the dependent variable (DV), measured by analyzing the survey results in terms of healthcare services provided taking into account the five key indicators.

- *Expertise* is measured by identifying students' level of satisfaction with the overall quality of the services along with the examination of the professionalism and expertise of the UHC staff.

- *Trust* is measured by analyzing to what extent students feel comfortable sharing their health issues with the UHC staff and to what extent they trust staff to handle their health concerns effectively. Sub-variables are *trust in UHC* and *health information*.

- *Communication* is measured by evaluating how clear and timely students engage in communication with staff members in terms of appointment reminders and health updates along with how well the UHC staff members explain students' medical status and treatment plans during their visits. Sub-variables are *communication* and *staff explanation.*

- *Facilities* are assessed by analyzing the level of cleanliness and comfort of the UHC along with the availability of necessary equipment and resources to address students' health concerns. Sub-variables are *facility* and *equipment*.

- *Visit frequency* is measured by analyzing the actual frequency of students' visits and examining their perceptions of how frequently they need to visit the UHC. Sub-variables are *visiting frequency* and *visit feeling*.

Table 2. Variables types

Dependent variable	Students' satisfaction with healthcare services
Independent variables	Expertise
	Communication
	Staff explanation
	Facility
	Equipment
	Visit frequency
	Visit feeling
	Trust in UHC
	Health information
Control variables	Age
	Gender
	Level of education
	Nationality

3.3. Empirical Analysis

We employed a binary regression model analysis to measure the correlation between the independent variables, such as trust, communication, facilities, expertise and visit frequency and dependent variable, as a students' satisfaction with healthcare services. This analysis helps us define the important determinants of student satisfaction and measures the overall service quality of the UHC. In the research, a Binary Regression

Logit Model was used in the Stata program. We used the logit model and logit regression equation, as shown in the equations 1 and 2, since the DV has only two values, 0 (non-satisfied) and 1(satisfied). This logit model was employed, because it is easy to interpret and allows testing the predictive value of new and creative variables in a crisis. The logit model has historically been used in social and medical sciences, usually when researchers wanted to test the achievement of some results. However, nowadays, researchers use this method for predicting financial crises or in risk management (Siegmann, 2017). The logit model was analysed with Stata 16.

Figure 3. A Logit model

$$_{\Omega}(x) =$$

$$\frac{Pr\ (y=1 \mid x)}{Pr\ (y=0 \mid x)} = \frac{Pr\ (y=1 \mid x)}{1-Pr\ (y=1 \mid x)}$$

The Logit model indicates the odds ratio, which examines the relationship between independent variables and probability of the results. The logarithm of odds ratio provides a linear equation, which is used for analysis and predictions.

Pr (y=1|x): this formula shows the probability that the outcome (y) equals 1, the relative value of the independent variable (x). This demonstrates the probability that a situation will occur under certain conditions.

Pr (y=0|x): this formula indicates that the probability that an outcome (y) equals 0, when the value of (x) as an independent variable will be the same. This probability demonstrates that a situation will not happen with these conditions.

1 - Pr (y=1|x): due to outcome can only be 0 or 1. The probability of y equals 0 is the same as 1 - Pr y=1.

Figure 4. A Logit regression equation

$$\boldsymbol{ln}_{\Omega}(x) = x * \beta = \beta_0 + \beta_1 * x_1 + \beta_2 * x_2 + \varepsilon$$

β_0: this is a point of interception of the equation, when all independent variables and the value of the logarithm odds are zero.

β_1, β_2…: coefficients for each independent variable. They demonstrated how to significantly change logarithm coefficients of the results, when one-unit changes in the appropriate independent variable, by leaving other variables unchanged.

$x_1, x_2 \ldots$: values of the independent variables; they indicate factors that might impact the results.

4. Findings

This chapter indicates the research findings based on the quantitative research method analysis of students' satisfaction level with healthcare services provided by the UHC. The findings are based on data retrieved from primary data surveys. The primary data was accumulated using a Google Forms survey by targeting broad medical services and examining the link between student satisfaction, which is a dependent variable, and five independent variables such as communication, facilities, visit frequency, trust and expertise. Here we will analyze the data, emphasize key research findings, and share some insights based on the statistical data analysis. First, we will present the results obtained from the primary survey data. Then we will formulate a more in-depth analysis to test the hypotheses based on this data.

4.1. Analysis of the primary data

4.1.1. Descriptive Statistics

The questionnaire was distributed among 7517 students from NU via Google Forms. In the first stage, the research questions were oriented to identify accurately satisfaction factors among the students. Out of 7517 NU students 289 responded as per Table 6. Then, respondents were categorized, based on age, gender, level of education and citizenship. Extra questions to the questionnaires were then added to the research. 107 students out of 7517 responded to these.

Table 3. Descriptive Statistics

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Variable	**Name**	**Obs**	**Mean**	**Std. Dev.**	**Min**	**Max**	**VIF**
DV	satisfaction (binary)*	289	0,60	0,49	0	1	
	satisfaction (binary)**	289	0,38	0,49	0	1	
IV	expertise	289	3,08	1,33	1	5	3,76
	communication	288	2,98	1,52	1	5	2,35
	staff explanation	289	3,16	1,42	1	5	2,76
	facility	289	4,11	1,08	1	5	2,16
	equipment	288	3,52	1,25	1	5	3,01

	visit_frequency	288	2,73	0,86	1	5	1,16
	visit_feel	289	2,23	0,57	1	4	1,23
	trust_UHC	289	3,08	1,31	1	5	4,6
	health_info	288	3,47	1,36	1	5	3,58
Control	age	107	2,36	0,68	1	4	2,43
	education	107	2,40	0,71	1	4	2,12
	gender	106	0,56	0,50	0	1	1,21
	citizenship	107	0,81	0,39	0	1	1,68

Table 3 shows a descriptive statistic of dependent and independent variables on satisfaction with medical care among students from NU. There are two dependent variables: Satisfaction* and Satisfaction**. The manipulations are as follows:

Satisfaction* (DV): On the question "how satisfied you are with the overall quality of the services provided by the UHC," in the second column "satisfaction (binary)*" answers such as: neutral, satisfied and very satisfied implies = 1; very dissatisfied and dissatisfied implies = 0. So, for this criterion 289 respondents were observed, with a mean rate equal to 0,60, standard deviation is equal to 0.49, which can be considered as high, due to it being close to the mean rate.

Satisfaction (DV):** In the second column "satisfaction (binary)**" answers satisfied and extremely satisfied implies = 1, answers like neutral, dissatisfied, very dissatisfied implies = 0. So, 289 students were observed, with the mean rate 0,38, standard deviation indicator is equal to the previous 0,49, which is also high, even more than the mean rate. These questionnaires are displayed in Appendix 1.

Next, main explanatory variables (IV) are summarized as follows:

Expertise level was measured by the question "How would you rate the professionalism and expertise of the Health Center staff?". For this question, 289 students responded, where 1 was equal to poor, 2 for fair, 3 for average, 4 for good and 5 for excellent. The mean rate is equal to 3,08, which can be considered as more than average, which means that students overall are satisfied by the professionalism and expertise of the medical staff. The standard deviation rate is 1,33, which is on a quietly low level by comparing it with the mean rate.

Additionally, the Variance Inflation Factor (VIF) which indicates multicollinearity of the correlated variables is equal to 3,76 rate, which can be recognized as normal, due to this indicator is not above than 5.

Communication was measured by the question "How clear and timely is the communication you receive from the UHC (e.g., appointment reminders, health updates)?" For this question, 288 students responded, the mean rate is 2,98, which is close to 3 (average) and can be interpreted as satisfied by the students of NU. The standard deviation rate is 1,52, which is the highest compared to others' deviation rates, which can be recognized that the data can be scattered. The Variance of inflation factor is equal to 2,35, which is in the frame of normal rate. The strong correlation between communication and satisfaction suggests that clear, effective communication is essential for improving the overall patient experience. This finding is supported by Gyamfi (2019) and other studies, which emphasize the importance of effective communication in healthcare settings.

Trust in UHC, from the survey's question as "How much do you trust the UHC staff to handle your health concerns effectively?" For this answer different responses were imaged as "1. Not at all, 2. In some cases, 3. Average, 4. Partly, 5. Completely". For this question, 289 students responded, the mean rate is 3,08, which can be interpreted as students' overall trust in UHC services. The standard deviation rate is 1,31 which is normal, due to this rate close to 1, which is ⅕ part. The Variance of inflation factor is 4,6, which is close to 5, and more than other VIF indicators of other variables, but it still can be considered as a normal. Moreover, high level of trust in healthcare providers were shown to significantly boost satisfaction, as confirmed by prior research (Abdullah et al., 2022).

As shown in table 3, 107 respondents participated in the primary data collection. By the research group, all respondents were divided into subgroups based on the age categories, "1. Under 18, 2. 18–25, 3. 26–35, 4. 36-50, 5. 51-60, 6. 61 or older." So, all respondents are in the age group from 18 to approximately 30 years old. In terms of education level, the research group asked the question as "What is your highest level of education?" with various responses such as: "1. Foundation, 2. Bachelor's degree, 3. Master's degree, 4. PhD or Doctorate." The majority of the 107 respondents studied for a Bachelor's degree and a small number of respondents studied for a Master's degree. In terms of gender, the participated students consisted of 46 males, 60 females and one did not identify a gender.

In the primary research, 87 Kazakhstani residents and 20 residents from other countries participated.

Table 4. Pairwise Correlation

	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15
Satisfaction (binary) (1)	1														
Satisfaction (binary) (2)	0.637*	1													
expertise (3)	0.721*	0.729*	1												
communication (4)	0.593*	0.621*	0.659*	1											
Staff Explanation (5)	0.569*	0.609*	0.723*	0.621*	1										
Facility (6)	0.514*	0.414*	0.552*	0.468*	0.538*	1									
Equipment (7)	0.458*	0.519*	0.538*	0.475*	0.564*	0.600*	1								
Visit_frequency (8)	-0.059	-0.121*	-0.037	-0.131*	-0.006	-0.03	-0.044	1							
Visit_feeling (9)	-0.120*	-0.077	-0.075	-0.091	-0.07	0.004	-0.056	0.295*	1						
Trust_UHC (10)	0.691*	0.659*	0.759*	0.620*	0.729*	0.596*	0.639*	-0.016	-0.048	1					
Health_information (11)	0.557*	0.553*	0.621*	0.528*	0.669*	0.604*	0.599*	0.027	-0.003	0.765*	1				
Age (12)	0.349*	0.416*	0.377*	0.348*	0.250*	0.177	0.107	-0.066	-0.094	0.278*	0.361*	1			
Education (13)	0.213*	0.381*	0.364*	0.293*	0.286*	0.143	0.194*	0.001	0.137	0.231*	0.281*	0.651*	1		
Gender (14)	-0.046	-0.1311	-0.1869	-0.1844	-0.102	-0.0311	0.062	0.102	-0.005	-0.09	-0.0568	-0.104	-0.132	1	
Citizenship (15)	-0.239*	-0.204*	-0.300*	-0.293*	-0.128	-0.204*	-0.062	0.006	0.108	-0.258*	-0.284*	-0.558*	-0.405*	0.298*	1

Analysis of Table 4 shows high positive correlations, namely satisfaction (1 & 2) strongly correlates with expertise (3), communication (4), staff explanations (5), trust in UHC (10) and availability of health information (11). This proves that these factors play an important role in terms of student satisfaction. Indicators such as expertise (3) are also strongly correlated with communication (4), staff explanations (5) and trust in UHC (10). Trust in UHC (10) and accessibility of health information (11) also have a high correlation. In addition, there are moderate positive correlations of indicators such as age (12) and education (13) with other variables such as satisfaction and expertise. However,

there are also negative correlations such as: frequency of visits (8) with satisfaction and other quality factors. As a result, this may mean that people who visit the clinic most often may be less satisfied. The "citizenship" variable (15) has a negative correlation with satisfaction and other factors. This may confirm the fact that the citizenship in Kazakhstan or another country may indicate a different degree of satisfaction. Additionally, it is worth noting that high correlations between variables such as expertise, communication, and staff explanations may indicate multicollinearity.

4.2. Empirical results

All of the results come from the estimation of the logit regression model and the post-estimation. First, in Table 8, the M1 and M2 models are compared. The analysis shows that M2 can be a more economical model, since it includes fewer variables. M1 and M2 have relatively high pseudo R2 values (0.6123 and 0.6219), which means that they represent a significant part of the variation in patient satisfaction. comparative analysis of AIC and BIC shows that M2 has lower AIC and BIC indicators, which also suggests that it is a more acceptable model than M1. In addition, it should be noted that expertise, communication, and trust in UHC are strong indicators of patient satisfaction in both models.

Table 5. Results from Logit Models

DV: satisfaction (binary)	M1	M2
expertise	1.545***	1.377*
	-0.337	-0.543
communication	0.445**	0.695*
type	-0.16	-0.349
staff explain	-0.169	-0.0758
	-0.202	-0.271
facility	0.516	-0.323

	-0.382	-0.399
equipment	-0.14	-0.454
	-0.219	-0.558
visit_freq	-0.0558	0.187
	-0.316	-0.506
visit_feel	-0.744	-0.0861
	-0.426	-1.102
trust_UHC	1.008***	1.411**
	-0.294	-0.452
health_info	0.0675	-0.0529
	-0.249	-0.444
age		1.745*
		-0.786
education		-0.852
		-0.569
gender		0.222
		-0.772
citizenship		1.015
		-1.481
_cons	-7.556***	-9.311**
	-2.065	-3.552
N	285	105

Pseudo R2	0.6123	0.6219
AIC	169	81.11
BIC	205.6	118.3
note: ( ) robust s.e., * p<0.05 ** p<0.01 *** p<0.001		

Next, Figure 5 shows the probability of Change by examining three variable indicators, such as expertise, which tested the professional level of the UHC staff. On Graph 1, the line which measures an expertise is represented by a line with circles, which is starting from 1 and rising to 10. This fact indicates that the expertise, professional level of competency of the UHC staff has a potential tendency for growth.

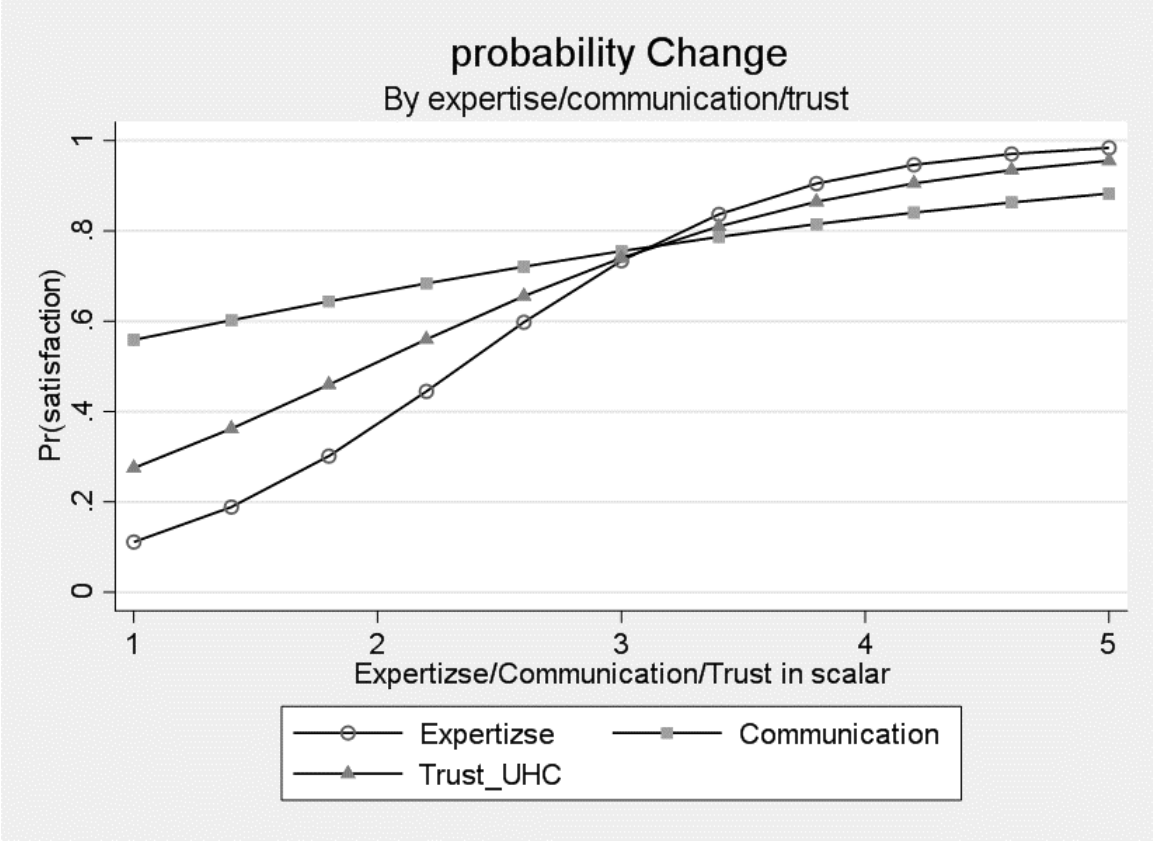

Figure 5. The probability of Change.

The second variable represents students' trust in UHC staffwith their personal information. The indicator of trust in UHC staff, depicted as a line with triangles. The trust line starts from 2,5 and rises to 9. This tendency also demonstrated a potential to

grow in terms of improving trust in the UHC staff among students. The third variable is communication between students and UHC staff. This indicator was represented as a line with squares, which starts from 5,8 pr (satisfaction) rate and has a potential to grow until it also has a tendency to grow to 8,5 pr (satisfaction) rate. As a result, all indicators of independent variables, such as expertise, trust and communication have potential to grow and further improve with the management level of the UHC.

Finally, Table 6 demonstrates a factor change coefficient analysis, which demonstrates interpretation of depression e^b scale. The "**b**" coefficient of the "**expertise**" variable is 1,55, which is positive; this means that the odds will be increased as the variable increases. The "**e^b**" value of the "**expertise**" is equal to 4,69. As a result, the odds of every outcome will be increased by almost 5 times by raising the level of expertise and improving the professional level of the UHC staff. The "**b**" coefficient of the **"communication"** variable is 0,45, which is positive; this means that the odds will be increased as the variable increases. The "**e^b**" value of the "**communication**" is equal to 1,56. As a result, the odds of every outcome will be increased by almost 2 times by improving the external communication between students and the UHC's staff. The "**b**" coefficient of the **"trust to UHC staff"** variable is 1,01, which is positive; this means that the odds will be increased as the variable increases. The "**e^b**" value of the "**trust to UHC**" is equal to 2,74. As a result, the odds of every outcome will be increased by almost 3 times by raising the level of trust to the UHC staff.

Table 6. Factor Change: results from logit model (N=285)

Table 6. Factor Change: results from logit model (N=285)						
Variables	b	z	P>|z|	e^b	e^bStdX	SDofX
expertise	**1,55**	4,58	0,00	**4,69**	7,80	1,33
communication	**0,45**	2,79	0,01	**1,56**	1,97	1,52
staff explanation	-0,17	-0,84	0,40	0,84	0,79	1,42
facility	0,52	1,35	0,18	1,68	1,75	1,09
equipment	-0,14	-0,64	0,52	0,87	0,84	1,25
frequency of visits	-0,06	-0,18	0,86	0,95	0,95	0,86
feelings for visiting	-0,74	-1,75	0,08	0,48	0,65	0,58
trust to UHC staff	**1,01**	3,43	0,00	**2,74**	3,78	1,32

health_information	0,07	0,27	0,79	1,07	1,10	1,36
constant	-7,56	-3,66	0,00	.	.	.

note: b = raw coefficient

z = z-score for test of b=0

P>|z| = p-value for z-test

e^b = exp(b) = factor change in odds for unit increase in X

e^bStdX = exp(b*SD of X) = change in odds for SD increase in X

SDofX = standard deviation of X

5. Discussion

From the empirical analysis shown above, we find some significant factors effecting students' satisfaction with the NU health service. The empirical findings for each hypothesis are summarized in Table 7. The detailed explanations are as follows:

The first hypothesis (H1: Trust increases students' satisfaction) is supported by the findings. The findings confirm the critical role of trust. The research results confirm outcomes from the literature review, by recommending the implementation of "trust-building initiatives" to enhance satisfaction among NU students. This approach aligns with the hypothesis that trust has a direct impact on satisfaction level.

The second hypothesis (H2: Expertise increases students' satisfaction with healthcare services) is supported by the findings. Empirical findings identify "expertise" as a crucial factor for improving communication and staff responsiveness, which are essential components of service quality.

The third hypothesis (H3: Effective communication increases students' satisfaction with healthcare services) is strongly supported by the findings. The findings show that "an effective communication" with students is a fundamental element of customer service. The findings and Logit model's probabilities predict that targeted trainings for healthcare providers will have a successful effect in terms of enhancing students' satisfaction with medical care.

The fourth hypothesis (H4: The quality and accessibility of healthcare facilities increase students' satisfaction with healthcare services) is partially supported by the findings acknowledging the importance of facility conditions and suggesting improvements to alleviate overcrowding, though it stops short of directly linking facility quality to satisfaction.

The fifth hypothesis (H5: Increased visit frequency increases students' satisfaction with healthcare services), though not directly supported by the findings, observes that some students infrequently visit the center and suggests enhancing awareness of available services.

In summary, Hypothesis 3 is strongly supported by the findings, hypotheses 1 and 2 are supported by the findings, hypothesis 4 is partially supported by the findings, and

hypothesis 5 is not supported by the findings. In other words, the most significant factor for the students' satisfaction in terms of healthcare services is communication followed by trust and expertise.

Table 7. Hypothesis Definition

Table 7. Hypothesis Definition	Results from the findings
H1: Trust directly impact students satisfaction	Fully supported
H2: Expertise has a direct positive impact on students satisfaction with healthcare services	Fully supported
H3: Effective communication has a direct positive impact on students satisfaction with healthcare services	Strongly supported
H4: The quality and accessibility of healthcare facilities have a direct positive impact on students satisfaction with healthcare services	Partially supported
H5: Increased visit frequency has a direct positive impact on students satisfaction with healthcare services	Not directly supported

5.1. Recommendations

It is recommended that the UHC focus on improving responsiveness, training, and communication to enhance patient satisfaction. Regular training programs for healthcare professionals should prioritize both technical skills and compassionate communication, ensuring that treatment plans, health updates, and appointment reminders are conveyed clearly and understandably. Another crucial focus area is improving staff responsiveness, which can be achieved by implementing online appointment scheduling, streamlining administrative processes, and providing real-time wait time updates.

Additionally, fostering trust through regular, personalized interactions between students and healthcare professionals should be a top priority, as these directly contribute to higher satisfaction. Establishing a feedback mechanism would allow students to voice

complaints and provide suggestions for service improvement, leading to more individualized and reliable care experiences.

To further enhance service quality, investments in modern medical equipment and facility renovations are essential to alleviate overcrowding and create a more welcoming and efficient healthcare environment. These actions aim to provide a healthcare experience that aligns with students' needs and expectations.

5.2. Limitations

The study's sample size and demographics are limited to students from Nazarbayev University, which may not accurately represent the broader student population in Kazakhstan. Additionally, certain demographic groups might be underrepresented due to a low response rate, potentially skewing the results. The research relied on surveys and a quantitative approach, which may not have fully captured the diverse experiences and perspectives of the students. To gain deeper insights into these subjective experiences, future studies should incorporate qualitative methods, such as focus groups and interviews.

Another limitation is the reliance on self-reported data, which can be influenced by individual biases, the respondent's mood at the time, or misinterpretations of the survey questions. Moreover, this study only examined the dimensions of the SERVQUAL model - communication, facilities, visit frequency, trust, and expertise - while neglecting other potential factors, such as peer influence and mental health support. The cross-sectional design further limits the ability to observe changes in student satisfaction over time. A longitudinal study would be beneficial for tracking shifts in satisfaction and identifying emerging needs.

Finally, the focus on a single university restricts the study's generalizability. To enhance its applicability, future research should involve multiple universities across Kazakhstan to provide a more comprehensive understanding of student satisfaction with healthcare services in different contexts.

Conclusion

This study thoroughly examines the key factors that impact students' satisfaction with healthcare services at NU UHC, based its analysis on the SERVQUAL model. The research analyzes how trust, expertise, communication, facilities, and visit frequency affect service quality and satisfaction. The results of the primary data analysis show that trust, expertise, and communication are the main factors affecting students' satisfaction, with facilities playing a moderate role and visit frequency having minimal influence.

The research underscores the significance of trust, stressing the crucial role of trust in UHC staff and the accuracy of health information in creating a favorable healthcare experience. Professional skill and quality service improve how quality and satisfaction are viewed. Good communication skills, especially when explaining medical issues and treatment choices, can help to build trust and satisfaction among students. However, although the quality of facilities is crucial in establishing a welcoming atmosphere, its direct effect on satisfaction seems to be less noticeable.

Furthermore, the results indicate that frequent engagements with healthcare professionals may not be linked to increased levels of satisfaction. This highlights the importance of prioritizing quality in patient interactions rather than quantity within healthcare services.

The study offers practical suggestions for managing UHC by recognizing and dealing with these factors, like investing in training for employees, enhancing communication methods, and improving facility conditions. These enhancements are designed to better match healthcare services with students' expectations, creating a supportive and effective healthcare atmosphere.

In summary, this study addresses a notable void in comprehension of student contentment in university medical environments and provides a structure for wider use in higher education establishments in Kazakhstan. The knowledge acquired will help direct specific actions, leading to improved healthcare results and overall student health.

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Appendices

Appendix 1. Primary data survey questions

1.What is your age?

1) Under 18
2) 2) 18–25
3) 26–35
4) 36-50
5) 51-60
6) 61 or older

2. How do you identify your gender?

1) Male
2) Female
3) Prefer not to say

3. What is your current level of education?

1) Foundation
2) Bachelor's degree
3) Master's degree
4) PhD or Doctorate

4. What is your citizenship?

1) Kazakhstan
2) Other

5. How satisfied are you with the overall quality of the services provided by the University Health Center?

Extremely Dissatisfied 1 2 3 4 5 Extremely Satisfied

6. How would you rate the professionalism and expertise of the Health Center staff?

Poor 1 2 3 4 5 Excellent

7. How clear and timely is the communication you receive from the University Health Center (e.g., appointment reminders, health updates)?

Poor 1 2 3 4 5 Clear

8. How well does the Health Center staff explain your medical condition and treatment options during your visits?

Poor 1 2 3 4 5 Clear

9. How would you rate the cleanliness and comfort of the Health Center facilities?

Poor 1 2 3 4 5 Excellent

10. Do you feel the Health Center has adequate equipment and resources to address your health needs?

Strongly Disagree 1 2 3 4 5 Strongly Agree

11. How often do you visit the University Health Center?

1) Never
2) Once a semester
3) 2-3 times per semester
4) Monthly
5) More than once a month

12. How frequently do you feel you need to visit the Health Center to address your health concerns?

1) Never
2) Occasionally
3) Frequently
4) Always

13. How much do you trust the University Health Center staff to handle your health concerns effectively?

Not At All 1 2 3 4 5 Completely

14. Do you feel comfortable sharing your health issues with the University Health Center staff?

Strongly Disagree 1 2 3 4 5 Strongly Agree

Appendix 2. Secondary data survey questions

Medical Check-up satisfaction survey

1.Is the registration process for a medical check-up convenient?

1) Convenient;
2) Inconvenient.

2. Please specify the approximate waiting time (including in the queue) when visiting medical check-up points/specialists:

2.1. **Blood test**

1) less than 5 minutes;
2) 5-10 minutes;
3) 10-15 minutes;
4) 15-30 minutes;
5) more than 30 minutes.

2.2. **Electrocardiogram**

1) less than 5 minutes;
2) 5-10 minutes;
3) 10-15 minutes;
4) 15-30 minutes;
5) more than 30 minutes.

2.3. **Chest x-ray**

1) less than 5 minutes;
2) 5-10 minutes;
3) 10-15 minutes;
4) 15-30 minutes;
5) more than 30 minutes.

2.4. **Therapist**

1) less than 5 minutes;
2) 5-10 minutes;
3) 10-15 minutes;
4) 15-30 minutes;
5) more than 30 minutes.

2.5. **Ophthalmologist**

1) less than 5 minutes;

2) 5-10 minutes;
3) 10-15 minutes;
4) 15-30 minutes;
5) more than 30 minutes.

2.6. **Neurologist**

1) less than 5 minutes;
2) 5-10 minutes;
3) 10-15 minutes;
4) 15-30 minutes;
5) more than 30 minutes.

2.7. **Gynecologist**

1) less than 5 minutes;
2) 5-10 minutes;
3) 10-15 minutes;
4) 15-30 minutes;
5) more than 30 minutes.

2.8. **Otorhinolaryngologist**

1) less than 5 minutes;
2) 5-10 minutes;
3) 10-15 minutes;
4) 15-30 minutes;
5) more than 30 minutes.

3. Please evaluate the specialists or the examination processes.

3.1. **Reception**

1) poor;
2) fair;
3) average;
4) good;
5) excellent.

3.2. **Blood test**

1) poor;
2) fair;
3) average;
4) good;

5) excellent.

3.3. **Electrocardiogram**

1) poor;
2) fair;
3) average;
4) good;
5) excellent.

3.4. **Chest x-ray**

1) poor;
2) fair;
3) average;
4) good;
5) excellent.

3.5. **Therapist**

1) poor;
2) fair;
3) average;
4) good;
5) excellent.

3.6. **Ophthalmologist**

1) poor;
2) fair;
3) average;
4) good;
5) excellent.

3.7. **Neurologist**

1) poor;
2) fair;
3) average;
4) good;
5) excellent.

3.8. **Gynecologist**

1) poor;
2) fair;

3) average;
4) good;
5) excellent.

3.9. **Otorhinolaryngologist**

1) poor;
2) fair;
3) average;
4) good;
5) excellent.

4. How much time did it take to complete the medical check-up in total, even if it was done over several days in parts?

1) Less than 1 hour;
2) 1-2 hours;
3) 2-3 hours;
4) more than 3 hours.

5. How many days did it take for you to complete the medical check-up?

1) 1 day;
2) 2 days, as the X-ray was on different day;
3) 2-3 days, because it was more convenient for me.

6. What usually prevents you from getting a medical check-up every year?

1) The need to spend time;
2) I don't like medical examinations;
3) The absence of health complaints;
4) The need to go to a medical center outside the campus;
5) It's difficult to find time during lecture/study hours;
6) Queue to see specialists.

7. What is your gender?

1) Male;
2) Female.

8. What is your age group?

1) 18-22;
2) 23-29;
3) 30-40;
4) 41+

9. What is your level of education?
    1) Undergraduate;
    2) Graduate, Master's degree;
    3) PhD;
    4) Doctor of Medicine.
10. What is your citizenship?
    1) Kazakhstan;
    2) Another country.

Appendix 3. The waiting time (in the queue) when visiting medical check-up points or specialists

	Blood test		Electrocardiogram		Chest x-ray		Therapist	
Less than 5 minutes	37	25,7%	21	14,6%	103	71,6%	34	23,6%
5-10 minutes	38	26,4%	23	16%	27	18,7%	39	27,1%
10-15 minutes	34	23,6%	20	13,9%	11	7,6%	34	23,6%
15-30 minutes	20	13,9%	34	23,6%	2	1,4%	16	11,1%
more than 30 minutes	15	10,4%	46	31,9%	1	0,7%	21	14,6%

Appendix 4. The waiting time (in the queue) when visiting medical check-up points or specialists

	Ophthalmologist		Neurologist		Gynecologist		Otorhinolaryngologist	
Less than 5 minutes	80	55,5%	78	54,2%	105	72,9%	72	50%
5-10 minutes	35	24,3%	42	29,1%	23	16%	47	32,6%
10-15 minutes	22	15,3%	11	7,6%	11	7,6%	14	9,7%
15-30 minutes	6	4,2%	7	4,9%	5	3,5%	8	5,6%
more than 30 minutes	1	0,7%	6	4,2%	0	0	3	2,1%

Appendix 5. The evaluation of the UHC specialists

	Reception		Blood test		Electrocardiogram		Chest x-ray		Therapist	
Poor	14	9,7%	6	4,2%	1	0,7%	17	11,8%	5	3,5%
Fair	15	10,4%	5	3,5%	3	2,1%	10	6,9%	3	2%
Average	25	17,4%	7	4,9%	9	6,3%	13	9%	10	7%
Good	38	26,4%	30	20,8%	44	30,5%	33	23%	32	22,2%
Excellent	52	36,1%	96	66,6%	87	60,4%	71	49,3%	94	65,3%

Appendix 6. The evaluation of the UHC specialists

	Ophthalmologist		Neurologist		Gynecologist		Otorhinolaryngologist	
Poor	4	2,7%	9	6,3%	56	38,9%	2	1,4%
Fair	4	2,7%	7	4,9%	5	3,5%	2	1,4%
Average	9	6,3%	13	9%	13	9%	12	8,3%
Good	41	28,5%	39	27%	20	13,9%	31	21,5%
Excellent	86	59,8%	76	52,8%	50	34,7%	97	67,4%

Appendix 7. Days for completing the medical check-up

Number of days	Frequency of occurrence	%
1 day	29	20,1%
2 days, as the X-ray was on a different day	58	40,3%
2-3 days, because it was more convenient for me	57	39,6%

Appendix 8. Time for completing the medical check-up in total

Time limit	Frequency of occurrence	%
Less than 1 hour	14	9,7%
1-2 hours	47	32,6%
2-3 hours	56	38,9%
more than 3 hours	27	18,8%

Appendix 9. The reasons of preventing from passing a medical check-up

Reasons	Frequency of occurrence	%
The need to spend time	88	27,2%
I don't like medical examinations	25	7,7%
The absence of health complaints	42	13%
The need to go to a medical center outside the campus	16	4,9%

It's difficult to find time during lecture/study hours	81	25%
Queue to see specialists	72	22,2%

Appendix 10. In the secondary research participated

Males	%	Females	%
61	42,3%	83	57,7%

Appendix 11. Age groups of the participants

Age group	Frequency of occurrence	%
18-22	113	78,5%
23-29	17	11,8%
30-40	12	8,3%
41+	2	1,4%

Appendix 12. Level of education of the students

Scientific degree	Frequency of occurrence	%
Undergraduate	113	78,5%
Graduate Master's degree	14	9,7%
Doctor of Philosophy	15	10,4%
Doctor of Medicine	2	1,4%

Appendix 13. The citizenship of the participants

Country	Frequency of occurrence	%
Kazakhstan	126	87,5%
Another country	18	12,5%

Appendix 14. The outcomes of patient satisfaction rate among the UMC's clinics Republican Diagnostic Center and Mother and Child Center.

The period of time	Patient satisfaction rate (Maximum rate is 100%)	Number of respondents	Overall coverage from all respondents (where the minimum rate is 20%)
June 2022	95%, minimum rate was 75%	1311, surveyed 204 (other children under 15 y.o.)	11%
July 2022	96%, minimum rate was 75%	1215, surveyed 283 (other children under 15 y.o.)	23%
August 2022	95%, minimum rate was 86%	1130, surveyed 308 (other children under 15 y.o.)	27%
September 2022	94%, minimum rate was 86%	1340, surveyed 290 (other children under 15 y.o.)	22%
October 2022	97%, minimum rate was 86%	1430, surveyed 290 (other children under 15 y.o.)	20%
November 2022	94%, minimum rate was 86%	1074, surveyed 254 (other children under 15 y.o.)	20%
December 2022	95%, minimum rate was 84%	1117, surveyed 225 (other children under 15 y.o.)	20%
1 quarter of 2023	96%, minimum rate was 86%	3573	20%
2 quarter of 2023	87%, minimum rate was 86%	3981, surveyed 778 (other children under 15 y.o.)	20%
3 quarter of 2023	92%, minimum rate was 86%	3560, surveyed 713 (other children under 15 y.o.)	20%

Source: The data from the Department of Management Quality of the "UMC" CF

Appendix 15. IREC Application

NU-IREC Human Research Ethics Application Form

Use this form to apply for ethical review of research involving people, to be carried out by researchers at Nazarbayev University (NU). Ethical review of research is a NU requirement for research involving humans. This includes research that studies data about people and observation of people.

Directions

- This application must be approved **prior to** beginning any aspect of **data collection or data analysis** (unless it relates to a pilot study which will not be published or presented).
- If your project does not involve human subjects or human subject data (e.g. literature reviews) you are not required to submit a NU-IREC application. If you are not sure if you require NU-IREC approval, you may request a consultation using the form on the NU-IREC website.
- Fill in this application form and verify that you have included all necessary documents. Consult the Checklist of Submission Documents on the final page and ensure that **all documents are labelled as directed.**
- All investigators affiliated with this application (i.e. faculty, research staff, students, and external collaborators) need to be listed on the application form and submit completion certificates for The **C**ollaborative **I**nstitutional **T**raining **I**nitiative (CITI Program) Basic Course on Human Subjects Research. Alternative ethics training certificates will be accepted. Certificates must be valid - completed within the last three years. See information available on the NU-IREC website.
- Save your completed form using naming protocols for all documents as stipulated at the end of this form. The correct naming of your documents will hasten the review process.
- This is a professional document; please check spelling, grammar and punctuation. Documents containing errors, especially on documents for public dissemination (e.g. consent forms), will be returned for correction.
- Submit the complete NU-IREC Application in electronic form to resethics@nu.edu.kz, with all required documents attached, the signature of a supervisor, or email of support is required for student research. All other signatures are only required after approval of the application.
- Once the project has been approved, a signed original hard copy of the application form must be delivered to the NU-IREC secretary within three weeks.

NU-IREC examines the information provided in your application to determine whether approval can be granted, and under what conditions. The application should be completed in terminology readily understood by an informed layperson. The project, as described in the application, should be complete with no additional documentation required other than requested by the Committee and listed in the checklist at the end of the application form. If your research cannot be understood, the application will be returned with a request for additional information or simplified language. Delays occur when the requested information is not provided in the application.

Review Timelines

Comprehensive and accurate applications, containing all the required information and supporting documents may be approved in the approximate times listed below:

- *Requests for exemption, amendment and extension*– usually within one week.
- *Expedited review* – three to four weeks.
- *Full board application*s – normal processing time is up to five weeks for complete, accurate, and language-appropriate applications. The review of full board applications occurs at biweekly NU-IREC meetings.

Part 0: Do I Submit an NU-IREC Application?

Does this research involve human subjects?

NU-IREC defines:

- **Research** as a systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge.
- **Human subject** as a living individual about whom an investigator obtains: 1) data through intervention or interaction with the individual; or 2) identifiable private information.

a) Does your research involve human subjects or official records about human subjects?
Yes ☑ No ☐ If "No" – No application needed.

b) Is this project being conducted solely to fulfill course requirements with no intention to share the results beyond the classroom in which it is assigned?
Yes ☐ No ☑ If "Yes" – No application needed.

c) Is this project a quality assurance activity or program improvement activity with no intention to share the results beyond the University community?
Yes ☐ No ☑ If "Yes" – No application needed.

d) Would you like to use this study to launch future investigations in which you would re-use this data?
Yes ☑ No ☐ If "Yes" – Application needed.

e) Would you like to disseminate or publish findings from this study at research presentations on- or off-campus, or in published works (including online media)?
Yes ☑ No ☐ If "Yes" – Application needed.

f) Do you think this research is eligible for an Exemption from Research Ethics Review?
Yes ☐ No ☑

NOTE: The NU-IREC will determine qualification for exemption based on information detailed in the remainder of this form.

The following categories of research are exempt from this policy:

f1 ☐ Research conducted in ***established or commonly accepted educational settings***, involving ***normal educational practices***, such as (i) research on education instructional strategies, or (ii) research on the effectiveness of or the comparison among instructional techniques, curricula, or classroom management methods.

f2 ☐ Research involving the ***use of educational tests*** (cognitive, diagnostic, aptitude, achievement), ***survey procedures, interview procedures or observation of public behavior***, **unless**: (i) information obtained is recorded in a manner that human subjects can be identified, directly or through identifiers linked to the subjects; ***and*** (ii) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or damage the subjects' financial standing, employability, or reputation.

f3 ☐ Research involving the collection or study of ***existing*** data, documents, records, pathological specimens, or diagnostic specimens, ***if these sources are publicly available OR if*** the information is recorded in such a manner that ***subjects cannot be identified***, directly or through identifiers linked to the subjects.

NOTE: "**Publicly available**" refers to data and/or biospecimens that are accessible to anyone in the general public, without the need for special qualifications, permissions, or privileges. Examples include data/biospecimens available for public purchase or searchable online.

Application #: _____	Decision: _____

NU-IREC Human Research Ethics Application Form

Part 1: Cover Sheet

Principal Investigator: Dinara Kyzyrbayeva Application Date: 04-May-2024

Nazarbayev University Unit/School: Graduate School of Public Policy

Primary Research Discipline: Social Sciences

Application Title:

Students' satisfaction with the medical care of the "University Medical Center" Corporate Fund. Case study of "Nazarbayev University" in Astana, Kazakhstan.

Type of Review (Please refer to the link for more information):

I am seeking (choose one category only):

An Expedited Review Yes ☑ No ☐

A Full Board Review Yes ☐ No ☑

An Exemption Yes ☐ No ☑ If "Yes", check below (refer to categories on page 2):

f1 ☐ ***normal educational practices*** in ***established or commonly accepted educational settings;***

f2 ☐ ***use of educational tests;***

f3 ☐ ***existing*** data, documents, records, pathological specimens, or diagnostic specimens, ***if these sources are publicly available OR de-identified***

f4 ☐ ***other***

Outline the reasons why your study should be considered exempt:

NOTE: The NU-IREC will determine qualification for exemption based on information detailed in the remainder of this form.

Part 2: Research Team Details

Principal Investigator

Name: Dinara Kyzyrbayeva NU ID: 201225093

NU School/ Unit: Graduate School of Public Policy

Department:

Position: Graduate Student

E-mail address: dinara.kyzyrbayeva@nu.edu.kz

Daytime Phone: Mobile phone: +77013017162

Have you completed the CITI basic course on Human Subjects Research?

Yes ☑ No ☐ If "No" – You cannot submit this application until CITI training is completed.

CITI Training completion date: 08-Sep-2023

NOTE: The application will only be reviewed if valid course completion certificates for all research team members are submitted.

By signing this form, the **Principal Investigator** certifies that:

a) You have read and understand NU's policies regarding the protection of human subjects in research;
b) You have not begun recruitment or collection of data from research participants and will not do so until formal notification of NU-IREC approval of the proposed project has been received;
c) You will seek approval from the NU-IREC prior to implementing any changes in procedures or the consent process/forms for this project; and
d) You will immediately inform the NU-IREC of any adverse events or other negative consequences incurred by participants in this research.

Signature: _____(to be completed on hard copy for final submission only)

Additional Investigator(s): *(Use additional pages if necessary)*

Name: Askar Sadvakassov NU ID: 202372667

NU School/ Unit: Graduate School of Public Policy

Department: MPA

Position: Graduate Student

E-mail address: a.sadvakassov@nu.edu.kz

Have you completed the CITI basic course on Human Subjects Research or, for non-NU researchers, alternative accepted by NU-IREC? Yes ☑ No ☐

If "No" – This application cannot be submitted until CITI training is completed.

CITI or alternative training completion date: 09-Sep-2023

Additional Investigator(s): *(Use additional pages if necessary)*

Name: Kanat Zhumanov NU ID: 100006708

NU School/ Unit: Graduate School of Public Policy

Department: MPA

Position: Graduate Student

E-mail address: k.zhumanov@nu.edu.kz

Have you completed the CITI basic course on Human Subjects Research or, for non-NU researchers, alternative accepted by NU-IREC? Yes ☑ No ☐

If "No" – This application cannot be submitted until CITI training is completed.

CITI or alternative training completion date: 02-Sep-2023

For students:

Undergraduate ☐ Masters ☑ PhD ☐ Other ☐

Course: MPA

Research Advisor:

Name: Hyesong Ha

Daytime Phone #:

Email: hyesong.ha@nu.edu.kz

NU School: Graduate School of Public Policy

Department: Assistant Professor

Have you completed the CITI basic course on Human Subjects Research?

Yes ☑ No ☐ If "No" – This application cannot be submitted until CITI training is completed.

CITI Training completion date: 08-Jun-2020

By signing this form, the **Research Advisor** certifies that:

a) You have provided appropriate training in the ethics of human research to the student signing above;
b) You have reviewed this protocol and take responsibility for the research design, and for the student investigator's compliance with the requirements of the NU-IREC; and
c) You will provide adequate supervision of the above student in the conduct of this research.

Signature:_____ Date:

Additional Signatures (as required by School-level policies):

Department Chair/Vice Dean of Research:

Name:

NU School/ Unit: ...

Department:

Signature: _____ Date:

School Dean/Director/Chair of Research Committee:

Name:

NU School/ Unit: ...

Department:

Signature: _____ Date:

Part 3: Research Design

This application must be written in language that can be understood by academics who are not specialists in the field of this study. The provision of clear information will assist with the prompt processing of your application.

3.1 What is the purpose of the research? (Approximately 250-300 words)
What question(s) do you hope to answer? Summarize the objectives and significance of the study.

The main purpose of the study is to identify main factors that satisfy students needs and wants within receiving them medical care at the "University Health Center" on the territory of " Nazarbayev University".

Central question: To identify factors that are associated with students' satisfaction of " Nazarbayev University" to receive medical care.

Sub-question 1: To discover how the management of the " UMC" CF can increase students' satisfaction with their medical care.

Sub-question 2: To find out the reasons that influence dissatisfaction among students of the " Nazarbayev University" .

From the practical side, the outcomes of this study will contribute to existing measures of the Managerial level of the UMC's clinics for preventing dissatisfaction level among students of the " Nazarbayev University".

From the educational side, the results of this study can be included in the educational program for future healthcare managers.

From the scientific perspective, the study will contribute to existing knowledge of the literature review on students' satisfaction level with medical care.

3.2 Describe the data collection methodology in language that will be understood by researchers outside your field. Briefly describe your data collection method. For example: qualitative (interviews, focus groups, observations, action research), quantitative (surveys, clinical trials, existing data sets, human genetics) and mixed methods. **Copies of all data collection instruments must be attached to this application, in the required languages**. (**Approximately 250-300 words**).

In order to provide an in-depth analysis of our research setting, we decided to use the mixed-method approach. Specifically, we are planning to use the qualitative component by conducting semi-structured interviews and focus groups with NU students, specialists of the polyclinic and the administrative staff. This will help us to dive into the issue of satisfaction and dissatisfaction among students which will be then extrapolated in getting the narrative data from medical specialists and administrative staff. According to Bryman (2012, p.12), semi-structured interviews help researchers to be more flexible and broad-minded, since while asking open-ended questions, participants might lead researchers to conversations and details that will uncover the research issue from another perspective. Thus, we decided to leave room for flexibility.

In terms of quantitative analysis, we are planning to conduct the NU-wide survey that will comprise both local and international students from various degrees. It is worth mentioning that NU has already conducted a survey regarding the relationship of students with the healthcare unit. We are planning to request access to the survey and utilize the data if it is relatable to the scope of our research. However, we are still planning to hold an authentic survey covering the level of satisfaction and dissatisfaction among students including medical personnel and administrative staff into the conversation. Moreover, considering the nature of our research topic and method being utilized, we claim that our reach will be more of a comparative nature analyzing the outcomes of the qualitative and quantitative methods.

3.3 Briefly describe the data analysis processes. (Approximately 150-300 words).

The data that we are planning to collect from the interviews, focus group discussions and surveys will be analyzed through the lenses of both qualitative and quantitative methods. Qualitative component data will be retrieved through conventional content analysis, coding semi-structured interview data and categorizing and interpreting focus group transcripts, while Quantitative component's data will be analyzed with the help of correlation analysis. When we will conduct both interviews and focus group discussions, we will focus on building trust between participants and us as the research project team. This will help us to achieve our research findings in an efficient manner.
The qualitative research data will be analyzed through conventional content analysis. We will look for research indicators in exemplifying the factors that are associated with students' satisfaction of "Nazarbayev University" to receive medical care. Before employing content analysis, we will code the semi-structured interviews by labeling and highlighting the data that will be then applied to content analysis. Focus group discussion data will initially be transcripted, then we will categorize and interpret the specific data related to our research question.
In terms of quantitative data, we will initially conduct an online survey amongst NU students and then employ correlation analysis. Survey results will guide us in analyzing the relationships between satisfaction and dissatisfaction level of NU students with healthcare provision by the University Health Center and the following variables: Quality of medical care personnel, Variety of medical care services, Availability of modern equipments, Communication between students, medical personnel and administrative staff, Trust between students and medical staff, Frequency of medical appointments, Citizen status of students (national or international) and Access to private medical care.

3.4 Briefly describe the research sites.

We have chosen the " University Health Center" ' Polyclinic of Nazarbayev University as the research setting of our study because of its unique funding opportunities. In comparison with other Kazakhstan universities, it is worth mentioning that the University Health Center has three sources of funding including the Guaranteed Value of Free Medical Care, the Compulsory Social Medical Insurance and the Voluntary Medical Insurance. In addition, Nazarbayev University is an autonomous organization governed by the Government that is privileged to have its own law. Taking into account these characteristics along with the fact that NU is one of the leading educational settings in Kazakhstan, we decided to choose this setting as a case study that will play a role in the framework that could be applied to other University Health Centers.

Part 4: Participants

4.1 Special Populations.

Do participants belong to a group for which special protections are required? Special precautions must be included in your research procedures if any of these special populations or research areas are included.

Are any of your human subjects:

a) Minors (under 18 years of age)? Yes ☐ No ☑

If "Yes", consent from parents and assent from the child will be required. These documents must be supplied with the application.

b) Legally incompetent? Yes ☐ No ☑

c) Prisoners? Yes ☐ No ☑

d) Perinatal women, if affected by the research? Yes ☐ No ☑

e) Institutionalized? Yes ☐ No ☑

f) Mentally incapacitated? Yes ☐ No ☑

Does the research deal with sensitive subjects, for example, questions concerning:

g) Sexual behaviors? Yes ☐ No ☑

h) Drug use? Yes ☐ No ☑

i) Illegal conduct? Yes ☐ No ☑

j) Use of alcohol? Yes ☐ No ☑

k) Other (please specify)

4.2 Participant Pool. Expected number of participants or sample size: 500 students

4.3 Describe your intended participant pool in terms of:

a) Languages of communication:

English and Russian languages

b) Gender, race or ethnic group, age range, etc.:

males, females, any race, age 18+

c) Affiliation of participants (e.g., institutions, hospitals, general public, students, etc.):

Students of the "University Health Center" on the Nazarbayev University territory

d) Participants' general state of mental health:

healthy

e) Participants' general state of physical health:

healthy

4.4 Explain why you have chosen this particular group for study. N/A ☐

If participants belong to one of the protected classes above, this justification is especially important. If participants are affiliated with a particular institution, please explain:

Because students considered as a customers of the University Health Center policlinic

4.5 What is your relationship to the participants? (e.g., are you their classroom instructor, a nurse in a clinic whose participants are seeking medical care, etc.? If your only relationship is as a researcher or student researcher, then there is likely no relationship).

Does your relationship potentially create any power over the potential participant?

One of the research group team member - Kanat Zhumanov, works as a Head of the "UMC Medical Assistance" development Department of the "University Medical Center" Corporate Fund. So, due to this reason, the research group has access to data from the Healthcare Department of the NU. Additionally. the research group can come to UHC and easier collect the data. The before mentioned fact about Kanat Zhumanov does not indicate that he has any power over

4.6 Participant Contact (Recruitment)

a) Will participants be recruited? Yes ☑ No ☐

b) How will you contact potential participants to solicit their involvement in your study? N/A ☐

Potential participants will be involved through NU's online platforms, corporate mail, google forms for connecting with potential participants to the study. From another perspective, the research group will distribute flyers or posters within the

c) Describe the method for recruiting participants. Provide copies of recruitment emails, presentations, advertising, posters, scripts or other materials. N/A ☐

This study will use online and offline methods for recruiting participants. Above described in detaile the process of conducting both methods online and offline for recruiting participants.

4.7 Exclusions: If certain populations will be excluded from this study, please describe and justify the criteria for exclusion. Describe the method you will use to identify and exclude the individuals from the study. For example, if you are excluding pregnant women from a nutrition study due to health concerns for the fetus, describe that here. N/A ☐

The research group selected students from "Nazarbayev University" for this research on student satisfaction with medical care due to the university's distinctive profile. As a leading institution in Kazakhstan with a diverse student body and a strong emphasis on international standards, "Nazarbayev University" provides a valuable ecosystem for understanding the healthcare experiences and expectations of a high-achieving, globally-minded student population. This allows for insights

4.8 Procedures in the event of a participant withdrawing from the study. Outline any follow up actions which will occur if a participant withdraws from the study.

All participation is voluntary base and everyone has a right to withdraw before, during and after the study, if so will happened, all data/information will be automatically deleted.

Part 5: Detailed Procedures

5.1 When is the data collection for the research intended to begin and end?
08/2024 to 09/2024 (enter month/year).

NOTE: The research cannot begin until this project has been approved by the NU-IREC. Projects will only be approved for **one year**. Requests for extension should be submitted one month before the approval expiry date.

5.2 **Procedures:** Describe how subjects will be involved in detail. Describe the setting in which the participants' involvement will take place. Where will they be? Will they be alone or in a group? Will there be any specific conditions? How long will it take?

The research group will conduct qualitative data gathering through implementing interview with stakeholders, such as students, representatives of Health and Safety Department of the "Nazarbayev University", representatives of the "UMC Medical Assistance" development Department. All stakeholders work on the territory of the "Nazarbayev University". All interviews will be conducted individually (face-to-face) in the form of free story, approximately duration of each interview 1.5 - 2 hours. Department of the NU about students' satisfaction by medical check-up. So, the medical check-up can be considered as a part of the students' experience of receiving medical care overall. As a result, the research group will use and analyze already conducted research by comparing with outcomes from future qualitative data. So, due to the reason

5.3 **Will you be the one administering the data collection procedure, or will someone else do it for you?** If someone else, describe how they will be involved and what type of oversight, training, and instructions they will have in order to conduct this procedure.

Our research group will totally involved in this process, every team member will take interview separately with different interviewees.

5.4 **Will the participants experience any discomfort?** Yes ☐ No ☑

If "Yes", please explain. (Discomfort may include physical or emotional discomfort).
N/A ☑

Students participating in a study about their satisfaction with medical care may experience discomfort related to anxiety, emotional distress, fear of judgment, and confidentiality concerns. To minimize these discomforts, the researcher group will make all procedures based on anonymity principle, create a safe environment, offer support resources, keep the study concise, and respect students' time. These measures will lead to a more positive experience for participants and more accurate study results.

5.5 **Will deception or false or misleading information be used in your procedures?** Will you withhold information that will influence the subjects' understanding of the true nature of the study?
Yes ☐ No ☑
If "Yes", explain why deception is necessary for this study and describe how you will debrief participants, and procedures you will follow if a participant decides to withdraw his/her consent.
N/A ☑

Part 6: Data Management Plan

All materials must be retained and available for inspection by the faculty advisor and/or NU-IREC audit **for a minimum of three years from the date of dissemination or final reporting**. PIs are responsible for the disposal of data or transfer to continuing safe storage repository.

6.1 Are you conducting a survey using any electronic media?

Yes ☐ No ☑

If "No," please skip to Part 6.5.

6.2 If you are sending out an email invitation to subjects to complete a survey:

a) Will you assure that the participant will only see his/her name?
Yes ☐ No ☐

b) Will you have the "read receipt" function turned off?
Yes ☐ No ☐

If you answered "No" to these questions, please explain why:

Regarding survey, the research group already received data from already conducted survey by the Health and Safety Department of the NU about students' satisfaction by medical check-up. So, the medical check-up can be considered as a part of the students' experience of receiving medical care overall. As a result, the research group will use and analyze already conducted research by comparing with outcomes from future qualitative data. So, due to the reason that survey

6.3 If your survey contains questions where the subjects choose from a dropdown menu, do they have the option to choose "No response" or to leave the question blank?

Yes ☐ No ☐ No dropdown menu ☐

6.4 How will data be transmitted? Is a survey host (Qualtrics, Select Survey, Survey Monkey, etc.) used? If a survey link is sent to participants, will the URL for the survey include information that could identify individuals? Will the host retain identifiable data? Will the data be encrypted?

What is the URL?

6.5 Where will data be stored?

6.6 How will data be maintained? Will it be in an individually identifiable form, aggregate form, anonymized?

For Interviews - the research group will separate identifiable information from responses into separate files, one with data and IDs instead of names, another with names and ID as a linking document, maintained separately from one

6.7 Will data be shared? This includes posting survey results or aggregated anonymized data on a website or publicly available location that could be accessed by individuals other than the investigators?

Yes ☑ No ☐

How? With whom? Will subjects be re-identifiable? Why or why not?

The potential findings of the research will be presented in the presentation and Master's Project and posted on public places at the GSPP building's hall and other public places. Potential users can be NU Community, such as faculty,

6.8 Describe the data security plan (e.g., how will you keep your data secure?):

All names and other personal informations will be coded, on the example of interviewee 1, interviewee 2 etc. And other personal information will be secure and used only for academic purposes. Additionally, password protection will be implemented for securing the confidential data.

Part 7: Risk/Benefit Analysis

7.1 Is the research Minimal Risk?

Minimal risk means that the probability and magnitude of harm or discomfort anticipated in the research are not greater in and of themselves than those ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

Do you believe those risks will be no greater than minimal?

Yes ☑ No ☐

Explain why:

The research group will work without probability and magnitude of harm or discomfort anticipated actions during the research.

Describe all risks, perceived and actual, that participants might encounter during this study. Risks may be physical, social, psychological, legal, or risks to employment or economic well-being. A response of "Not Applicable" or "No risk" will not be accepted.

The minimum risk can be psychological, if customer faced bad and sensitive experinece during the receiving medical care. Additionally, possibility of distribution personal information may exist if the research group will not work in the compliance with confidentiality rules.

7.2 If risks are greater than minimal, describe the following:

a) Explain why these risks are essential to your study.

b) What have you done to minimize risks without compromising your research objectives?

c) What protections have you put in place to minimize the potential consequences to the subjects if the risks become realized?

d) What procedures have you established for reporting adverse events should they occur?

7.3 Will the participants directly or indirectly benefit from your study?

Yes ☑ No ☐

Please explain:

the outcomes will be used in the future investigations, publications, and for managerial level of the clinic, outcomes will be provided as recommendations for service improvement.

7.4 What are the anticipated benefits to society at large as a result of this project? Are there other benefits?

Anticipated benefits for society at large as a result of this project can consist in the recommendations for other University Medical Centers, medical centers and other social organizations. For the academic perspective, outcomes of the research, will contribute existing knowledge in the field of customer satisfaction by medical care.

7.5 Will you offer incentives, reimbursement of costs, or other compensation to participants?

Yes ☐ No ☑

If "Yes", what will you offer as incentive, reimbursement, or compensation and under what conditions will participants receive it?

Part 8: Confidentiality/Anonymity

Anonymity occurs when the identity of the subject to whom a particular set of data pertains is completely unknown, even to the researcher.

Confidentiality is necessary when anonymity is not possible – when the identity of the participant is known to the researcher in any way.

8.1 Will you make video, photograph, or audio recordings? Yes ☑ No ☐

8.2 Do your consent forms include a request for permission to obtain video, photographic or audio recordings? Yes ☑ No ☐

8.3 Can the subjects be identified by the researchers directly or through any identifiers?

Yes ☐ No ☑ ***If "Yes," please explain:***

8.4 If the data collected in your research will be anonymous, explain the procedures you will use to create and preserve anonymity:

N/A (My research does not involve anonymous data) ☑

To guarantee anonymity in the student satisfaction research, no personal information will be collected. Unique identifiers will be used for data analysis, and all data will be stored securely. Any identifying details will be removed before reporting findings, which will focus on group trends. Confidentiality agreements will be in place for all research team members, and informed consent will clearly explain the anonymity procedures to participants.

8.5 If the data will not be anonymous, explain the procedures you will use to protect the confidentiality of your data:

a) During the data collection process:

For the confidentiality purposes our research group will give special names to interviewees, such as Interviewer 1,2,3 and others, for the survey as well, the research group will provide special names like: respondent 1,2,3 and others.

b) While results are being analyzed:

Unique identifiers will be used for data analysis, and all data will be stored securely. Any identifying details will be removed before reporting findings, which will focus on group trends.

c) In publication or other reporting of results:

Confidentiality agreements will be in place for all research team members, and informed consent will clearly explain the anonymity procedures to participants.

d) In storage after research is complete and results are reported:

To guarantee anonymity in the student satisfaction research, no personal information will be collected.

Part 9: Consent

If subjects are under the age of 18 (a minor), a parent, guardian, or an authorized representative must give consent for participation. A school's personnel cannot give permission or consent on behalf of minors. In addition, the minor must give their assent. Consent forms and assent scripts must be provided. Samples are available on the NU-IREC website.

9.1 Describe how you will obtain informed consent from your participants: In what setting? Who will be present? Will there be an opportunity for questions to be asked and answered?

N/A ☑ ***If "N/A", please explain why?***

The setting will be conducive to privacy and comfort for the participant. This could be in a research lab, a meeting room, or any other private space where distractions are minimized. Only the researcher and the participant will be present during the consent process. The researcher will explain the purpose of the study, what participation entails, potential risks and benefits, confidentiality measures, and the right to withdraw at any time without consequences. After the explanation, the participant will ask questions. Department of the NU about students' satisfaction by medical check-up. So, the medical

9.2 Describe how you will assure that participation is voluntary:

The researcher group will create an environment where participants feel empowered to make informed choices about their involvement in the study, fostering a sense of trust and respect between researchers and participants. The research group will follow to these principles, that will prove the statement that the participation is voluntary: clear explanation of each step, no coercion, freedom to withdraw, confidentiality and anonymity, no consequences for non-participation and respect for autonomy.

9.3 Are you requesting Oral Consent Only (a Waiver of Documentation of Informed Consent)?

Yes ☐ No ☑

If you wish to request a waiver of documentation of informed consent (that is, you are requesting oral consent), explain how your research plan meets each of the criteria below.

a) The research involves no more than minimal risk to the subjects:

b) The waiver will not adversely affect the rights and welfare of the subjects:

c) The research could not practicably be carried out without the waiver:

Requesting a waiver of documentation of informed consent does NOT guarantee that the NU-IREC will grant it. All researchers must submit consent forms or oral consent scripts with their application materials in order for the NU-IREC to determine whether the informed consent process may be modified.

Please include a copy of informed **consent forms in all languages** intended to be used and in **English,** even if your subjects are not expected to speak English.

Part 10: Project Funding

10.1 Funding/Sponsor Information:

a) Is this project being supported by any funding sources?

Yes ☑ No ☐

b) What is the source of funding? NU

For external funding provide: N/A ☑

Name of granting agency/sponsor:

Name of contact person:
E-mail address:
Duration of grant/sponsorship:
Commencement date of grant/sponsorship:

Part 11. Protocol for naming of documents and attachments

Correct naming of documents helps the reviewers to complete the review quickly. Ensure that all of your documents are labelled as outlined below. Applications will be returned if documents are not identifiable as outlined.

Application form:
Surname of PI_IREC Application Date (month– day – year)
e.g. Sinclair_ IREC Application_04172020

Instruments:
Surname of PI [description of the instrument - language]_Date (month– day – year)
e.g. Sinclair_ Interview Questions-Eng_04172020
or Sinclair_Online Survey_04172020

Consent Forms/Assent Scripts:
Surname of PI [description of the form - language]_Date (month– day – year)
e.g. Sinclair_Participant consent-Eng_04172020
or Sinclair_Parent Consent-Kz_04172020

Recruitment Documents:
Surname of PI [description of the form - language]_Date (month– day – year)
e.g. Sinclair_Recruitment email-En_04172020
or Sinclair_Recruitment poster-Kz_04172020

Ethics Training document:
Surname of investigator [Training body – completion date month– day – year]
e.g. Sinclair_CITI_04172020
or Sinclair_TRREE_04172020

Other:
Surname of PI [Description of the document - language]_Date of document (month – day – year)
e.g Sinclair_hospital authorization - Ru_04172020

CHECKLIST OF SUBMISSION DOCUMENTS:

☑ **Electronic Completed NU-IREC Application**

☑ **Consent form(s)**

- ☑ Standard consent form(s) should include explanation of procedures, risks, safeguards, freedom to withdraw, confidentiality, offer to answer inquiries, third party referral for concerns, and participant (and/or guardian) signature. Consent forms need to be provided in all languages intended to be used and in English even if your subjects are not expected to speak English. Sample consent forms can be found at the official NU-IREC website.
- ☐ Parental consent form or child assent script. ☐ N/A
- ☑ Consent forms are named according to the protocol described above.

☑ **Data Collection Instruments**

- ☑ The final version of the data collection instrument must be attached. Also, if the survey is being conducted verbally, a copy of the introductory comments and survey questions being asked must be attached to this form. ☐ N/A
- ☑ If your data collection includes focus group questions, a complete list of the questions should be attached. ☐ N/A
- ☑ For research using a published/purchased instrument, a copy of the complete survey will suffice. ☐ N/A
- ☑ Data collection instruments are named according to the protocol described above.

☑ **Human Subject Ethics Training Certificates** (CITI basic course on Human Subjects Research or approved alternative) must be completed by all individuals involved in conducting this research project before this form is submitted.

- ☑ Current, valid certificates, named according to the required protocol, are attached for all project participants (staff, students, partners in external organizations).

☑ **Recruitment Documents** ☐ N/A

- ☑ Information sheets or letters/emails explaining the purpose of the research for recruitment, Information presentations, posters.

☑ **Other Documents as Needed** ☐ N/A

- ☑ Other forms may include recruitment materials, advertising documents, debriefing scripts, etc.